



BCP03 Plumbing and Services Training Package

Volume 1 of 3

Version Number: 3
Review Date: 30 November 2006



BCP03 Plumbing and Services Training Package

Volume 1 of 3 Plumbing and Services Training Package Volume 1

Introduction, Qualifications Framework, Assessment Guidelines and Competency Standards.
The Competency Standards in this volume cover the qualifications;

BCP20103 Certificate II in Drainage

BCP20203 Certificate II in Metal Roofing and Cladding

BCP20303 Certificate II in Urban Irrigation

BCP30103 Certificate III in Plumbing

BCP30203 Certificate III in Plumbing (Mechanical Services)

BCP30303 Certificate III in Roof Plumbing

BCP30403 Certificate III in Gas Fitting

BCP30503 Certificate III in Fire Protection

The Plumbing and Services Training Package (BCP03) is comprised of three volumes.

This Training Package was endorsed by NTQC in October 2003.

This Training Package is to be reviewed by November 2006.

BCP03 - Plumbing and Services Training Package

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Preliminary Information

Important Note to Users

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

Check the version number before commencing training or assessment

This Training Package is Version 3 - 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 Construction and Property Services Industry Skills Council at <http://www.cpsisc.com.au> to confirm the latest version number.

Explanation of version number conventions

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

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.

Version	Release Date	Comments
3	24/08/06	Addition of new units of competency and qualifications at Certificate IV and Diploma levels. Packaging into qualifications of previously endorsed units (Version 2) used for licensing purposes.
2	22/10/04	Addition of Licensing Units and replacement mains piping unit BCPDR3004A Addition of nineteen competency standards for licensing purposes: BCPCM4001A Carry out work based risk control processes BCPCM4002A Estimate and cost work BCPDR4001A Plan, size and layout sanitary drainage systems BCPDR4002A Plan, size and layout stormwater drainage systems BCPDR4003A Plan, size and layout domestic treatment plant disposal systems BCPFS4001A Commission domestic and residential fire suppression sprinkler systems BCPFS4002A Commission and maintain special hazards fire suppression systems

Version	Release Date	Comments
		BCPFS4003A Commission fire system pump sets BCPFS4004A Design residential and domestic fire sprinkler systems BCPGS4001A Plan, size and layout consumer gas installations BCPGS4002A Service Type A gas appliances BCPMS4001A Plan, size and layout heating and cooling systems BCPMS4002A Commission air and water systems BCPRF4001A Plan, size and layout roof drainage systems BCPSN4001A Plan, size and layout sanitary pipework and fixtures BCPWT4001A Plan, size and layout hot and cold water services/systems BCPWT4002A Commission and maintain backflow prevention devices BCPWT4003A Commission and maintain hot water temperature control devices BSBSBM401A Establish business and legal requirements Note: There are no qualifications attached to these standards.
1	20/11/03	Initial Release of the Package

Forms control : All endorsed training packages will have a version number displayed on the imprint page of every volume constituting that training package. Every training package will display an up-to-date copy of this modification history form, to be placed immediately after the contents page of the first volume of the training package. Comments on changes will only show sufficient detail to enable a user to identify the nature and location of the change. Changes to training packages will generally be batched at quarterly intervals. This modification history form will be included within any displayed sample of that training package and will constitute all detail available to identify changes.

Summary of AQF qualifications in this Training Package

Code	Title
BCP20103	Certificate II in Drainage
BCP20203	Certificate II in Metal Roofing and Cladding
BCP20303	Certificate II in Urban Irrigation
BCP30103	Certificate III in Plumbing
BCP30203	Certificate III in Plumbing (Mechanical Services)
BCP30303	Certificate III in Roof Plumbing
BCP30403	Certificate III in Gas Fitting
BCP30503	Certificate III in Fire Protection
BCP40106	Certificate IV in Plumbing and Services
BCP50106	Diploma of Plumbing and Services

Units of competency in this Training Package and their prerequisites

Note – the prerequisite column is only displayed if prerequisites exist.

Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2007A	Carry out levelling
BCPCM2008A	Cut and join sheet metal
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPCM2012A	Weld using oxy-acetylene equipment
BCPCM2013A	Weld using arc welding equipment
BCPCM3001A	Flash penetrations through roofs and walls
BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPCM3003A	Fabricate and install non-ferrous pressure piping
BCPCM4001A	Carry out work based risk control processes
BCPCM4002A	Estimate and cost work
BCPCM4003A	Produce 2-D architectural drawings using CAD software
BCPCM4004A	Prepare simple sketches and drawings
BCPCM5000A	Design complex sanitary plumbing and drainage systems
BCPCM5001A	Design complex cold water systems
BCPCM5002A	Design complex stormwater and roof drainage systems
BCPCM5003A	Design complex (non-solar) hot water systems
BCPCM5004A	Design sewer systems
BCPDR2001A	Locate and clear blockages

Code	Title
BCPDR2002A	Install domestic treatment plants
BCPDR2003A	Maintain effluent disinfection systems
BCPDR2004A	Install stormwater and sub-soil drainage systems
BCPDR2005A	Drain worksite
BCPDR2006A	Install pre-fabricated inspection openings and enclosures
BCPDR3001A	Plan the layout for a residential sanitary drainage system
BCPDR3002A	Install below ground sanitary drainage systems
BCPDR3003A	Install on-site disposal systems
BCPDR3004A	Install water mains pipe systems
BCPDR4001A	Plan, size and layout sanitary drainage systems
BCPDR4002A	Plan, size and layout stormwater drainage systems
BCPDR4003A	Plan, size and layout domestic treatment plant disposal systems
BCPFS2001A	Connect static storage tanks
BCPFS2002A	Install portable fire equipment
BCPFS3001A	Fabricate and install fire hydrant and hose reel systems
BCPFS3002A	Install distribution and range pipes
BCPFS3003A	Fit-off sprinkler heads, controls and ancillary equipment
BCPFS3004A	Install control valve assemblies, actuating devices and local alarms
BCPFS3005A	Test fire protection systems for pressure
BCPFS3006A	Install special hazards systems
BCPFS3007A	Install domestic and residential life safety sprinkler systems
BCPFS3008A	Test and maintain fire hydrant and hose reel installations
BCPFS3009A	Test and maintain automatic fire sprinklers
BCPFS3010A	Design pre-calculated fire sprinkler systems
BCPFS4001A	Commission domestic and residential fire suppression sprinkler systems

Code	Title
BCPFS4002A	Commission and maintain special hazards fire suppression systems
BCPFS4003A	Commission fire system pump sets
BCPFS4004A	Design residential and domestic fire sprinkler systems
BCPFS4005A	Commission fire alarm and detection systems
BCPFS4006A	Commission firefighting appliances
BCPFS5000A	Design fire-compliant hydraulic services
BCPFS5001A	Design fire sprinkler systems
BCPFS5002A	Design fire hydrant and hose reel systems
BCPGS3001A	Install gas piping systems
BCPGS3002A	Size consumer piping systems
BCPGS3003A	Install and commission Type A gas appliances
BCPGS3004A	Install LP gas storage of aggregate storage capacity up to 500 litres
BCPGS3005A	Install LP gas storage of aggregate capacity exceeding 500 litres and less than 8KL
BCPGS3006A	Install LP gas systems in caravans/mobile homes, water craft and mobile work places
BCPGS3007A	Install gas detection devices
BCPGS3008A	Install gas pressure control equipment
BCPGS3009A	Install a Type A appliance flue
BCPGS3010A	Install a Type B appliance flue
BCPGS3011A	Purge consumer piping
BCPGS3012A	Maintain Type A gas appliances
BCPGS3013A	Disconnect and reconnect Type A appliances
BCPGS3014A	Calculate and install natural ventilation for Type A gas appliances
BCPGS3015A	Install subsidiary gas meters
BCPGS4001A	Plan, size and layout consumer gas installations
BCPGS4002A	Service Type A gas appliances

Code	Title
BCPGS4003A	Install, commission and service Type B gas appliances
BCPIG2001A	Design domestic urban irrigation systems
BCPIG3001A	Set out, install and commission irrigation systems
BCPIG3002A	Install and commission domestic irrigation pumps
BCPMS2001A	Assemble mechanical services components
BCPMS3001A	Fabricate and install steel pressure piping
BCPMS3002A	Select and fit insulation and sheathing
BCPMS3003A	Install small bore heating systems
BCPMS3004A	Install medical gas pipeline systems
BCPMS3005A	Install and test ducting systems
BCPMS3006A	Install air handling units
BCPMS3007A	Install split system air conditioning
BCPMS3008A	Install air conditioning control equipment
BCPMS3009A	Maintain mechanical services equipment
BCPMS3010A	Install and maintain evaporative air cooling systems
BCPMS4001A	Plan, size and layout heating and cooling systems
BCPMS4002A	Commission air and water systems
BCPMS5000A	Design steam distribution systems
BCPMS5001A	Design air conditioning and ventilation systems
BCPMS5002A	Design sound attenuated hydraulic services
BCPMS5003A	Design hydronic heating and cooling systems
BCPPS5000A	Design gas bulk storage systems
BCPPS5001A	Design industrial gas systems
BCPPS5002A	Design gas reticulation systems
BCPPS5003A	Design solar water heating systems
BCPPS5004A	Conduct a water audit and identify water-saving initiatives
BCPPS5005A	Design grey water re-use systems in sewerred areas

Code	Title
BCPPS5006A	Design rainwater collection, storage, distribution and
BCPPS5007A	Design irrigation systems
BCPPS5008A	Design trade waste pre-treatment systems
BCPPS5009A	Analyse and report on technical plumbing systems
BCPPS5010A	Design pump systems
BCPPS5011A	Coordinate services and penetrations
BCPPS5012A	Design siphonic stormwater drainage systems
BCPPS5013A	Design vacuum sewerage systems
BCPPS5014A	Locate and maintain piping systems
BCPPS5015A	Inspect plumbing and drainage systems
BCPRF2001A	Work safely on roofs
BCPRF2002A	Select and install roof sheeting and wall cladding
BCPRF2003A	Collect and store roof water
BCPRF2004A	Fabricate roof coverings for curved structures
BCPRF3001A	Receive roofing materials
BCPRF3002A	Fabricate and install roof drainage components
BCPRF3003A	Fabricate and install external flashings
BCPRF3004A	Install roof components
BCPRF3005A	Install roof coverings to curved roof structures
BCPRF3006A	Install composite roof systems
BCPRF4001A	Plan, size and layout roof drainage systems
BCPSN3001A	Plan the layout for a residential sanitary plumbing system
BCPSN3002A	Install discharge pipes
BCPSN3003A	Fabricate and install sanitary stacks
BCPSN3004A	Install and fit off sanitary fixtures
BCPSN3005A	Install pre-treatment facilities
BCPSN3006A	Install sewerage pump sets

Code	Title
BCPSN4001A	Plan, size and layout sanitary pipework and fixtures
BCPWT3001A	Set out and install water services
BCPWT3002A	Install and adjust water service controls and devices
BCPWT3003A	Install and commission water heating systems
BCPWT3004A	Install domestic water treatment equipment
BCPWT3005A	Install water pump sets
BCPWT3006A	Fit off and commission hot and cold water services
BCPWT3007A	Connect irrigation systems from drinking water supply
BCPWT3008A	Install water service
BCPWT4001A	Plan, size and layout hot and cold water services/systems
BCPWT4002A	Commission and maintain backflow prevention devices
BCPWT4003A	Commission and maintain hot water temperature control devices

Imported units of competency in this Training Package

Code	Title	Origin
BCCPL3001B	Install water mains pipelines	BCC03
BCF2009A	Carry out load slinging of off-site materials	BCF00
BCGBC4002A	Manage Occupational Health and Safety in the building and construction workplace	BCG03
BCGBC4008A	Conduct on-site supervision of the building and construction project	BCG03
BCGBC4009A	Apply legal requirements to building and construction projects	BCG03
BCGBC4012A	Read and interpret plans and specifications	BCG03
BCGBC4014A	Prepare simple building sketches and drawings	BCG03
BCGBC4015A	Prepare specifications for all construction works	BCG03
BCGBC4017A	Arrange resources and prepare for the building or construction project	BCG03
BCGBC4019A	Apply sustainable building design principles to water management systems	BCG03
BCGBC4020A	Build thermally efficient and sustainable structures	BCG03
BCGBC4021A	Minimise waste on the building and construction site	BCG03
BCGBC4024A	Resolve business disputes	BCG03
BCGBC4025A	Manage personal work priorities and professional development	BCG03
BCGBC4026A	Arrange building applications and approvals	BCG03
BCGBC4034A	Apply codes and standards to building trade and services contracting	BCG03
BCGBC5002A	Monitor building or construction costing systems on medium-rise building and construction projects	BCG03
BCGBC5010A	Manage construction work/projects	BCG03
BCGCM2003B	Install trench support	BCG03
BCGCM2008B	Erect and dismantle restricted height scaffolding	BCG03
BCGCM3001B	Operate elevated work platforms	BCG03
BCGCM3002B	Operate a truck mounted loading crane	BCG03

Code	Title	Origin
BCGCM3003B	Work safely around power sources, services and assets	BCG03
BCGCO2003B	Carry out concreting to simple forms	BCG03
BCGRI3001B	Operate personnel and materials hoists	BCG03
BCGSV6010A	Apply fire technology to buildings up to 3 storeys	BCG03
BCGWC3006B	Install acoustic and thermal environmental protection systems	BCG03
BSBADM305A	Create and use databases	BSB01
BSBCM213A	Produce simple word-processed documents	BSB01
BSBCM214A	Create and use simple spreadsheets	BSB01
BSBCM310A	Deliver and monitor a service to customers	BSB01
BSBCM404A	Develop teams and individuals	BSB01
BSBCM412A	Promote innovation and change	BSB01
BSBCM419A	Manage projects	BSB01
BSBCM420A	Write complex documents	BSB01
BSBFLM403B	Implement effective workplace relationships	BSB01
BSBFLM404A	Lead work teams	BSB01
BSBFLM409B	Implement continuous improvement	BSB01
BSBFLM505B	Manage operational plan	BSB01
BSBFLM507B	Manage quality customer service	BSB01
BSBFLM512A	Ensure team effectiveness	BSB01
BSBMGT503A	Prepare budgets and financial plans	BSB01
BSBOHS403A	Identify hazards and assess OHS risks	BSB01
BSBOHS504A	Apply principles of OHS risk management	BSB01
BSBPM404A	Apply quality management techniques	BSB01
BSBPM407A	Apply risk management techniques	BSB01
BSBPM505A	Manage project quality	BSB01
BSBPM508A	Manage project risk	BSB01
BSBSBM401A	Establish business and legal requirements	BSB01

Code	Title	Origin
BSBSBM402A	Undertake financial planning	BSB01
BSBSBM404A	Undertake business planning	BSB01
BSBSBM405A	Monitor and manage business operations	BSB01
BSBSBM406A	Manage finances	BSB01
CHCCS405A	Work effectively with culturally diverse clients and co-workers	CHC02
MEM1010AA	Install pipework and pipework assemblies	MEM98
MEM109AA	Install refrigeration and air conditioning plant and equipment	MEM98
MEM1886AA	Test, evacuate and charge refrigeration systems	MEM98
MEM549AA	Perform routine gas tungsten arc welding	MEM98
MEM550AA	Perform routine gas metal arc welding	MEM98
RTE3605A	Troubleshoot irrigation systems	RTE03
TAADEL404A	Facilitate work-based learning	TBA

Explanation of the review date

The review date (shown on the title page and in the header 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.

Note To Users

Summary of plumbing and services units of competency in Volume 3 of BCP03

There are no prerequisite requirements for individual industry-specific units of competency that comprise the Certificate IV and Diploma qualifications contained in Volume 3. Imported units may contain prerequisite requirements. There are, however, prerequisite qualifications for entry into the Certificate IV in Plumbing Services - operations stream qualification referred to in this volume.

Certificate IV and Diploma level plumbing and services units of competency

Unit code	Unit title
BCPCM4003A	Produce 2-D architectural drawings using CAD software
BCPFS4005A	Commission fire alarm and detection systems
BCPFS4006A	Commission firefighting appliances

BCPGS4003A	Install, commission and service Type B gas appliances
BCPCM5000A	Design complex sanitary plumbing and drainage systems
BCPCM5001A	Design complex cold water systems
BCPCM5002A	Design complex stormwater and roof drainage systems
BCPCM5003A	Design complex (non-solar) hot water systems
BCPCM5004A	Design sewer systems
BCPFS5000A	Design fire-compliant hydraulic services
BCPFS5001A	Design fire sprinkler systems
BCPFS5002A	Design fire hydrant and hose reel systems
BCPMS5000A	Design steam distribution systems
BCPMS5001A	Design air conditioning and ventilation systems
BCPMS5002A	Design sound attenuated hydraulic services
BCPMS5003A	Design hydronic heating and cooling systems
BCPPS5000A	Design gas bulk storage systems
BCPPS5001A	Design industrial gas systems
BCPPS5002A	Design gas reticulation systems
BCPPS5003A	Design solar water heating systems
BCPPS5004A	Conduct a water audit and identify water-saving initiatives
BCPPS5005A	Design grey water re-use systems in sewered areas
BCPPS5006A	Design rainwater collection, storage, distribution and re-use systems
BCPPS5007A	Design irrigation systems
BCPPS5008A	Design trade waste pre-treatment systems
BCPPS5009A	Analyse and report on technical plumbing systems

BCPPS5010A	Design pump systems
BCPPS5011A	Coordinate services and penetrations
BCPPS5012A	Design siphonic stormwater drainage systems
BCPPS5013A	Design vacuum sewerage systems
BCPPS5014A	Locate and maintain piping systems
BCPPS5015A	Inspect plumbing and drainage systems

Note: The following units were previously endorsed in Version 2 of BCP03

BCPCM4001A	Carry out work based risk control processes
BCPCM4002A	Estimate and cost work
BCPDR4001A	Plan, size and layout sanitary drainage systems
BCPDR4002A	Plan, size and layout stormwater drainage systems
BCPDR4003A	Plan, size and layout domestic treatment plant disposal systems
BCPFS4004A	Design residential and domestic fire sprinkler systems
BCPFS4001A	Commission domestic and residential fire suppression sprinkler systems
BCPFS4002A	Commission and maintain special hazards fire suppression systems
BCPFS4003A	Commission fire system pump sets
BCPGS4001A	Plan, size and layout consumer gas installations
BCPGS4002A	Service Type A gas appliances
BCPMS4001A	Plan, size and layout heating and cooling systems
BCPMS4002A	Commission air and water systems
BCPMS4003A	Design compressed air systems
BCPRF4001A	Plan, size and layout roof drainage systems
BCPSN4001A	Plan, size and layout sanitary pipework and fixtures

BCPWT4001A	Plan, size and layout hot and cold water services/systems
BCPWT4002A	Commission and maintain backflow prevention devices
BCPWT4003A	Commission and maintain hot water temperature control devices

Imported units of competency

Unit code	Unit title	Origin
BCGBC4002A	Manage occupational health and safety in the building and construction workplace	BCG03
BCGBC4008A	Conduct on-site supervision of the Building and Construction Project	BCG03
BCGBC4009A	Apply legal requirements to building and construction projects	BCG03
BCGBC4012A	Read and interpret plans and specifications	BCG03
BCGBC4014A	Prepare simple sketches and drawings	BCG03
BCGBC4015A	Prepare specifications for all construction works	BCG03
BCGBC4017A	Arrange resources and prepare for the building or construction project	BCG03
BCGBC4019A	Apply sustainable building design principles to water management systems	BCG03
BCGBC4020A	Build thermally efficient and sustainable structures	BCG03
BCGBC4021A	Minimise waste on the building and construction site	BCG03
BCGBC4024A	Resolve business disputes	BCG03
BCGBC4025A	Manage personal work priorities and professional development	BCG03
BCGBC4026A	Arrange building applications and approvals	BCG03
BCGBC4034A	Apply codes and standards to building trade and services contracting	BCG03
BCGBC5002A	Monitor building or construction costing systems on medium rise buildings and construction projects	BCG03

BCGBC5010A	Manage construction work/projects	BCG03
BCGSV6010A	Apply fire technology to buildings up to three storeys	BCG03
BSBADM305A	Create and use databases	BSB01
BSBCM412A	Promote innovation and change	BSB01
BSBCM419A	Manage projects	BSB01
BSBCM420A	Write complex documents	BSB01
BSBCM213A	Produce simple word processed documents	BSB01
BSBCM214A	Create and use simple spreadsheets	BSB01
BSBCM310A	Deliver and monitor a service to customers	BSB01
BSBCM404A	Develop teams and individuals	BSB01
BSBFLM403B	Implement effective workplace relationships	BSB01
BSBFLM404A	Lead work teams	BSB01
BSBFLM409B	Implement continuous improvement	BSB01
BSBFLM505B	Manage operational plans	BSB01
BSBFLM507B	Manage quality customer service	BSB01
BSBFLM512A	Ensure team effectiveness	BSB01
BSBMGT503A	Prepare budgets and financial plans	BSB01
BSBOHS403A	Identify hazards and assess OHS risks	BSB01
BSBOHS504A	Apply principles of OHS risk management	BSB01
BSBPM404A	Apply quality management techniques	BSB01
BSBPM407A	Apply risk management techniques	BSB01
BSBPM505A	Manage project quality	BSB01
BSBPM508A	Manage project risk	BSB01

BSBSBM401A	Establish business and legal requirements	BSB01
BSBSBM402A	Undertake financial planning	BSB01
BSBSBM404A	Undertake business planning	BSB01
BSBSBM405A	Monitor and manage business operations	BSB01
BSBSBM406A	Manage finances	BSB01
CHCCS405A	Work effectively with culturally diverse clients and co-workers	CHC02
TAADEL404A	Facilitate work-based learning	BSB01

Relationship of Volume 3 to Volumes 1 and 2 of BCP03

The qualifications and units of competency contained in Volume 3 of BCP03 are in addition to, and in no way alter the content or use of, the qualifications and units of competency that are contained in Volume 1 and 2 of this Training Package.

On the advice of industry, the qualifications to support the plumbing services - operations stream in Volume 3 have the completion of a BCP03 Certificate III qualification or comparable trade qualification as a prerequisite.

The qualifications contained in Volume 3 also provide the opportunity to draw units from Certificate III qualifications into Certificate IV qualifications using the packaging rules described within this volume.

With the exception of imported units, all the plumbing and services units of competency contained in Volume 3 of the Training Package are new, first version 'A' units.

Skill Sets

In addition to qualifications, the Training Package contains a number of skill sets which are the result of the industry-led project that culminated in the development of Certificate IV and Diploma qualifications in BCP03. The skill sets are 'trade contracting' and 'plumbing and services team leader'.

While the skill sets are significant and meaningful sets of units of competency, they cannot currently be allocated qualification codes.

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 people's skills, and may also have optional support materials
- enables nationally recognised qualifications to be awarded through direct assessment of workplace competencies
- encourages the development and delivery of flexible training which suits individual and industry requirements
- encourages learning and assessment in a work-related environment which leads to verifiable workplace outcomes.

How do Training Packages fit within the National Skills Framework?

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

How are Training Packages developed?

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

How do Training Packages encourage flexibility?

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

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

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

Who can deliver and assess using Training Packages?

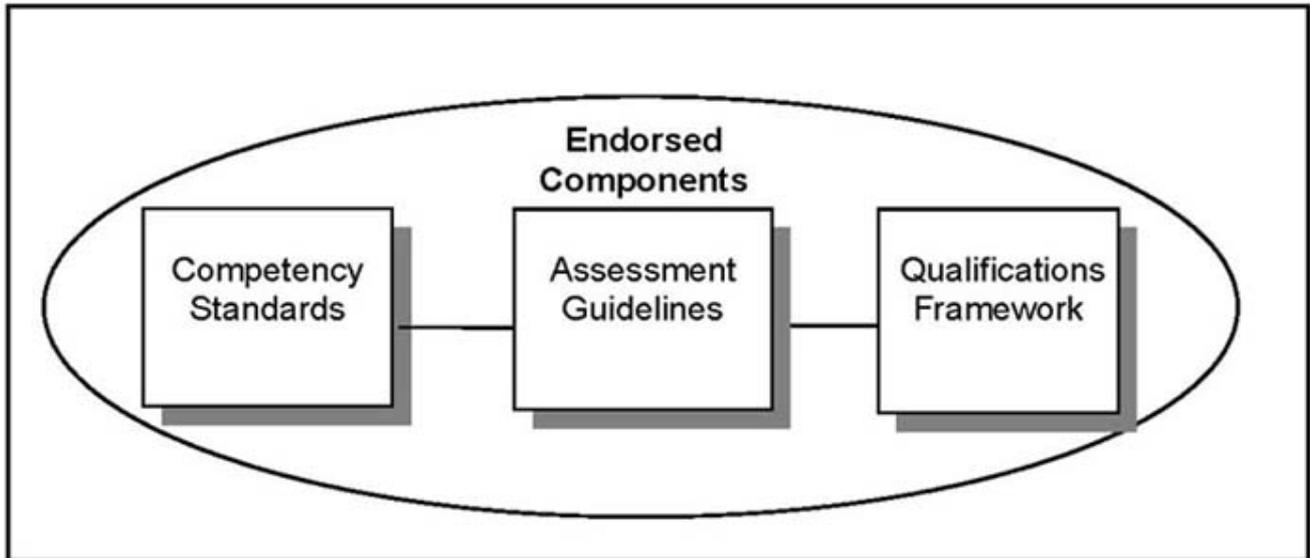
Training and assessment using Training Packages must be conducted by a Registered Training Organisation (RTO) that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO, as specified in the AQTF 2007.

Training Package Components

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

Training Package Endorsed Components

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



Competency Standards

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

Assessment Guidelines

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

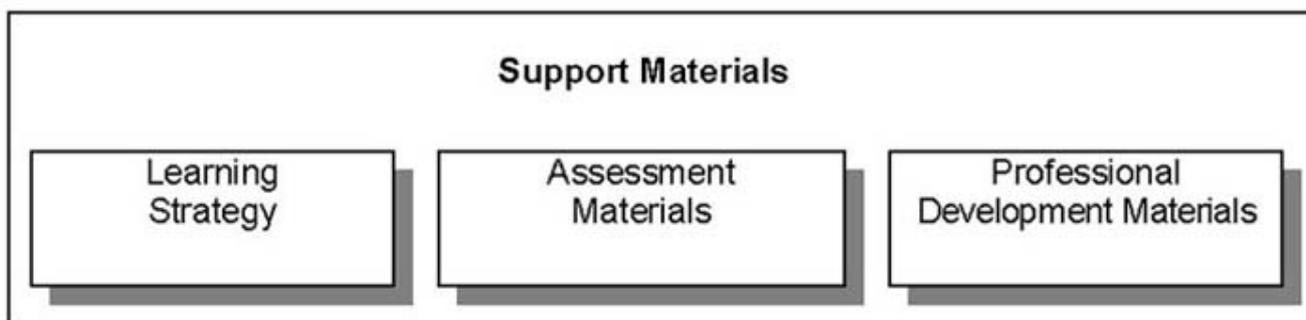
Qualifications Framework

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

Training Package Support Materials

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

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



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

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



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

Training Package, Qualification and Unit of Competency Codes

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

Training Package Codes

Each Training Package has a unique five-character national code assigned when the Training Package is endorsed, for example BCP03. 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 BCP20103. 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 BCPCM2001A;
- the first three characters signify the Training Package - BCP03 - 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:

- BCP20103 Certificate II in Drainage

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:

- BCPCM2001A Work effectively in the plumbing and services sector

Development Process

General Background The development was commenced in the early 1990s under the direction of the board of Construction Training Australia and the detailed guidance of a

Stream Advisory Committee (SAC). This process involved the identification and development of competency units, identification of the required qualifications and their structures and rules, and the development of the assessment guidelines. This culminated in the preparation and submission of a draft package to the Australian National Training Authority (ANTA) in late 2002.

ANTA Assistance Activity On receipt of the proposed Training Package and in response to approaches from a number of parties, ANTA commissioned an independent review of the contents. The final review activity commenced in November 2002 and concluded in August 2003. The project management concept required the expansion of the previous Stream Advisory Committee to a full National Steering Committee under the ANTA guidelines. This was achieved by the addition of representatives of an STA and a significant Registered Training Organisation (RTO). The composition of this Committee is shown in the Stream Advisory/National Steering Committee table. In addition, a Technical Advisory Group was assembled to provide impartial and expert advice on development requirements. The membership of this group is shown in the Technical Advisory Group Members table.

Stream Advisory/National Steering Committee Members

Name	State/Territory	Representing
Atfield, Craig	QLD	ITAB Network
Ball, Vince	ACT	ITAB Network
Baltetsch, Fred	VIC	Registered Training Organisations
Blackwell, Anna	WA	ITAB Network
Borowick, Michael	VIC	Australian Workers' Union
Burnett, Jolyon (Observer)	NSW	Irrigation Association of Australia
Coad, Peter	TAS	ITAB Network
Coate, Carmel	VIC	Fire Contractors' Federation
Court, Gil	NT	ITAB Network
d'Assumpcao, Marcus	SA	ITAB Network
Ebejer, Vin	VIC	Master Plumbers' & Mechanical Services Association
Eynon, David (Co-Chair)	NSW	Air Conditioning & Mechanical Contractors' Association
Foster, Geoff	VIC	State Training Authorities
Greening, Douglas	NSW	ITAB Network

Hutt, Ray	National (CTA)	ITAB Network
Izatt, David	QLD	Origin Energy
Jones, Raymond	NSW	Metal Roof Cladders' Association of Australia
McClusky, Doug (Co-Chair)	VIC	Communications, Electrical and Plumbing Union (Plumbing Division)
Quade, Mike	National	Australian National Training Authority
Reeves, Terry	SA	Master Plumbers' & Mechanical Services Association of South Australia
Wheeler, Alan	VIC	Australian Industry Group

Technical Advisory Group Members

Name	State/ Territory	Representing/From
Atfield, Craig	QLD	ITAB Network
Baltetsch, Fred	VIC	Gordon Institute
Blackwell, Anna	WA	ITAB Network
Clancy, Jane	VIC	Holmesglen TAFE
Coate, Carmel	VIC	Fire Contractors' Federation
Court, Gil	NT	ITAB Network
Coutts, Neville	VIC	Office of Gas Safety
Cowie, Adrian	TAS	Master Plumbers' Association of Tasmania
Cunningham, Steve	NSW	Master Plumbers' Association of New South Wales
d'Assumpcao, Marcus	SA	ITAB Network
Ebejer, Vin	VIC	Master Plumbers' & Mechanical Services Association
Eynon, David	NSW	Air Conditioning & Mechanical Contractors'

		Association
Followes, David	TAS	Tasmanian Plumbers' Registration Board and TAFE TAS
Foster, Geoff	VIC	Office of Technical and Tertiary Education
Fraser, Peter	TAS	Communications, Electrical and Plumbing Union (Plumbing Division)
Greening, Douglas	NSW	ITAB Network
Hebbard, Denis	SA	JH Hebbard, Water Damage Investigations
Hutt, Ray	National (CTA)	ITAB Network
Jones, Raymond	NSW	Metal Roof Cladders' Association of Australia
McClusky, Doug	VIC	Communications, Electrical and Plumbing Union (Plumbing Division)
McEwan, Jon	NSW	NSW TAFE
Minagall, Matthew	SA	Master Plumbers' & Mechanical Services Association of South Australia
Penny, Neville	VIC	Victoria University
Perry, Graeme	VIC	Plumbing Industry Commission
Perry, Allan	QLD	Yeronga TAFE
Shinners, Kevin	VIC	JP Shinners & Sons, Plumbers & Gasfitters
Smith, Fred	VIC	Communications, Electrical and Plumbing Union (Plumbing Division)
Watson, Bill	QLD	Master Plumbers' Board of Queensland
Wills, Ernie	VIC	D&E Air Conditioning
Wilson, Glen	VIC	Air Conditioning & Mechanical Contractors' Association

Development Activities The review included the following key activities and timelines outlined below:

- Preparatory Activity. ANTA and their consultants met with the board of CTA and resolved the necessary project management and operational issues including the project

plan and the revised format and numbering system for the units of competency. Meetings were also conducted with other key participants to ensure support for the proposed activities.

- November 2002- January 2003 Consultation was effected with a number of central players who had previously not been involved in the process and who were naturally concerned at their inability to influence outcomes. This included a number of regulators in both plumbing and gas services.
- November 2002 Representatives of the stream advisory committee (SAC) and the technical advisory group (TAG) met in Melbourne in November 2002 to be apprised of the situation and to agree the revised listing of the units of competency. The workshop reviewed all units and provided guidance on completion requirements. Units were revised in collaboration with members of this group over the December/January period.
- February 2003 The revised draft units of competency were circulated to all members of the SAC and TAG for their review and comments.
- February 2003 A meeting of ANZRA in Sydney in February 2003 was briefed on the development of the Package. Approval in principle to its methodology and content was provided.
- February 2003 A meeting of gas regulators from Queensland, Victoria, South Australia and West Australia was convened in Adelaide to review and endorse the Gas Services units of competency.
- March 2003 Comments on the units of competency were consolidated and considered at a SAC meeting in Melbourne in March 2003. Amendments, including the deletion of some of the proposed units, were agreed by the meeting and directions for the development of the qualifications framework were determined. Comments on the revised units of competency and input for the qualifications framework, for general plumbing and specialist requirements, were sought.
- April 2003 At a meeting in Melbourne in April 2003, the units of competency and the qualifications and their content were agreed by the SAC/ NSC. States and Territories provided input to reflect their regulatory and other requirements to allow the finalisation of the qualification framework.
- May 2003 The final draft competency units together with the proposed qualifications structure and draft Assessment Guidelines were distributed to members of the SAC/NSC and TAG for their consideration.
- June 2003 The final meeting of the SAC/NSC was held in Melbourne at which decisions were taken on the three components of the proposed package i.e. units of competency, the qualifications framework and assessment guidelines.
- June - July 2003 Outstanding issues were resolved with the appropriate parties. SAC/NSC concurrence with the post-meeting activities was gained and their decisions were incorporated into the components of the Training Package. The submission to ANTA was then finalised.
- August 2003 The State Training Authorities considered the submission in August 2003 and, following resolution of a number of technical issues, agreed to recommend the Package to the National Training Quality Council.

Consultation on Safety Issues In an industry of this nature the question of public and industrial safety and related regulatory requirements is paramount. Consultation on safety issues was conducted with the industry regulators at the national level and also in briefings and meetings on the Package were held in the States and Territories.

Other Consultation included:

- Regular meetings with and briefings for the Co-Chairs of the SAC/NSC who were also representing principal employer and union organisations

- The provision of briefings for, and conduct of, discussions with ITAB Network members, key industry representatives, unions, regulators, RTO and STA representatives in the States and Territories
- Discussions with other interested ITABs
- Discussions with National and/or State and Territory officials of the key industry associations or equivalent.

Development of Licensing Units

The initial Training Package development covered the majority of the registered plumbing work which is undertaken by journeymen in most States/Territories. The imminent redundancy of some existing State Accreditation/Licensing coverage and revised licensing requirements meant that some constituencies needed to implement the proposed competency based licensing approach from 1 January 2005. The initial development did not however cover those licensing competencies which were adjudged to be above the AQF III level.

ANTA commissioned a project define and develop licensing competencies, above AQF III level, covering all streams within the plumbing and services industry. The resulting units of competency were to be submitted for inclusion in BCP03 Plumbing and Services Training Package.

Due to time pressures and the absence of an Industry Skills Council, the project was not to include broader or non-licensing competency development requirements above AQF III Level. These, together with formal AQF IV-VI qualifications will be addressed under the auspices of the new Industry Skills Council.

The project methodology followed a staged and iterative process involving development, distribution, comment, modification and validation. The key aspects were as follows:

- The National Steering Committee for Training Package (BCP03) met on 18 November 2003 to identify the industry views on the competencies which were required to satisfy licensing needs. Invitations to participate in this process were extended to all Committee members and to a range of others who had been involved in the AQF I-III Project.
- The identification process sought to establish all the functions required above AQF III and from these, to identify those which were routinely required by the States and Territories for licensing purposes.
- The National Steering Committee (BCP03) licensing proposals covered all streams and the proposed unit structure was subsequently considered and provisionally cleared by the ANZRA Executive and representatives of the Gas Technical Regulators Committee (GTRC).
- By December 2003, the first draft units of competency were completed and circulated for consideration and comment.
- The National Steering Committee met again on 29 January 2004 to consider all comments received and to further direct the consultants. The issue of gas competencies was referred to the GTRC for intensive review.
- During February and March, a further two iterations of the draft units were circulated to the membership of the National Steering Committee on the understanding that no comment would signify no opposition to the unit content.
- Comments received were processed through direct negotiation or by referral to acknowledged subject matter experts.
- On 4 April 2004, the finalised units of competency were distributed to all National Steering Committee members and through the ANZRA forum.
- In June 2004 the units were approved by ANZRA and in July 2004 the units were circulated for consideration by the State Training Authorities.
- The State Training Authority teleconference was conducted on Friday 20 August 2004.

This meeting considered and reached agreement on a number of proposals. The agreed national position is now reflected in the final units .

Note: The licensing units by themselves do not make up a national qualification.

Development of Higher-Level Qualifications

The development of Certificate IV and Diploma qualifications is the end point of a series of industry-led projects that have been conducted over almost a decade. The qualifications and units of competency have been refined over this period of time and will be subject to further review to reflect the changing nature and skill-development needs of the industry.

The qualifications and units of competency reflect the work functions and performance standards of complex job roles. They also reflect the first occasion when RTOs serving this industry are moving from curriculum to competency-based delivery for higher-level qualifications and it is recognised that this will require a significant shift in their delivery methods. Perhaps the most significant of these changes will be the need to respond to the 'required skills and knowledge' which, in part, describe the technical and underpinning knowledge required for successful performance of the competency. The 'required skills and knowledge' content currently is explicitly presented in curriculum modules within accredited qualifications.

The Certificate IV to Diploma work was part of a broader project to develop higher-level qualifications for both the BCP03 Plumbing and Services and BCG03 General Construction Training Packages. The development activities were overseen and led by a committee comprising:

- Mr Laurie Kruize, Chair, Housing Industry Association
- Mr Darren Atkinson, Australian Building Codes Board replacing Ms McKinnon
- Mr Fred Baltetsch, Gordon Institute
- Mr Peter Brilliant, Building Commission Victoria
- Mr Richard Campbell, Department of Employment and Training (Qld)
- Ms Carmel Coate, National Fire Industry Association
- Ms Mary Faraone, Holmesglen TAFE
- Mr Lindsay Fraser, Construction, Forestry, Mining and Energy Union
- Mr David Hardy, Department of Education, Science and Training replacing Mr Quade (Australian National Training Authority)
- Mr Ric Howard, Office of Australian Safety and Compensation Council replacing Ms Major
- Mr David Magee, Construction and Property Services Industry Skill Council
- Ms Jo Major, Office of Australian Safety and Compensation Council replacing Mr Stoddart
- Mr Paul Marko, Construction Training Queensland (state Construction ITAB)
- Mr Doug McClusky, Communications, Electrical, Electronic, Energy, Information, Postal, Plumbing and Allied Services Union of Australia (CEPU - Plumbing Division)
- Ms Margaret McKinnon, Australian Building Codes Board
- Mr Kel O'Neil, Department of Education, Science and Training replacing Mr Hardy
- Mr Len Pimm, representing Boral Australian Gypsum Limited
- Mr Mike Quade, Australian National Training Authority
- Mr Graham Roberts, Australian Workers Union
- Mr Alan Ross, Construction and Property Services Industry Skills Council
- Mr Adrian Shackleton, Construction Training Queensland (state Construction ITAB) replacing Mr Marko
- Mr Peter Shell, Australian Industry Group
- Mr Paul Spark, representing Boral Australian Gypsum Limited replacing Mr Pimm

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- Mr James Stoddart, Office of Australian Safety and Compensation Council
 - Mr Glenn Thompson, Australian Manufacturing Workers' Union
 - Mr Bill Watson, Master Plumbers Association
 - Mr Denis Wilson, Master Builders Australia
 - Mr Bob Whittaker, Australian Institute of Building

The Construction and Property Services Industry Skills Council and the technical developers, Performance Growth, would like to thank the committee members for their hard work and support. Others have also played a significant role and the following input is also acknowledged with thanks:

Mr Des Harms, Manager, Innovative Products Unit, Yeronga Institute of TAFE for significant input to the development of the Diploma of Plumbing and Services and for the technical content of the units of competency.

Introduction to the BCP03 Plumbing and Services Training Package

Introduction to BCP03 Plumbing and Services Training Package

Volume I of BCP03

Volume I of BCP03 contains units of competency from the following streams:

- drainage (DR)
- fire services (FS)
- gas services (GS)
- irrigation (IG)
- air conditioning and mechanical services (MS)
- roofing (RF)
- sanitation (SN)
- water (WT)
- as well as common units of competency (CM).

Volume II of BCP03

Volume II of BCP03 contains units of competency from the following streams:

- fire services (FS)
- gas services (GS)
- air conditioning and mechanical services (MS)
- plumbing services (PS)
- as well as common units of competency (CM).

Volume III of BCP03

Volume III supports and provides training pathways for:

- experienced fire operators with responsibility for project design and supervision
- experienced service operators with responsibility for project design and supervision
- plumbers who manage a plumbing business
- specialist plumbing services tradespeople and operators seeking to deepen their technical skills.

It must be recognised that the plumbing and services industry is subject to significant levels of licensing. It is the responsibility of RTOs to make themselves and their candidates aware of the licensing requirements within their jurisdiction, and the impact of those requirements on the packaging of qualifications.

Qualifications Framework

The Australian Qualifications Framework

What is the Australian Qualifications Framework?

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

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

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

Qualifications

Training Packages can incorporate the following eight AQF qualifications.

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

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

Statement of Attainment

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

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

AQF Guidelines and Learning Outcomes

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

Certificate I

Characteristics of Learning Outcomes

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

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

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

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

Certificate II

Characteristics of Learning Outcomes

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

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

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

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

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

Certificate III

Characteristics of Learning Outcomes

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

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

Applications may involve some responsibility for others. Participation in teams including

group or team co-ordination may be involved.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

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

Certificate IV

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills. Applications involve responsibility for, and limited organisation of, others.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

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

Diploma

Characteristics of Learning Outcomes

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

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

Applications involve participation in development of strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation

functions. Group or team co-ordination may be involved.

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

Distinguishing Features of Learning Outcomes

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

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

Advanced Diploma

Characteristics of Learning Outcomes

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

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

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

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

Distinguishing Features of Learning Outcomes

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

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

Vocational Graduate Certificate

Characteristics of competencies or learning outcomes

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth and complexity involving the initiation, analysis, design, planning, execution and evaluation of technical and management functions in highly varied and

highly specialised contexts.

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

Distinguishing features of learning outcomes

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

Vocational Graduate Diploma

Characteristics of competencies or learning outcomes

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

Distinguishing features of learning outcomes

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

Qualification Pathways

The following pathways charts are provided to show the types of pathways into and from qualifications that are possible with this Training Package. For more information about qualifications and pathways contact Construction and Property Services Industry Skills Council (<http://www.cpsisc.com.au>).

Skill Sets

Definition

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

Wording on Statements of Attainment

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

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

Skill Sets in this Training Package

Trade contracting skill set

This skill set addresses the skills used by experienced tradespeople operating as sole traders, or with limited staff, contracting their services to builders. The contractors may be in the early stages of developing and growing their newly-established businesses.

The intent of the skill set is to provide an initial set of business skills to support contractors' existing trade skills.

The completion of this skill set provides a pathway to a range of Certificate IV qualifications.

Trade contracting skill set	
Unit code	Unit title
BCGBC4004A	Identify and produce estimated costs for building and construction projects
BCGBC4024A	Resolve business disputes
BCGBC4034A	Apply codes and standards to building trade and services contracting
BSBCM310A	Deliver and monitor a service to customers
BSBOHS403A	Identify hazards and assess OHS risks

BSBSBM401A	Establish business and legal requirements
BSBSBM406A	Manage finances
PLUS one of the following units:	
BCGBC4025A	Manage personal work priorities and professional development
BCGBC4031A	Process client requirements
BSBCM420A	Write complex documents
Pathway	Completion of these units provides credit towards BCP40106 Certificate IV in Plumbing and Services.
Suggested form of words for Statement of Attainment	These units from BCP03 Plumbing and Services Training Package meet industry requirements for experienced tradespersons performing trade contracting work in the plumbing and services industry.

Plumbing and services team leader skill set

This skill set addresses the skills used by experienced tradespeople and operators who are moving into roles with additional responsibility and team leadership, typically in smaller businesses. The intent of the skill set is to identify the team leadership and other skills that will enable the development of staff under the supervision of an experienced site supervisor or other recognised industry figure. The completion of this skill set provides a pathway to a range of Certificate IV qualifications.

Plumbing and services team leader skill set	
Unit code	Unit title
BCGBC4002A	Manage occupational health and safety in the building and construction workplace
BCGBC4009A	Apply legal requirements to building and construction projects
BSBFLM404A	Lead work teams
Pathway	Completion of these units provides credit towards BCP40106 Certificate IV in Plumbing and Services.
Suggested form of words for Statement of Attainment	These units from BCP03 Plumbing and Services Training Package meet industry requirements for experienced tradespersons and operators working as plumbing and services team leaders in the construction industry.

Employability Skills

Employability Skills replacing Key Competency information from 2006

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

Background to Employability Skills

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

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

http://www.dest.gov.au/archive/ty/publications/employability_skills/index.htm.

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

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

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

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

Employability Skills Framework

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

Skill	Facets
	Aspects of the skill that employers identify as important. The nature and application of these facets will vary depending on industry and job type.
Communication that contributes to productive	<ul style="list-style-type: none">• listening and understanding• speaking clearly and directly

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

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

Employability Skills Summary

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

The following is important information for trainers and assessors about Employability Skills Summaries.

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

designed by trainers and assessors after analysis at the unit level).

- Employability Skills Summaries contain information that may also assist in building learners' understanding of industry and workplace expectations.

Qualifications

The Plumbing and Services Qualifications Framework consists of the following:

BCP20103	Certificate II in Drainage
BCP20203	Certificate II in Metal Roofing and Cladding
BCP20303	Certificate II in Urban Irrigation
BCP30103	Certificate III in Plumbing
BCP30203	Certificate III in Plumbing (Mechanical Services)
BCP30303	Certificate III in Roof Plumbing
BCP30403	Certificate III in Gas Fitting
BCP30503	Certificate III in Fire Protection
BCP40106	Certificate IV in Plumbing and Services
BCP50106	Diploma of Plumbing and Services

In addition to the above qualifications the Training Package contains the following skill sets:

Trade Contracting

Plumbing and Services team leader

For additional information on the skill sets please see the Qualifications Framework section of this training package.

Packaging Rules

Each qualification is made up of a specified minimum number of core and elective competency units. Core units are mandatory and cannot be deleted or substituted. The unit requirement is shown at the commencement of each individual qualification.

Elective units create the flexibility required to recognise and reflect the different requirements of the industry throughout the nation.

Unless specifically restricted elsewhere, elective units must be demonstrably relevant to the qualification sought and may be drawn from:

- Equivalent level units from the same this Training Package
- Up to two previously unused and relevant units from this package, being either one level above or below that of the qualification being sought
- Equivalent level units from other ANTA/DEST endorsed Training Packages

Qualifications in many cases are deliberately predicated on a range of the same or similar sub-streams. Therefore, individual competency units gained in one qualification or sub-sector stream may also be used as a credit for any other qualification or sub-sector in which the unit is listed in the table as either a core or elective.

Customising/Contextualising the Training Package

Training Packages are intended to be customised to meet the requirements of the workplace while still retaining the intent of the original outcomes. This Training Package provides qualifications that allow for a combination of units from both within the plumbing and services industry and across a range of external Training Packages. There are two options for customising units. Unit contextualisation refers to customising the content of units and qualification customisation refers to customising the choice of units available within a qualification.

Unit Contextualisation

The purpose of unit contextualisation is to directly relate the unit content to the workplace context. The first part of a unit that may need to be contextualised is the range statement. The range statement explains the context in which the skills and knowledge in the unit are applied. The range statement identifies conditions that must be met and others that may apply. The terms 'is to' and 'are to' require no further explanation as they are mandatory. The use of the term 'may include' indicates where contextualisation may apply. These conditions may be contextualised to suit workplace requirements and conditions. For example, the range statement often includes information about the types of processes and equipment that may be used. This can be expanded to suit workplace requirements.

The elements, performance criteria and evidence guide outline the skills and knowledge that must be covered to achieve competence. This information is expressed at a level of detail appropriate across industry. When using standards in a workplace, contextualisation involves describing how each item applies in the given context. For example, all operators are required to recognise and control OHS hazards in the workplace. Contextualisation would involve identifying the specific hazards and control methods used. This allows the workplace to directly link the outcomes to their requirements and express this in familiar language. The essential rule when contextualising a unit/s is to make sure that the whole evidence guide is covered and the intent of the unit is retained.

Special attention needs to be paid to the Critical Aspects of Evidence which in this package establish the industry approved minima for the satisfaction of the application aspects of competency. These must be satisfied through the assessment process.

Note that all items in the Evidence Guide must be addressed by the assessment process.

In addition to describing evidence to be collected by the assessment process, the evidence guide describes the context in which assessment must occur and any conditions that apply to assessment. This information can be contextualised for a workplace by determining how these conditions apply. For example, which operating procedures or other workplace information is relevant, which equipment must be used? Where a workplace has a number of versions of the same type of equipment, is demonstration of skills on one type sufficient or must skills be demonstrated using more than one? These questions should be addressed by the workplace in conjunction with the RTO, and reflected in assessment processes.

Qualification Customisation within the Training Package

The plumbing and services qualifications are designed to provide a reasonable degree of flexibility to select the combination of units appropriate to a given work process. In a sense every qualification completed presents a customised outcome.

Potential also exists for further customisation at the qualification level by the inclusion of additional units, imported from other existing Training Packages.

New Apprenticeship Arrangements

All qualifications within this Package are open to New Apprenticeship pathways.

BCP20103 Certificate II in Drainage

Packaging Rules

- **22 units :**

- **18 Core units**

Core (refer to the unit list at the end of this section)

- **and 4 units from Electives.**

Electives (refer to the unit list at the end of this section)

Packaging Groups

Core	
Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2007A	Carry out levelling
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPDR2001A	Locate and clear blockages
BCPDR2002A	Install domestic treatment plants
BCPDR2004A	Install stormwater and sub-soil drainage systems
BCPDR2005A	Drain worksite
BCPDR2006A	Install pre-fabricated inspection openings and enclosures
BCPDR3002A	Install below ground sanitary drainage systems
BCPDR3003A	Install on-site disposal systems
BCGCM2003B	Install trench support
BCGCO2003B	Carry out concreting to simple forms
Electives	

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPCM2012A	Weld using oxy-acetylene equipment
BCPCM2013A	Weld using arc welding equipment
BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPDR2003A	Maintain effluent disinfection systems
BCPDR3001A	Plan the layout for a residential sanitary drainage system
BCPRF2003A	Collect and store roof water
BCPSN3005A	Install pre-treatment facilities
BCPDR3004A	Install water mains pipe systems

Employability Skills for BCP20103 Certificate II in Drainage

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	
Teamwork	
Problem solving	
Initiative and enterprise	
Planning and organising	
Self management	
Learning	
Technology	

BCP20203 Certificate II in Metal Roofing and Cladding

Packaging Rules

- 24 units :

- 14 Core units

Core (refer to the unit list at the end of this section)

- **and 10 units from Electives.**

Electives (refer to the unit list at the end of this section)

Packaging Groups

Core	
Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2007A	Carry out levelling
BCPCM2008A	Cut and join sheet metal
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPCM3001A	Flash penetrations through roofs and walls
BCPRF2001A	Work safely on roofs
BCPRF2002A	Select and install roof sheeting and wall cladding
BCGCM3001B	Operate elevated work platforms
Electives	
Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPCM2012A	Weld using oxy-acetylene equipment
BCPCM2013A	Weld using arc welding equipment

BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPDR2001A	Locate and clear blockages
BCPRF2003A	Collect and store roof water
BCPRF2004A	Fabricate roof coverings for curved structures
BCPRF3001A	Receive roofing materials
BCPRF3002A	Fabricate and install roof drainage components
BCPRF3003A	Fabricate and install external flashings
BCPRF3004A	Install roof components
BCPRF3005A	Install roof coverings to curved roof structures
BCPRF3006A	Install composite roof systems
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCF2009A	Carry out load slinging of off-site materials
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding

Employability Skills for BCP20203 Certificate II in Metal Roofing and Cladding

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	
Teamwork	
Problem solving	
Initiative and enterprise	
Planning and organising	
Self management	
Learning	
Technology	

BCP20303 Certificate II in Urban Irrigation

Packaging Rules

- 20 Units

- 13 Core units

Core (refer to the unit list at the end of this section)

- **and 7 units from Electives.**

Electives (refer to the unit list at the end of this section)

Packaging Groups

Core	
Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPFS2001A	Connect static storage tanks
BCPIG2001A	Design domestic urban irrigation systems
BCPIG3001A	Set out, install and commission irrigation systems
BCPIG3002A	Install and commission domestic irrigation pumps
BCGCO2003B	Carry out concreting to simple forms
Electives	
Code	Title
BCPCM2007A	Carry out levelling
BCPCM2008A	Cut and join sheet metal
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPCM2012A	Weld using oxy-acetylene equipment

BCPCM2013A	Weld using arc welding equipment
BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPRF2003A	Collect and store roof water
BCPWT3005A	Install water pump sets
BCPWT3007A	Connect irrigation systems from drinking water supply
BCPWT3008A	Install water service
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCCPL3001B	Install water mains pipelines

Employability Skills for BCP20303 Certificate II in Urban Irrigation

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	
Teamwork	
Problem solving	
Initiative and enterprise	
Planning and organising	
Self management	
Learning	
Technology	

BCP30103 Certificate III in Plumbing

Packaging Rules

- cannot select of the following streams

- **Stream 1 - Water (Mandatory)**

- **24 Core units**

Core: Water (refer to the unit list at the end of this section)

- **and 6 units from Electives**

Electives: Water (refer to the unit list at the end of this section)

- **and 3 or more streams from:**

- **Stream 2- Sanitary**

- **6 Core units**

Core: Sanitary (refer to the unit list at the end of this section)

- **and 4 units from Electives**

Electives: Sanitary (refer to the unit list at the end of this section)

- **and/or Stream 3 - Drainage**

- **9 Core units**

Core: Drainage (refer to the unit list at the end of this section)

- **and 3 units from Electives**

Electives: Drainage (refer to the unit list at the end of this section)

- **and/or Stream 4 - Mechanical Services**

- **4 Core units**

Core: Mechanical Services (refer to the unit list at the end of this section)

- **and 11 units from Electives**

Electives: Mechanical Services (refer to the unit list at the end of this section)

- **and/or Stream 5 - Roofing**

- **9 Core units**

Core: Roofing (refer to the unit list at the end of this section)

- **and 4 units from Electives**

Electives: Roofing (refer to the unit list at the end of this section)

- **and/or Stream 6 - Gas Services**

- **12 Core units**

Core: Gas Services (refer to the unit list at the end of this section)

- **and 5 units from Electives**

Electives: Gas Services (refer to the unit list at the end of this section)

Packaging Groups

Core: Water	
Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2007A	Carry out levelling
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPCM2012A	Weld using oxy-acetylene equipment
BCPCM2013A	Weld using arc welding equipment
BCPCM3001A	Flash penetrations through roofs and walls
BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPCM3003A	Fabricate and install non-ferrous pressure piping
BCPFS3001A	Fabricate and install fire hydrant and hose reel systems
BCPFS3007A	Install domestic and residential life safety sprinkler systems
BCPRF2001A	Work safely on roofs
BCPWT3001A	Set out and install water services
BCPWT3002A	Install and adjust water service controls and devices
BCPWT3003A	Install and commission water heating systems
BCPWT3005A	Install water pump sets
BCPWT3006A	Fit off and commission hot and cold water services
BCPWT3007A	Connect irrigation systems from drinking water supply
BCGCO2003B	Carry out concreting to simple forms
Electives: Water	
Code	Title
BCGCM3001B	Operate elevated work platforms

BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding
RTE3605A	Troubleshoot irrigation systems
BCPCM2008A	Cut and join sheet metal
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPFS2001A	Connect static storage tanks
BCPFS2002A	Install portable fire equipment
BCPFS3003A	Fit-off sprinkler heads, controls and ancillary equipment
BCPFS3004A	Install control valve assemblies, actuating devices and local alarms
BCPFS3008A	Test and maintain fire hydrant and hose reel installations
BCPIG2001A	Design domestic urban irrigation systems
BCPIG3001A	Set out, install and commission irrigation systems
BCPIG3002A	Install and commission domestic irrigation pumps
BCPMS3001A	Fabricate and install steel pressure piping
BCPMS3002A	Select and fit insulation and sheathing
BCPMS3003A	Install small bore heating systems
BCPMS3010A	Install and maintain evaporative air cooling systems
BCPRF2003A	Collect and store roof water
BCPWT3004A	Install domestic water treatment equipment
BCPWT3008A	Install water service
BCPDR3004A	Install water mains pipe systems
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding

Core: Sanitary

Code	Title
BCPCM2008A	Cut and join sheet metal

BCPDR2001A	Locate and clear blockages
BCPSN3001A	Plan the layout for a residential sanitary plumbing system
BCPSN3002A	Install discharge pipes
BCPSN3003A	Fabricate and install sanitary stacks
BCPSN3004A	Install and fit off sanitary fixtures

Core: Drainage

Code	Title
BCPDR2001A	Locate and clear blockages
BCPDR2002A	Install domestic treatment plants
BCPDR2004A	Install stormwater and sub-soil drainage systems
BCPDR2005A	Drain worksite
BCPDR2006A	Install pre-fabricated inspection openings and enclosures
BCPDR3001A	Plan the layout for a residential sanitary drainage system
BCPDR3002A	Install below ground sanitary drainage systems
BCPDR3003A	Install on-site disposal systems
BCGCM2003B	Install trench support

Core: Mechanical Services

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPMS2001A	Assemble mechanical services components
BCPMS3001A	Fabricate and install steel pressure piping
BCPMS3003A	Install small bore heating systems

Core: Roofing

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPRF2002A	Select and install roof sheeting and wall cladding
BCPRF2003A	Collect and store roof water
BCPRF3001A	Receive roofing materials
BCPRF3002A	Fabricate and install roof drainage components

BCPRF3003A	Fabricate and install external flashings
BCPRF3004A	Install roof components
BCPRF3005A	Install roof coverings to curved roof structures
BCPRF3006A	Install composite roof systems

Core: Gas Services

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPGS3001A	Install gas piping systems
BCPGS3002A	Size consumer piping systems
BCPGS3003A	Install and commission Type A gas appliances
BCPGS3004A	Install LP gas storage of aggregate storage capacity up to 500 litres
BCPGS3006A	Install LP gas systems in caravans/mobile homes, water craft and mobile work places
BCPGS3007A	Install gas detection devices
BCPGS3008A	Install gas pressure control equipment
BCPGS3009A	Install a Type A appliance flue
BCPGS3011A	Purge consumer piping
BCPGS3013A	Disconnect and reconnect Type A appliances
BCPGS3014A	Calculate and install natural ventilation for Type A gas appliances

Electives: Sanitary

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPDR2002A	Install domestic treatment plants
BCPDR2003A	Maintain effluent disinfection systems
BCPDR2004A	Install stormwater and sub-soil drainage systems
BCPDR2005A	Drain worksite
BCPDR2006A	Install pre-fabricated inspection openings and enclosures
BCPDR3002A	Install below ground sanitary drainage systems
BCPDR3003A	Install on-site disposal systems

BCPMS3002A	Select and fit insulation and sheathing
BCPSN3005A	Install pre-treatment facilities
BCPSN3006A	Install sewerage pump sets
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems

Electives: Drainage

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPDR2003A	Maintain effluent disinfection systems
BCPSN3005A	Install pre-treatment facilities
BCPDR3004A	Install water mains pipe systems
BCF2009A	Carry out load slinging of off-site materials

Electives: Mechanical Services

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPMS3002A	Select and fit insulation and sheathing
BCPMS3004A	Install medical gas pipeline systems
BCPMS3005A	Install and test ducting systems
BCPMS3006A	Install air handling units
BCPMS3007A	Install split system air conditioning
BCPMS3008A	Install air conditioning control equipment
BCPMS3009A	Maintain mechanical services equipment
BCPMS3010A	Install and maintain evaporative air cooling systems
BCPRF3003A	Fabricate and install external flashings

BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding
MEM109AA	Install refrigeration and air conditioning plant and equipment
MEM1010AA	Install pipework and pipework assemblies
MEM1886AA	Test, evacuate and charge refrigeration systems

Electives: Roofing

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPRF2004A	Fabricate roof coverings for curved structures
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding

Electives: Gas Services

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPGS3005A	Install LP gas storage of aggregate capacity exceeding 500 litres and less than 8KL
BCPGS3010A	Install a Type B appliance flue

BCPGS3012A	Maintain Type A gas appliances
BCPGS3015A	Install subsidiary gas meters
BCPMS2001A	Assemble mechanical services components
BCPMS3001A	Fabricate and install steel pressure piping
BCPMS3003A	Install small bore heating systems
BCPMS3005A	Install and test ducting systems
BCPMS3006A	Install air handling units
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding

Employability Skills for BCP30103 Certificate III in Plumbing

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	
Teamwork	
Problem solving	
Initiative and enterprise	
Planning and organising	
Self management	
Learning	
Technology	

BCP30203 Certificate III in Plumbing (Mechanical Services)

Packaging Rules

- 4 or more streams from:

- **Stream 1 - Mechanical Services (Mandatory)**

- **4 Core units**

Core: Mechanical Services (refer to the unit list at the end of this section)

- **and 11 units from Electives**

Electives: Mechanical Services (refer to the unit list at the end of this section)

- **and Stream 2 - Water (Mandatory)**

- **24 Core units**

Core: Water (refer to the unit list at the end of this section)

- **and 8 units from Electives**

Electives: Water (refer to the unit list at the end of this section)

- **and 2 or more streams from:**

- **Stream 3 - Sanitary**

- **6 Core units**

Core: Sanitary (refer to the unit list at the end of this section)

- **and 4 units from Electives**

Electives: Sanitary (refer to the unit list at the end of this section)

- **and/or Stream 4 - Drainage**

- **9 Core units**

Core: Drainage (refer to the unit list at the end of this section)

- **and 3 units from Electives**

Electives: Drainage (refer to the unit list at the end of this section)

- **and/or Stream 5 - Roofing**

- **9 Core units**

Core: Roofing (refer to the unit list at the end of this section)

- **and 4 units from Electives**

Electives: Roofing (refer to the unit list at the end of this section)

- **and/or Stream 6 - Gas Services**

- **12 Core units**

Core: Gas Services (refer to the unit list at the end of this section)

- **and 5 units from Electives.**

Electives: Gas Services (refer to the unit list at the end of this section)

Packaging Groups

Core: Mechanical Services	
Code	Title
BCPCM2008A	Cut and join sheet metal
BCPMS2001A	Assemble mechanical services components
BCPMS3001A	Fabricate and install steel pressure piping
BCPMS3003A	Install small bore heating systems
Core: Water	
Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2007A	Carry out levelling
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPCM2012A	Weld using oxy-acetylene equipment
BCPCM2013A	Weld using arc welding equipment
BCPCM3001A	Flash penetrations through roofs and walls
BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPCM3003A	Fabricate and install non-ferrous pressure piping
BCPFS3001A	Fabricate and install fire hydrant and hose reel systems
BCPFS3007A	Install domestic and residential life safety sprinkler systems
BCPRF2001A	Work safely on roofs
BCPWT3001A	Set out and install water services
BCPWT3002A	Install and adjust water service controls and devices
BCPWT3003A	Install and commission water heating systems
BCPWT3005A	Install water pump sets

BCPWT3006A	Fit off and commission hot and cold water services
BCPWT3007A	Connect irrigation systems from drinking water supply
BCGCO2003B	Carry out concreting to simple forms

Core: Sanitary

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPDR2001A	Locate and clear blockages
BCPSN3001A	Plan the layout for a residential sanitary plumbing system
BCPSN3002A	Install discharge pipes
BCPSN3003A	Fabricate and install sanitary stacks
BCPSN3004A	Install and fit off sanitary fixtures

Core: Drainage

Code	Title
BCPDR2001A	Locate and clear blockages
BCPDR2002A	Install domestic treatment plants
BCPDR2004A	Install stormwater and sub-soil drainage systems
BCPDR2005A	Drain worksite
BCPDR2006A	Install pre-fabricated inspection openings and enclosures
BCPDR3001A	Plan the layout for a residential sanitary drainage system
BCPDR3002A	Install below ground sanitary drainage systems
BCPDR3003A	Install on-site disposal systems
BCGCM2003B	Install trench support

Core: Roofing

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPRF2002A	Select and install roof sheeting and wall cladding
BCPRF2003A	Collect and store roof water
BCPRF3001A	Receive roofing materials
BCPRF3002A	Fabricate and install roof drainage components

BCPRF3003A	Fabricate and install external flashings
BCPRF3004A	Install roof components
BCPRF3005A	Install roof coverings to curved roof structures
BCPRF3006A	Install composite roof systems

Core: Gas Services

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPGS3001A	Install gas piping systems
BCPGS3002A	Size consumer piping systems
BCPGS3003A	Install and commission Type A gas appliances
BCPGS3004A	Install LP gas storage of aggregate storage capacity up to 500 litres
BCPGS3006A	Install LP gas systems in caravans/mobile homes, water craft and mobile work places
BCPGS3007A	Install gas detection devices
BCPGS3008A	Install gas pressure control equipment
BCPGS3009A	Install a Type A appliance flue
BCPGS3011A	Purge consumer piping
BCPGS3013A	Disconnect and reconnect Type A appliances
BCPGS3014A	Calculate and install natural ventilation for Type A gas appliances

Electives: Mechanical Services

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPMS3002A	Select and fit insulation and sheathing
BCPMS3004A	Install medical gas pipeline systems
BCPMS3005A	Install and test ducting systems
BCPMS3006A	Install air handling units
BCPMS3007A	Install split system air conditioning
BCPMS3008A	Install air conditioning control equipment
BCPMS3009A	Maintain mechanical services equipment

BCPMS3010A	Install and maintain evaporative air cooling systems
BCPRF3003A	Fabricate and install external flashings
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding
MEM109AA	Install refrigeration and air conditioning plant and equipment
MEM1010AA	Install pipework and pipework assemblies
MEM1886AA	Test, evacuate and charge refrigeration systems

Electives: Water

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPFS2001A	Connect static storage tanks
BCPFS2002A	Install portable fire equipment
BCPFS3003A	Fit-off sprinkler heads, controls and ancillary equipment
BCPFS3004A	Install control valve assemblies, actuating devices and local alarms
BCPFS3008A	Test and maintain fire hydrant and hose reel installations
BCPIG2001A	Design domestic urban irrigation systems
BCPIG3001A	Set out, install and commission irrigation systems
BCPIG3002A	Install and commission domestic irrigation pumps
BCPMS3001A	Fabricate and install steel pressure piping
BCPMS3002A	Select and fit insulation and sheathing
BCPMS3003A	Install small bore heating systems
BCPMS3010A	Install and maintain evaporative air cooling systems

BCPRF2003A	Collect and store roof water
BCPWT3004A	Install domestic water treatment equipment
BCPWT3008A	Install water service
BCPDR3004A	Install water mains pipe systems
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding
RTE3605A	Troubleshoot irrigation systems

Electives: Sanitary

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPDR2002A	Install domestic treatment plants
BCPDR2003A	Maintain effluent disinfection systems
BCPDR2004A	Install stormwater and sub-soil drainage systems
BCPDR2005A	Drain worksite
BCPDR2006A	Install pre-fabricated inspection openings and enclosures
BCPDR3002A	Install below ground sanitary drainage systems
BCPDR3003A	Install on-site disposal systems
BCPMS3002A	Select and fit insulation and sheathing
BCPSN3005A	Install pre-treatment facilities
BCPSN3006A	Install sewerage pump sets
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding

BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems

Electives: Drainage

Code	Title
BCPCM2008A	Cut and join sheet metal
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPDR2003A	Maintain effluent disinfection systems
BCPSN3005A	Install pre-treatment facilities
BCPDR3004A	Install water mains pipe systems
BCF2009A	Carry out load slinging of off-site materials

Electives: Roofing

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPRF2004A	Fabricate roof coverings for curved structures
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding

Electives: Gas Services

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPGS3005A	Install LP gas storage of aggregate capacity exceeding 500 litres and less than 8KL
BCPGS3010A	Install a Type B appliance flue

BCPGS3012A	Maintain Type A gas appliances
BCPGS3015A	Install subsidiary gas meters
BCPMS2001A	Assemble mechanical services components
BCPMS3001A	Fabricate and install steel pressure piping
BCPMS3003A	Install small bore heating systems
BCPMS3005A	Install and test ducting systems
BCPMS3006A	Install air handling units
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding

Employability Skills for BCP30203 Certificate III in Plumbing (Mechanical Services)

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	
Teamwork	
Problem solving	
Initiative and enterprise	
Planning and organising	
Self management	
Learning	
Technology	

BCP30303 Certificate III in Roof Plumbing

Packaging Rules

- **31 units :**

- **21 Core units**

Core (refer to the unit list at the end of this section)

- **and 10 units from Electives.**

Electives (refer to the unit list at the end of this section)

Packaging Groups

Core	
Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2007A	Carry out levelling
BCPCM2008A	Cut and join sheet metal
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPCM3001A	Flash penetrations through roofs and walls
BCPRF2001A	Work safely on roofs
BCPRF2002A	Select and install roof sheeting and wall cladding
BCPRF3001A	Receive roofing materials
BCPRF3002A	Fabricate and install roof drainage components
BCPRF3003A	Fabricate and install external flashings
BCPRF3004A	Install roof components
BCPRF3006A	Install composite roof systems
BCGCM2008B	Erect and dismantle restricted height scaffolding

BCGCM3001B	Operate elevated work platforms
BCGRI3001B	Operate personnel and materials hoists
Electives	
Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPCM2012A	Weld using oxy-acetylene equipment
BCPCM2013A	Weld using arc welding equipment
BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPCM3003A	Fabricate and install non-ferrous pressure piping
BCPDR2001A	Locate and clear blockages
BCPDR2004A	Install stormwater and sub-soil drainage systems
BCPDR2005A	Drain worksite
BCPDR2006A	Install pre-fabricated inspection openings and enclosures
BCPMS3002A	Select and fit insulation and sheathing
BCPRF2003A	Collect and store roof water
BCPRF2004A	Fabricate roof coverings for curved structures
BCPRF3005A	Install roof coverings to curved roof structures
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCO2003B	Carry out concreting to simple forms
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding

Employability Skills for BCP30303 Certificate III in Roof Plumbing

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	
Teamwork	
Problem solving	
Initiative and enterprise	
Planning and organising	
Self management	
Learning	
Technology	

BCP30403 Certificate III in Gas Fitting

Packaging Rules

- 32 units :

- 26 Core units

Core (refer to the unit list at the end of this section)

- **and 6 units from Electives.**

Electives (refer to the unit list at the end of this section)

Packaging Groups

Core	
Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2007A	Carry out levelling
BCPCM2008A	Cut and join sheet metal
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPCM2012A	Weld using oxy-acetylene equipment
BCPCM2013A	Weld using arc welding equipment
BCPCM3001A	Flash penetrations through roofs and walls
BCPGS3001A	Install gas piping systems
BCPGS3002A	Size consumer piping systems
BCPGS3003A	Install and commission Type A gas appliances
BCPGS3004A	Install LP gas storage of aggregate storage capacity up to 500 litres
BCPGS3006A	Install LP gas systems in caravans/mobile homes, water craft and mobile work places
BCPGS3007A	Install gas detection devices

BCPGS3008A	Install gas pressure control equipment
BCPGS3009A	Install a Type A appliance flue
BCPGS3011A	Purge consumer piping
BCPGS3012A	Maintain Type A gas appliances
BCPGS3013A	Disconnect and reconnect Type A appliances
BCPGS3014A	Calculate and install natural ventilation for Type A gas appliances
BCPRF2001A	Work safely on roofs

Electives

Code	Title
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPCM3003A	Fabricate and install non-ferrous pressure piping
BCPGS3005A	Install LP gas storage of aggregate capacity exceeding 500 litres and less than 8KL
BCPGS3010A	Install a Type B appliance flue
BCPGS3015A	Install subsidiary gas meters
BCPMS2001A	Assemble mechanical services components
BCPMS3001A	Fabricate and install steel pressure piping
BCPMS3003A	Install small bore heating systems
BCPMS3005A	Install and test ducting systems
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGCO2003B	Carry out concreting to simple forms
BCGRI3001B	Operate personnel and materials hoists
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding

Employability Skills for BCP30403 Certificate III in Gas Fitting

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	
Teamwork	
Problem solving	
Initiative and enterprise	
Planning and organising	
Self management	
Learning	
Technology	

BCP30503 Certificate III in Fire Protection

Packaging Rules

- **33 units :**

- **28 Core units**

Core (refer to the unit list at the end of this section)

- **and 5 units from Electives.**

Electives (refer to the unit list at the end of this section)

Packaging Groups

Core	
Code	Title
BCPCM2001A	Work effectively in the plumbing and services sector
BCPCM2002A	Carry out interactive workplace communication
BCPCM2003A	Carry out OH&S requirements
BCPCM2004A	Read plans and calculate plumbing quantities
BCPCM2005A	Handle and store plumbing materials
BCPCM2006A	Use plumbing hand and power tools
BCPCM2007A	Carry out levelling
BCPCM2008A	Cut and join sheet metal
BCPCM2009A	Cut with oxy-LPG/acetylene
BCPCM2010A	Mark out materials
BCPCM2011A	Apply first aid in the workplace
BCPCM2012A	Weld using oxy-acetylene equipment
BCPCM2013A	Weld using arc welding equipment
BCPCM3003A	Fabricate and install non-ferrous pressure piping
BCPFS2001A	Connect static storage tanks
BCPFS3001A	Fabricate and install fire hydrant and hose reel systems
BCPFS3002A	Install distribution and range pipes
BCPFS3003A	Fit-off sprinkler heads, controls and ancillary equipment
BCPFS3004A	Install control valve assemblies, actuating devices and local alarms

BCPFS3005A	Test fire protection systems for pressure
BCPFS3006A	Install special hazards systems
BCPFS3007A	Install domestic and residential life safety sprinkler systems
BCPFS3008A	Test and maintain fire hydrant and hose reel installations
BCPFS3009A	Test and maintain automatic fire sprinklers
BCPFS3010A	Design pre-calculated fire sprinkler systems
BCPMS3001A	Fabricate and install steel pressure piping
BCPWT3005A	Install water pump sets
BCPWT3008A	Install water service

Electives

Code	Title
BCPCM3001A	Flash penetrations through roofs and walls
BCPCM3002A	Weld polyethylene (PE) pipe using fusion method
BCPFS2002A	Install portable fire equipment
BCPRF2001A	Work safely on roofs
BCPDR3004A	Install water mains pipe systems
BCF2009A	Carry out load slinging of off-site materials
BCGCM2003B	Install trench support
BCGCM2008B	Erect and dismantle restricted height scaffolding
BCGCM3001B	Operate elevated work platforms
BCGCO2003B	Carry out concreting to simple forms
BCGRI3001B	Operate personnel and materials hoists
BCGWC3006B	Install acoustic and thermal environmental protection systems
MEM549AA	Perform routine gas tungsten arc welding
MEM550AA	Perform routine gas metal arc welding

Employability Skills for BCP30503 Certificate III in Fire Protection

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	
Teamwork	
Problem solving	
Initiative and enterprise	
Planning and organising	
Self management	
Learning	
Technology	

BCP40106 Certificate IV in Plumbing and Services

The Certificate IV packaging arrangement is designed to meet the needs of:

- experienced fire operators with responsibility for project design and supervision (fire services stream)
- experienced service operators with responsibility for project design and supervision (air conditioning and mechanical services stream)
- plumbers who manage a plumbing business (plumbing services - management stream)
- specialist plumbing services tradespeople and operators seeking to deepen their technical skills (plumbing services - operations stream).

Plumbing services: Management Stream

Industry considers it appropriate for people seeking to complete Certificate IV in Plumbing and Services: management stream to hold a relevant Certificate III qualification.

Plumbing services: Operations Stream

This stream has a prerequisite that requires the completion of a relevant trade qualification or equivalent.

Packaging Rules

Air conditioning and mechanical services stream

- 15 Units

- 4 Common core units

Common Core (refer to the unit list at the end of this section)

- **and 4 Shared core units from the following group:**

- **Core: Air conditioning and mechanical services and fire service streams**

Core: Air conditioning and mechanical services and fire services streams (refer to the unit list at the end of this section)

- **and 7 Elective units, ensuring that any licensing issues are addressed. Of these seven electives:**

- **cannot select units must be selected from the pool of elective units in the air conditioning and mechanical services stream**

Electives: Air conditioning and mechanical services stream (refer to the unit list at the end of this section)

- **and between 0 and 2 units may be selected from another relevant endorsed Training Package or from the core or elective units of another stream with the Certificate IV in Plumbing and Services, with the units selected maintaining both integrity of the AQF level and the industry context of the qualification.**

- **and between 0 and 1 unit may be drawn from Certificate III or Diploma levels in BCP03**

- BCP03 Certificate III

- BCP03 Diploma

- **and between 0 and 3 units maybe selected from the pool of elective units common to all streams**

Elective: all streams (refer to the unit list at the end of this section)

or

Plumbing services - management stream

- 15 Units

- Industry considers it appropriate for people seeking to complete a Certificate IV in Plumbing and Services - management stream to hold a relevant Certificate III qualification.

- and 4 Common core units

Common Core (refer to the unit list at the end of this section)

- and 6 Core: Plumbing services-management stream

Core: Plumbing services - management stream (refer to the unit list at the end of this section)

- **and 5 Elective units must be completed, ensuring that any licensing requirements are addressed. Of these five electives:**

- between 0 and 5 units from the Electives: Plumbing services - management stream

Electives: Plumbing services - management stream (refer to the unit list at the end of this section)

- and between 0 and 1 unit may be drawn from Certificate III or Diploma levels in BCP03

- BCP03 Certificate III

- BCP03 Diploma

- **and between 0 and 2 units may be selected from another relevant endorsed Training Package or from the core or elective units of another stream with the Certificate IV in Plumbing and Services, with the units selected maintaining both integrity of the AQF level and the industry context of the qualification.**

- **and between 0 and 3 units may be selected from the pool of elective units common to all streams**

Elective: all streams (refer to the unit list at the end of this section)

or

Plumbing services - operations stream

- 15 Units

- This stream has a prerequisite that requires the completion of a relevant trade qualification or equivalent.

- and 4 Common Core units

Common Core (refer to the unit list at the end of this section)

- and 8 Core units: Plumbing services - operations stream

Core: Plumbing services - operations stream (refer to the unit list at the end of this section)

- **and 3 Elective units must be completed, ensuring that any licensing requirements are addressed. Of these three electives:**

- **between 0 and 3 units may be selected from the pool of elective units in the plumbing services-operations stream.**

Electives: Plumbing services - operations stream (refer to the unit list at the end of this section)

- **and between 0 and 1 unit may be drawn from Certificate III or Diploma levels in BCP03**

- BCP03 Certificate III

- BCP03 Diploma

- **and between 0 and 2 units may be selected from another relevant endorsed Training Package or from the core or elective units of another stream with the Certificate IV in Plumbing and Services, with the units selected maintaining both integrity of the AQF level and the industry context of the qualification.**

- **and between 0 and 3 units may be selected from the pool of elective units common to all streams.**

Elective: all streams (refer to the unit list at the end of this section)

or

Fire service stream

- **15 Units**

- **4 Common core units**

Common Core (refer to the unit list at the end of this section)

- **and 4 Shared core units from the following group**

- **Core: Air conditioning and mechanical services and fire services stream**

Core: Air conditioning and mechanical services and fire services streams (refer to the unit list at the end of this section)

- **and 7 Elective units, ensuring that any licensing issues are addressed. Of these seven electives:**

- **cannot select units from the pool of elective units in the fire services stream**

Electives: Fire services stream (refer to the unit list at the end of this section)

- **and between 0 and 2 units may be selected from another relevant endorsed Training Package or from the core or elective units of another stream withing the Certificate IV in Plumbing and Services, with the units selected maintaining both the integrity of the AQF and the industry context of the qualification.**

- **and between 0 and 1 unit maybe drawn from Certificate III or Diploma levels in BCP03**

- BCP03 Certificate III

- BCP03 Diploma

- **and between 0 and 3 units maybe selected from the pool of elective units common to all streams**

Elective: all streams (refer to the unit list at the end of this section)

Packaging Groups

Common Core	
Code	Title
BCGBC4012A	Read and interpret plans and specifications
BCPCM4001A	Carry out work based risk control processes
BCPCM4002A	Estimate and cost work
BSBOHS403A	Identify hazards and assess OHS risks
Core: Air conditioning and mechanical services stream	
Code	Title
BCGBC4015A	Prepare specifications for all construction works
BCPCM4003A	Produce 2-D architectural drawings using CAD software
BCPCM4004A	Prepare simple sketches and drawings
BSBCMN310A	Deliver and monitor a service to customers
Core: Fire services stream	
Code	Title
BCGBC4015A	Prepare specifications for all construction works
BCPCM4003A	Produce 2-D architectural drawings using CAD software
BCPCM4004A	Prepare simple sketches and drawings
BSBCMN310A	Deliver and monitor a service to customers
Electives: Air conditioning and mechanical services stream	
Code	Title
BCGBC4008A	Conduct on-site supervision of the building and construction project
BCGBC4017A	Arrange resources and prepare for the building or construction project
BCGBC4019A	Apply sustainable building design principles to water management systems
BCGBC4020A	Build thermally efficient and sustainable structures
BCGBC4021A	Minimise waste on the building and construction site
BCGBC4026A	Arrange building applications and approvals
BCGBC4034A	Apply codes and standards to building trade and services contracting
BCPGS4001A	Plan, size and layout consumer gas installations

BCPGS4002A	Service Type A gas appliances
BCPMS4001A	Plan, size and layout heating and cooling systems
BCPMS4002A	Commission air and water systems
BCPWT4001A	Plan, size and layout hot and cold water services/systems
BCPWT4002A	Commission and maintain backflow prevention devices
BCPWT4003A	Commission and maintain hot water temperature control devices
BSBCM419A	Manage projects
BSBFLM404A	Lead work teams
BSBFLM403A	Manage effective workplace relationships
BSBPM407A	Apply risk management techniques
BSBSBM401A	Establish business and legal requirements
BSBSBM402A	Undertake financial planning
BSBSBM404A	Undertake business planning
BSBSBM405A	Monitor and manage business operations
BSBSBM406A	Manage finances
TAADEL404A	Facilitate work-based learning
BCPGS4003A	Install, commission and service Type B gas appliances

Elective: all streams

Code	Title
BCGBC4002A	Manage Occupational Health and Safety in the building and construction workplace
BCGBC4024A	Resolve business disputes
BCGBC4025A	Manage personal work priorities and professional development
BSBADM305A	Create and use databases
BSBCM4213A	Produce simple word-processed documents
BSBCM4214A	Create and use simple spreadsheets
BSBCM4404A	Develop teams and individuals
BSBCM4420A	Write complex documents
BSBPM404A	Apply quality management techniques

CHCCS405A	Work effectively with culturally diverse clients and co-workers
BSBCM412A	Promote innovation and change
BSBFLM409B	Implement continuous improvement
Electives: Plumbing services - management stream	
Code	Title
BCGBC4008A	Conduct on-site supervision of the building and construction project
BCGBC4009A	Apply legal requirements to building and construction projects
BCGBC4017A	Arrange resources and prepare for the building or construction project
BCGBC4019A	Apply sustainable building design principles to water management systems
BCGBC4020A	Build thermally efficient and sustainable structures
BCGBC4021A	Minimise waste on the building and construction site
BCGBC4026A	Arrange building applications and approvals
BCPCM4003A	Produce 2-D architectural drawings using CAD software
BCPCM4004A	Prepare simple sketches and drawings
BCPFS4004A	Design residential and domestic fire sprinkler systems
BCPGS4001A	Plan, size and layout consumer gas installations
BCPGS4002A	Service Type A gas appliances
BCPMS4001A	Plan, size and layout heating and cooling systems
BCPMS4002A	Commission air and water systems
BCPRF4001A	Plan, size and layout roof drainage systems
BCPSN4001A	Plan, size and layout sanitary pipework and fixtures
BCPWT4001A	Plan, size and layout hot and cold water services/systems
BCPWT4002A	Commission and maintain backflow prevention devices
BCPWT4003A	Commission and maintain hot water temperature control devices
BSBCM419A	Manage projects
BSBFLM404A	Lead work teams
BSBPM407A	Apply risk management techniques
TAADL404A	Facilitate work-based learning
BSBFLM403B	Implement effective workplace relationships

BCPDR4001A	Plan, size and layout sanitary drainage systems
BCPDR4002A	Plan, size and layout stormwater drainage systems
BCPDR4003A	Plan, size and layout domestic treatment plant disposal systems
BCPGS4003A	Install, commission and service Type B gas appliances

Elective: all streams

Code	Title
BCGBC4002A	Manage Occupational Health and Safety in the building and construction workplace
BCGBC4024A	Resolve business disputes
BCGBC4025A	Manage personal work priorities and professional development
BSBADM305A	Create and use databases
BSBCMN213A	Produce simple word-processed documents
BSBCMN214A	Create and use simple spreadsheets
BSBCMN404A	Develop teams and individuals
BSBCMN420A	Write complex documents
BSBPM404A	Apply quality management techniques
CHCCS405A	Work effectively with culturally diverse clients and co-workers
BSBCMN412A	Promote innovation and change
BSBFLM409B	Implement continuous improvement

Common Core

Code	Title
BCGBC4012A	Read and interpret plans and specifications
BCPCM4001A	Carry out work based risk control processes
BCPCM4002A	Estimate and cost work
BSBOHS403A	Identify hazards and assess OHS risks

Core: Plumbing services - management stream

Code	Title
BCGBC4034A	Apply codes and standards to building trade and services contracting
BSBSBM401A	Establish business and legal requirements

BSBSBM402A	Undertake financial planning
BSBSBM404A	Undertake business planning
BSBSBM405A	Monitor and manage business operations
BSBCMN310A	Deliver and monitor a service to customers

Electives: Plumbing services - operations stream

Code	Title
BCGBC4019A	Apply sustainable building design principles to water management systems
BCGBC4020A	Build thermally efficient and sustainable structures
BCGBC4021A	Minimise waste on the building and construction site
BCGBC4034A	Apply codes and standards to building trade and services contracting
BCPFS4004A	Design residential and domestic fire sprinkler systems
BCPGS4002A	Service Type A gas appliances
BCPMS4001A	Plan, size and layout heating and cooling systems
BCPMS4002A	Commission air and water systems
BCPWT4002A	Commission and maintain backflow prevention devices
BCPWT4003A	Commission and maintain hot water temperature control devices
BSBCMN310A	Deliver and monitor a service to customers
BCPGS4003A	Install, commission and service Type B gas appliances

Elective: all streams

Code	Title
BCGBC4002A	Manage Occupational Health and Safety in the building and construction workplace
BCGBC4024A	Resolve business disputes
BCGBC4025A	Manage personal work priorities and professional development
BSBADM305A	Create and use databases
BSBCMN213A	Produce simple word-processed documents
BSBCMN214A	Create and use simple spreadsheets
BSBCMN404A	Develop teams and individuals
BSBCMN420A	Write complex documents

BSBPM404A	Apply quality management techniques
CHCCS405A	Work effectively with culturally diverse clients and co-workers
BSBCMN412A	Promote innovation and change
BSBFLM409B	Implement continuous improvement

Common Core

Code	Title
BCGBC4012A	Read and interpret plans and specifications
BCPCM4001A	Carry out work based risk control processes
BCPCM4002A	Estimate and cost work
BSBOHS403A	Identify hazards and assess OHS risks

Core: Plumbing services - operations stream

Code	Title
BCPDR4001A	Plan, size and layout sanitary drainage systems
BCPDR4002A	Plan, size and layout stormwater drainage systems
BCPDR4003A	Plan, size and layout domestic treatment plant disposal systems
BCPGS4001A	Plan, size and layout consumer gas installations
BCPRF4001A	Plan, size and layout roof drainage systems
BCPSN4001A	Plan, size and layout sanitary pipework and fixtures
BCPWT4001A	Plan, size and layout hot and cold water services/systems
BSBSBM401A	Establish business and legal requirements

Common Core

Code	Title
BCGBC4012A	Read and interpret plans and specifications
BCPCM4001A	Carry out work based risk control processes
BCPCM4002A	Estimate and cost work
BSBOHS403A	Identify hazards and assess OHS risks

Core: Air conditioning and mechanical services and fire services streams

Code	Title
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BCGBC4015A	Prepare specifications for all construction works
BCPCM4003A	Produce 2-D architectural drawings using CAD software
BSBCM310A	Deliver and monitor a service to customers

Electives: Fire services stream

Code	Title
BCPFS4004A	Design residential and domestic fire sprinkler systems
BCPFS4001A	Commission domestic and residential fire suppression sprinkler systems
BCPFS4002A	Commission and maintain special hazards fire suppression systems
BCPFS4003A	Commission fire system pump sets
BSBCM419A	Manage projects
BSBFLM404A	Lead work teams
BSBPM407A	Apply risk management techniques
BSBSBM401A	Establish business and legal requirements
BSBSBM402A	Undertake financial planning
BSBSBM404A	Undertake business planning
BSBSBM405A	Monitor and manage business operations
BSBSBM406A	Manage finances
TADEL404A	Facilitate work-based learning
BSBFLM403B	Implement effective workplace relationships
BCGBC4008A	Conduct on-site supervision of the building and construction project
BCGBC4017A	Arrange resources and prepare for the building or construction project
BCGBC4026A	Arrange building applications and approvals
BCGBC4034A	Apply codes and standards to building trade and services contracting
BCPFS4005A	Commission fire alarm and detection systems
BCPFS4006A	Commission firefighting appliances

Elective: all streams

Code	Title
BCGBC4002A	Manage Occupational Health and Safety in the building and construction workplace

BCGBC4024A	Resolve business disputes
BCGBC4025A	Manage personal work priorities and professional development
BSBADM305A	Create and use databases
BSBCMN213A	Produce simple word-processed documents
BSBCMN214A	Create and use simple spreadsheets
BSBCMN404A	Develop teams and individuals
BSBCMN420A	Write complex documents
BSBPM404A	Apply quality management techniques
CHCCS405A	Work effectively with culturally diverse clients and co-workers
BSBCMN412A	Promote innovation and change
BSBFLM409B	Implement continuous improvement

Employability Skills for BCP40106 Certificate IV in Plumbing and Services

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill Communication	<p>Industry/enterprise requirements for this qualification include:</p> <ul style="list-style-type: none"> • interprets a range of complex documents including relevant regulatory, legislative, licensing and registration requirements; codes and standards; drawings and specifications; industry definitions and terminology; contracts; plans and diagrams; job specifications; manufacturer specifications and technical manuals; design specifications; and industrial relations policies • understands industry terminology • communicates effectively with a range of relevant parties through a range of media • prepares a range of documents including reports, file notes, drawings and sketches, building applications and submissions; compressed air system specifications; testing and commissioning schedules; and operation and maintenance manuals • uses active listening skills to seek clarification where needed • facilitates site meetings • negotiates conflict and dispute resolution.
Teamwork	<ul style="list-style-type: none"> • seeks expert advice where appropriate • supervises others' work and monitors work processes • plans and sequences work in conjunctions with others • participates in professional networks and associations.
Problem solving	<ul style="list-style-type: none"> • performs various calculations and measurements relating to comparisons of alternative water management systems, waste management minimisation strategies, and materials and designs for compressed air systems • identifies and rectifies faults • deals with contract variations • coordinates a range of team members and activities • reviews design solutions for effectiveness and compliance • deals with customer complaints and disputes.
Initiative and enterprise	<ul style="list-style-type: none"> • identifies building sites from location drawings • identifies typical faults and problems and takes necessary remedial action • uses creative design and drafting skills • identifies opportunities for improved water management • evaluates effective strategies for insulating structures • develops waste management strategies • designs compressed air systems • develops waste management strategies and dispute resolution procedures.

- Planning and organising**
- gathers required tools and equipment
 - ensures a coordinated development of drawings
 - supervises various administrative and work processes, including claims and payments, insurance coverage, payroll systems and tax systems
 - arranges resources and prepares for the building or construction project
 - plans and arranges building applications and approvals
 - ensures current building codes and standards are applied
 - plans and sets out work
 - plans waste management strategies
 - scopes the extent of work required and plans and details relevant systems and layouts.
- Self management**
- manages own performance to ensure required levels of service standards, work quality and professional competence, and compliance with relevant codes and standards
 - manages work priorities and professional development
 - maintains required standard of personal fitness, hygiene and grooming
 - uses feedback to improve own performance.
- Learning**
- uses appropriate mechanisms to inform others of applicable standards and codes
 - applies training agreement provisions.
- Technology**
- uses information technology skills to operate office equipment and computers
 - uses digital cameras
 - uses CAD software to produce and manage architectural drawing and template files
 - commissions fire alarm and detection systems and gas appliances
 - checks relevant tools and equipment for serviceability
 - understands basic electrical theory and the types, characteristics, uses and limitations of electrical/electronic componentry and control systems
 - designs compressed air systems using computer software.

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

Due to the high proportion of electives required by this qualification, the detail of the above Employability Skills are representative of the plumbing and services industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines.

BCP50106 Diploma of Plumbing and Services

This packaging arrangement for the Diploma of Plumbing and Services is designed to meet the needs of:

- specialist and senior plumbers, fire services professionals and air conditioning and mechanical services professionals who have advanced technical skill requirements
- experienced professionals who are pursuing management roles within the plumbing and services industry.

Packaging Rules

Air conditioning and mechanical service stream

- 12 Units

- 2 Common core units

Common core (refer to the unit list at the end of this section)

- **and 4 Core: Air conditioning and mechanical services stream**

Core: Air conditioning and mechanical services stream (refer to the unit list at the end of this section)

- **and 6 units elective units, of which**

- **between 0 and 2 units may be selected from the pool of elective units in the plumbing and services - management stream**

Electives: Plumbing and services - management stream (refer to the unit list at the end of this section)

- **and 1 unit of the elective units may be drawn from a Certificate IV in Plumbing and Services.**

- **and 1 unit of the elective units may be selected from another relevant endorsed Training Package with the units selected maintaining both the integrity of the AQF level and the industry context of the qualification**

- **and Elective units may be drawn from the pool of electives from the plumbing and services - management stream, or other plumbing services industry electives or from the core units of any other stream**

or

Fire services stream

- 12 Units

- 2 Common core units

Common core (refer to the unit list at the end of this section)

- **and 4 Core: Fire services stream**

Core: Fire services stream (refer to the unit list at the end of this section)

- **and 6 elective units**

- **Elective units may be drawn from the pool of electives from the plumbing and services - management stream, or other plumbing services industry electives or from**

the core units of any other stream**- Core units**

Core: Air conditioning and mechanical services stream (refer to the unit list at the end of this section)

Core: Fire services stream (refer to the unit list at the end of this section)

Core: Plumbing services stream (refer to the unit list at the end of this section)

- and Elective units

Electives: Other plumbing services industry (refer to the unit list at the end of this section)

Electives: Plumbing and services - management stream (refer to the unit list at the end of this section)

- and between 0 and 2 units may be selected from the pool of elective units in the plumbing and services - management stream

Electives: Plumbing and services - management stream (refer to the unit list at the end of this section)

- and 1 unit of the elective units may be selected from another relevant endorsed Training Package with the units selected maintaining both the integrity of the AQF level and the industry context of the qualification

- and 1 unit of the elective units may be drawn from a Certificate IV in Plumbing and Services. BCP40106 Certificate IV in Plumbing and Services

or

Plumbing services stream**- 12 Units**

- The plumbing stream has a prerequisite of the Certificate IV in Plumbing and Services (plumbing services - operations stream) or an equivalent qualification. BCP40106 Certificate IV in Plumbing and Services

- and 2 Common core units

Common core (refer to the unit list at the end of this section)

- and 5 core units from Core: Plumbing services stream

Core: Plumbing services stream (refer to the unit list at the end of this section)

- and 5 elective units

- Elective units may be drawn from the pool of electives from the plumbing and services - management stream, or other plumbing services industry electives or from the core units of any other stream;

- Core units

Core: Air conditioning and mechanical services stream (refer to the unit list at the end of this section)

Core: Fire services stream (refer to the unit list at the end of this section)

Core: Plumbing services stream (refer to the unit list at the end of this section)

- and Elective units

Electives: Other plumbing services industry (refer to the unit list at the end of this section)

Electives: Plumbing and services - management stream (refer to the unit list at the end of this section)

- and between 0 and 2 units may be selected from the pool of elective units in the plumbing and services - management stream

Electives: Plumbing and services - management stream (refer to the unit list at the end of this section)

- and 1 unit of the elective units may be selected from another relevant endorsed Training Package with the units selected maintaining both the integrity of the AQF level and the industry context of the qualification

- and 1 unit of the elective units may be drawn from a Certificate IV in Plumbing and Services BCP40106 Certificate IV in Plumbing and Services

Packaging Groups

Common core	
Code	Title
BSBOHS504A	Apply principles of OHS risk management
BSBPM504A	Manage project costs
Core: Air conditioning and mechanical services stream	
Code	Title
BCPMS5000A	Design steam distribution systems
BCPMS5001A	Design air conditioning and ventilation systems
BCPMS5002A	Design sound attenuated hydraulic services
BCPMS5003A	Design hydronic heating and cooling systems
Electives: Plumbing and services - management stream	
Code	Title
BCGBC4034A	Apply codes and standards to building trade and services contracting
BCGBC5002A	Monitor building or construction costing systems on medium-rise building and construction projects
BCGBC5010A	Manage construction work/projects
BSBFLM505A	Manage operational plan
BSBFLM507B	Manage quality customer service
BSBFLM512A	Ensure team effectiveness

BSBMGT503A	Prepare budgets and financial plans
BSBPM508A	Manage project risk
BSBFLM505B	Manage operational plan
Common core	
Code	Title
BSBOHS504A	Apply principles of OHS risk management
BSBPM504A	Manage project costs
Core: Fire services stream	
Code	Title
BCPFS5000A	Design fire-compliant hydraulic services
BCPFS5001A	Design fire sprinkler systems
BCPFS5002A	Design fire hydrant and hose reel systems
BCGSV6010A	Apply fire technology to buildings up to 3 storeys
Electives: Plumbing and services - management stream	
Code	Title
BCGBC4034A	Apply codes and standards to building trade and services contracting
BCGBC5002A	Monitor building or construction costing systems on medium-rise building and construction projects
BCGBC5010A	Manage construction work/projects
BSBFLM505A	Manage operational plan
BSBFLM507B	Manage quality customer service
BSBFLM512A	Ensure team effectiveness
BSBMGT503A	Prepare budgets and financial plans
BSBPM508A	Manage project risk
BSBFLM505B	Manage operational plan
Core: Plumbing services stream	
Code	Title
BCPCM5004A	Design sewer systems
BCPCM5000A	Design complex sanitary plumbing and drainage systems

BCPCM5001A	Design complex cold water systems
BCPCM5002A	Design complex stormwater and roof drainage systems
BCPCM5003A	Design complex (non-solar) hot water systems

Core: Fire services stream

Code	Title
BCPFS5000A	Design fire-compliant hydraulic services
BCPFS5001A	Design fire sprinkler systems
BCPFS5002A	Design fire hydrant and hose reel systems
BCGSV6010A	Apply fire technology to buildings up to 3 storeys

Core: Air conditioning and mechanical services stream

Code	Title
BCPMS5000A	Design steam distribution systems
BCPMS5001A	Design air conditioning and ventilation systems
BCPMS5002A	Design sound attenuated hydraulic services
BCPMS5003A	Design hydronic heating and cooling systems

Electives: Plumbing and services - management stream

Code	Title
BCGBC4034A	Apply codes and standards to building trade and services contracting
BCGBC5002A	Monitor building or construction costing systems on medium-rise building and construction projects
BCGBC5010A	Manage construction work/projects
BSBFLM505A	Manage operational plan
BSBFLM507B	Manage quality customer service
BSBFLM512A	Ensure team effectiveness
BSBMGT503A	Prepare budgets and financial plans
BSBPM508A	Manage project risk
BSBFLM505B	Manage operational plan

Electives: Other plumbing services industry

Code	Title
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BCPPS5000A	Design gas bulk storage systems
BCPPS5001A	Design industrial gas systems
BCPPS5002A	Design gas reticulation systems
BCPPS5003A	Design solar water heating systems
BCPPS5004A	Conduct a water audit and identify water-saving initiatives
BCPPS5005A	Design grey water re-use systems in sewered areas
BCPPS5006A	Design rainwater collection, storage, distribution and
BCPPS5007A	Design irrigation systems
BCPPS5008A	Design trade waste pre-treatment systems
BCPPS5009A	Analyse and report on technical plumbing systems
BCPPS5010A	Design pump systems
BCPPS5011A	Coordinate services and penetrations
BCPPS5012A	Design siphonic stormwater drainage systems
BCPPS5013A	Design vacuum sewerage systems
BCPPS5014A	Locate and maintain piping systems
BCPPS5015A	Inspect plumbing and drainage systems

Common core

Code	Title
BSBOHS504A	Apply principles of OHS risk management
BSBPM504A	Manage project costs

Core: Plumbing services stream

Code	Title
BCPCM5004A	Design sewer systems
BCPCM5000A	Design complex sanitary plumbing and drainage systems
BCPCM5001A	Design complex cold water systems
BCPCM5002A	Design complex stormwater and roof drainage systems
BCPCM5003A	Design complex (non-solar) hot water systems

Electives: Plumbing and services - management stream

Code	Title
------	-------

BCGBC4034A	Apply codes and standards to building trade and services contracting
BCGBC5002A	Monitor building or construction costing systems on medium-rise building and construction projects
BCGBC5010A	Manage construction work/projects
BSBFLM505A	Manage operational plan
BSBFLM507B	Manage quality customer service
BSBFLM512A	Ensure team effectiveness
BSBMGT503A	Prepare budgets and financial plans
BSBPM508A	Manage project risk
BSBFLM505B	Manage operational plan

Core: Plumbing services stream

Code	Title
BCPCM5004A	Design sewer systems
BCPCM5000A	Design complex sanitary plumbing and drainage systems
BCPCM5001A	Design complex cold water systems
BCPCM5002A	Design complex stormwater and roof drainage systems
BCPCM5003A	Design complex (non-solar) hot water systems

Core: Fire services stream

Code	Title
BCPFS5000A	Design fire-compliant hydraulic services
BCPFS5001A	Design fire sprinkler systems
BCPFS5002A	Design fire hydrant and hose reel systems
BCGSV6010A	Apply fire technology to buildings up to 3 storeys

Core: Air conditioning and mechanical services stream

Code	Title
BCPMS5000A	Design steam distribution systems
BCPMS5001A	Design air conditioning and ventilation systems
BCPMS5002A	Design sound attenuated hydraulic services
BCPMS5003A	Design hydronic heating and cooling systems

Electives: Plumbing and services - management stream	
Code	Title
BCGBC4034A	Apply codes and standards to building trade and services contracting
BCGBC5002A	Monitor building or construction costing systems on medium-rise building and construction projects
BCGBC5010A	Manage construction work/projects
BSBFLM505A	Manage operational plan
BSBFLM507B	Manage quality customer service
BSBFLM512A	Ensure team effectiveness
BSBMGT503A	Prepare budgets and financial plans
BSBPM508A	Manage project risk
BSBFLM505B	Manage operational plan
Electives: Other plumbing services industry	
Code	Title
BCPPS5000A	Design gas bulk storage systems
BCPPS5001A	Design industrial gas systems
BCPPS5002A	Design gas reticulation systems
BCPPS5003A	Design solar water heating systems
BCPPS5004A	Conduct a water audit and identify water-saving initiatives
BCPPS5005A	Design grey water re-use systems in sewered areas
BCPPS5006A	Design rainwater collection, storage, distribution and
BCPPS5007A	Design irrigation systems
BCPPS5008A	Design trade waste pre-treatment systems
BCPPS5009A	Analyse and report on technical plumbing systems
BCPPS5010A	Design pump systems
BCPPS5011A	Coordinate services and penetrations
BCPPS5012A	Design siphonic stormwater drainage systems
BCPPS5013A	Design vacuum sewerage systems
BCPPS5014A	Locate and maintain piping systems

BCPPS5015A	Inspect plumbing and drainage systems
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Employability Skills for BCP50106 Diploma of Plumbing and Services

The following table contains a summary of the employability skills for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on the packaging options.

Employability Skill Communication	<p>Industry/enterprise requirements for this qualification include:</p> <ul style="list-style-type: none"> • interprets a range of complex documents including relevant regulatory, legislative, licensing and registration requirements; codes and standards; drawings and specifications; industry definitions and terminology; contracts; plans and diagrams; job specifications; manufacturer specifications and technical manuals; design specifications; and industrial relations policies • understands industry terminology • communicates effectively with a range of relevant parties through a range of media • prepares a range of documents including reports, file notes, drawings and sketches, building applications and submissions; compressed air system specifications; testing and commissioning schedules; and operation and maintenance manuals • uses active listening skills to seek clarification where needed • facilitates site meetings • negotiates conflict and dispute resolution.
Teamwork	<ul style="list-style-type: none"> • seeks expert advice where appropriate • supervises others' work and monitors work processes • plans and sequences work in conjunctions with others • participates in professional networks and associations.
Problem solving	<ul style="list-style-type: none"> • performs various calculations and measurements relating to comparisons of alternative water management systems, waste management minimisation strategies, and materials and designs for compressed air systems • identifies and rectifies faults • deals with contract variations • coordinates a range of team members and activities • reviews design solutions for effectiveness and compliance • deals with customer complaints and disputes.
Initiative and enterprise	<ul style="list-style-type: none"> • identifies building sites from location drawings • identifies typical faults and problems and takes necessary remedial action • uses creative design and drafting skills • identifies opportunities for improved water management • evaluates effective strategies for insulating structures • develops waste management strategies • designs compressed air systems • develops waste management strategies and dispute resolution procedures.

Planning and organising

- gathers required tools and equipment
- ensures a coordinated development of drawings
- supervises various administrative and work processes, including claims and payments, insurance coverage, payroll systems and tax systems
- arranges resources and prepares for the building or construction project
- plans and arranges building applications and approvals
- ensures current building codes and standards are applied
- plans and sets out work
- plans waste management strategies
- scopes the extent of work required and plans and details relevant systems and layouts.

Self management

- manages own performance to ensure required levels of service standards, work quality and professional competence, and compliance with relevant codes and standards
- manages work priorities and professional development
- maintains required standard of personal fitness, hygiene and grooming
- uses feedback to improve own performance.

Learning

- uses appropriate mechanisms to inform others of applicable standards and codes
- applies training agreement provisions.

Technology

- uses information technology skills to operate office equipment and computers
- uses digital cameras
- uses CAD software to produce and manage architectural drawing and template files
- commissions fire alarm and detection systems and gas appliances
- checks relevant tools and equipment for serviceability
- understands basic electrical theory and the types, characteristics, uses and limitations of electrical/electronic componentry and control systems
- designs compressed air systems using computer software.

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

Due to the high proportion of electives required by this qualification, the detail of the above Employability Skills are representative of the plumbing and services industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines.

Assessment Guidelines

Introduction

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

Assessment System Overview

This section provides an overview of the requirements for assessment when using this Training Package, including a summary of the AQTF 2007 requirements; licensing/registration requirements; and assessment pathways.

Benchmarks for Assessment

Assessment within the National Skills Framework is the process of collecting evidence and making judgments 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.

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

Australian Quality Training Framework Assessment Requirements

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

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

Registration of Training Organisations

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

Quality Training and Assessment

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

Assessor Competency Requirements

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

Assessment Requirements

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

Assessment Strategies

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

National Recognition

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

Access and Equity and Client Outcomes

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

Monitoring Assessments

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

Recording Assessment Outcomes

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

Issuing AQF Qualifications and Statements of Attainment

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

Licensing/registration requirements

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 and DEST 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 DEST 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.

A number of occupations and roles within the plumbing and services industry are regulated in some or all of the States and Territories.

The regulators for each jurisdiction are listed below:

Jurisdiction	Name of Regulatory Body	Address
Australian Capital Territory	Plumbing Compliance ACT Planning and Land Authority	Ground Floor North Dame Pattie Menzies House 16 Challis Street

		Dickson ACT 2601
New South Wales	Plumbing Policy, Standards and Regulations Sydney Water Corporation	Sydney Water Corporation 2nd Floor, Corner of Bigge and Moore Streets Liverpool NSW 2170
Northern Territory	Building Advisory Services Department of Planning & Infrastructure	First Floor Cavenagh House 38 Cavenagh Street Darwin NT 0800
Queensland	Plumbing Standards Building Codes Queensland	Level 25, 41 George Street Brisbane QLD 4000
South Australia	Plumbing Services South Australian Water Corporation	South Australian Water Corporation East Terrace Thebarton SA 5031
Tasmania	Building Standards and Regulation	30 Gordons Hill Road Rosny Park TAS 7018
Victoria	Plumbing Industry Commission	450 Burke Road Camberwell Vic 3124
West Australia	Western Australian Plumbers Licensing Board	Locked Bag 14 Cloisters Square WA 6850

When selecting a qualification, including the choice of electives, reference should be made to the requirement identified by the Australian and New Zealand Reciprocity Association that the following units must be completed for the range of plumbing specialisms and which are used within the States and Territories for licensing purposes:

ALL STREAMS

BCPCM4001A Carry out work based risk control processes

BCPCM4002A Estimate and cost work

BSBSBM401A Establish business and legal requirements

WATER SUPPLY

BCPWT4001A Plan, size and layout hot and cold water services/systems

BCPWT4002A Commission and maintain backflow prevention devices

BCPWT4003A Commission and maintain hot water temperature control devices

DRAINAGE

BCPDR4001A Plan, size and layout sanitary drainage systems

BCPDR4002A Plan, size and layout stormwater drainage systems

BCPDR4003A Plan, size and layout domestic treatment plant disposal systems

SANITARY

BCPSN4001A Plan, size and layout sanitary pipe work and fixtures

GASFITTING

BCPGS4001A Plan, size and layout consumer gas installations

BCPGS4002A Service Type A gas appliances

AIR CONDITIONING AND MECHANICAL SERVICES

BCPMS4001A Plan, size and layout heating and cooling systems

BCPMS4002A Commission air and water systems

ROOFING

BCPRF4001A Plan, size and layout roof drainage systems

FIRE SERVICES

BCPFS4001A Commission domestic and residential fire suppression sprinkler systems

BCPFS4002A Commission and maintain special hazards fire suppression systems

BCPFS4003A Commission fire system pump sets

BCPFS4004A Design residential and domestic fire sprinkler systems

It is of importance that RTOs and candidates make themselves familiar with the licensing and registration arrangements that apply in their jurisdiction.

Requirements for Assessors

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 and DEST 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 DEST 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.

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BCPWT4003A Commission and maintain hot water temperature control devices

DRAINAGE

BCPDR4001A Plan, size and layout sanitary drainage systems

BCPDR4002A Plan, size and layout stormwater drainage systems

BCPDR4003A Plan, size and layout domestic treatment plant disposal systems

SANITARY

BCPSN4001A Plan, size and layout sanitary pipe work and fixtures

GASFITTING

BCPGS4001A Plan, size and layout consumer gas installations

BCPGS4002A Service Type A gas appliances

AIR CONDITIONING AND MECHANICAL SERVICES

BCPMS4001A Plan, size and layout heating and cooling systems

BCPMS4002A Commission air and water systems

ROOFING

BCPRF4001A Plan, size and layout roof drainage systems

FIRE SERVICES

BCPFS4001A Commission domestic and residential fire suppression sprinkler systems

BCPFS4002A Commission and maintain special hazards fire suppression systems

BCPFS4003A Commission fire system pump sets

BCPFS4004A Design residential and domestic fire sprinkler systems

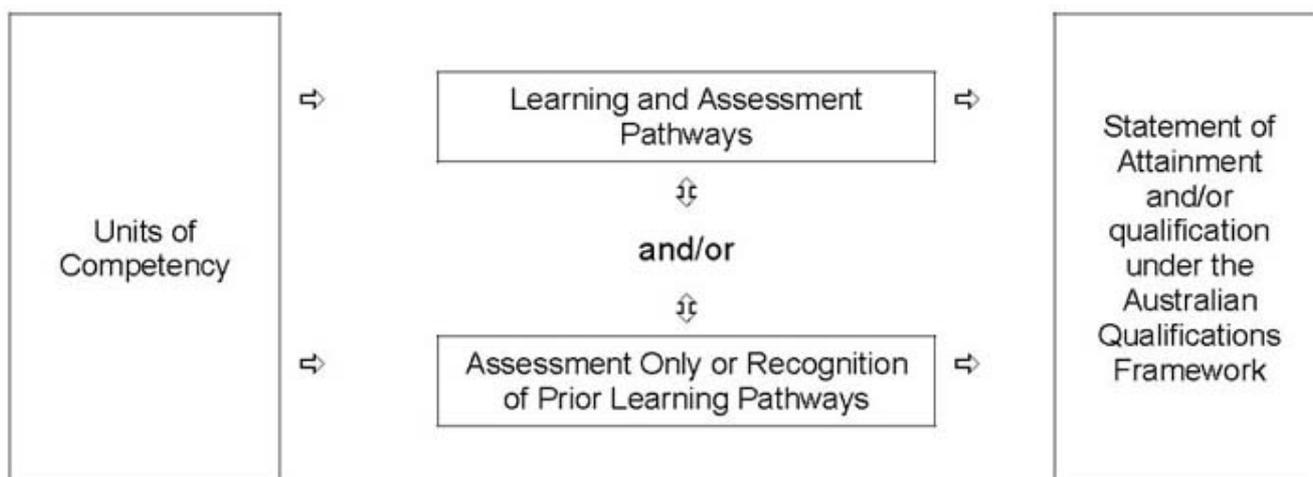
It is of importance that RTOs and candidates make themselves familiar with the licensing and registration arrangements that apply in their jurisdiction.

Pathways

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

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

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



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

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

Learning and Assessment Pathways

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

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

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

Assessment-Only or Recognition of Prior Learning Pathway

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

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

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

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

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

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

Combination of Pathways

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

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

Assessor Requirements

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

Assessor Competencies

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

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

Designing Assessment Tools

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

Use of Assessment Tools

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

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

Using Prepared Assessment Tools

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

Developing Assessment Tools

When developing assessment tools, assessors must ensure that they:

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

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

Conducting Assessment

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

Assessment Requirements

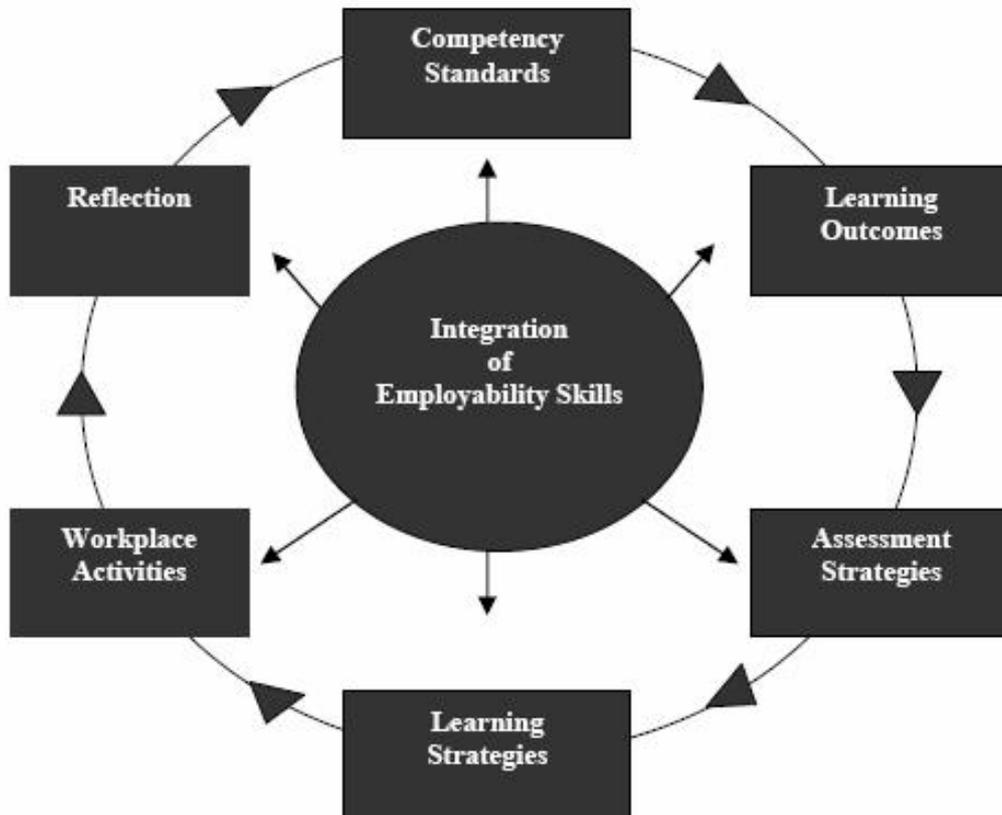
Assessments must meet the criteria set out in the AQTF 2007 Essential Standards for Registration.

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

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

Assessment of Employability Skills

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



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

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

For more information on Employability Skills in Construction and Property Services Industry Skills Council Training Packages go to the Construction and Property Services Industry Skills Council website at <http://www.cpsisc.com.au>.

Access and Equity

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

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

Reasonable adjustments

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

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

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

An education provider is also entitled to maintain the academic integrity of a course or program and to consider the requirements or components that are inherent or essential to its nature when assessing whether an adjustment is reasonable. There may be more than one adjustment that is reasonable in a given set of circumstances; education providers are required to make adjustments that are reasonable and that do not cause them unjustifiable hardship.

See Part 4, Chapter 2 of the *Training Package Development Handbook* (DEST, September 2007) for more information on reasonable adjustment, including examples of adjustments.

Industry Assessment Contextualisation 2

Assessment in the Plumbing and Services Industry

The Plumbing and Services Industry places premium on skills and knowledge that can be demonstrated in a real workplace environment. Whilst assessment of some of the Unit(s) of Competency in the Plumbing and Services Training Package can be carried out in a simulated work environment, the industry strongly recommends that assessment is conducted in the workplace, wherever possible.

Assessment of competency requires the collection of evidence and this should be conducted over a period of time. This assessment approach may include demonstration at the workplace and/or a simulated work environment to ensure that the demonstration of competency is valid and reliable. The individual being assessed needs to be aware that the collection of evidence is ongoing and needs to be part of the planning, conduct and review of the assessment process.

Supporting Integrated Training Delivery and Assessment

As a general principle, the Plumbing and Services Industry supports the integration of Unit(s) of Competency for assessment, where practical, as this reflects real work practices. An integrated approach to assessment brings together a number of Unit(s) of Competency, which reflect actual workplace requirements. For example, an employee working on a plumbing work site would complete a number of interrelated installation and occupational, health and safety tasks together, not simply one individual task at a time.

An integrated assessment activity would be designed to collect evidence for a number of units together rather than designing one assessment activity for each individual element of performance criteria.

Where both training and assessment are required the industry supports an approach which provides for off-the-job training combined with assessment of the application of skills and knowledge in a real work situation.

The Plumbing and Services Training Package defines on-the-job assessment as that assessment which occurs in the workplace as part of the normal operation of the business. The Plumbing and Services Training Package defines off-the-job assessment as that which occurs away from the normal operation of the business including, for example, assessment which may occur in the workplace but not under normal industry working conditions. The industry considers it important that candidates should have the opportunity to develop competency in structured learning programs which includes assessing in the workplace whenever possible.

It would be expected that where an integrated competency assessment approach is implemented that several integrated competency assessments would be necessary to cover the breadth and complexity of the qualification, at Certificates II and III. The context of the assessment, the role of the candidate and the complexity of the task will influence how many Unit(s) of Competency will be integrated.

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

Contacts

Contacts

Construction and Property Services Industry Skills Council (CPSISC)

PO Box 151 Belconnen ACT 2616

Tel: (02) 6253 0002

Email: info@cpsisc.com.au

Website: www.cpsisc.com.au

Contact details for the National Network of Building and Construction Industry Training Advisory Bodies are as follows:

State or Territory	Organisation	Contact Details
New South Wales	Construction Industry Advisory Board (NSW) PO Box 1925 Hornsby Westfield NSW 1635	Chief Executive Officer Tel: (02) 9987 4027 Email: douglasg@citab.com.au
Queensland	Construction Training Queensland PO Box 28 Salisbury QLD 4107	Operations Manager Tel: (07) 3274 7999 Email: info@ctq.com.au
Northern Territory	Major Industry Training Advisory Council	Executive Officer Tel: (08) 8981 0077

	GPO Box 1610 Darwin NT 0801	Email: tim@mitac.org.au
Western Australia	Building and Construction Industry Training Council 1st Floor 1152 Hay Street West Perth WA 6005	Executive Officer Tel: (08) 9381 3900 Email: bcitcwa@bcitcwa.com.au
South Australia	Construction Industry Training Board (SA) PO Box 1227 Unley SA 5034	Chief Executive Officer Tel: (08) 8172 9500 Email: citb@citb.org.au
Tasmania	Tasmania Building and Construction Industry Board PO Box 105 Sandy Bay TAS 7006	Executive Director Tel: (03) 6223 7804 Email: email@tbcitb.com.au
Australian Capital Territory	ACT Building and Construction Industry Training Council PO Box 882 Dickson ACT 2602	Executive Officer Tel: (02) 6241 3977 Email: citc@iimetro.com.au
National	Construction and Property Services Industry Skills Council (CPSISC) PO Box 151 Belconnen ACT 2616	Chief Executive Officer Tel: (02) 6253 0002 Email: info@cpsisc.com.au

Technical and Vocational Education and Training (TVET) Australia Limited

Level 21, 390 St Kilda Road, Melbourne VIC 3150

PO Box 12211, A"Beckett Street Post Office

MELBOURNE VICTORIA 8006

Ph: +61 3 9832 8100

Fax: +61 3 9832 8198

Email: sales@tvetaustralia.com.au

Web: www.tvetaustralia.com.au

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

Innovation & Business Skills Australia
Level 2, Building B, 192 Burwood Road
HAWTHORN VIC 3122
Telephone: (03) 9815 7000
Facsimile: (03) 9815 7001
Web: www.ibsa.org.au
Email: virtual@ibsa.org.au

General Resources

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

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

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

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

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

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

TAA04 Training and Assessment Training Package. This is available from the Innovation and Innovation & Business Skills Australia (IBSA) Industry Skills Council and can be viewed, and components downloaded, from the National Training Information Service (NTIS).

National Training Information Service, an electronic database providing comprehensive information about RTOs, Training Packages and accredited courses - www.ntis.gov.au

Training Package Development Handbook (DEST, August 2007). Can be downloaded from www.dest.gov.au

Assessment Resources

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

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

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

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

Assessment Tool Design and Conducting Assessment

VETASSESS & Western Australian Department of Training and Employment 2000, *Designing Tests - Guidelines for designing knowledge based tests for Training Packages*.

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

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

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

Assessor Training

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

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

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

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

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

Assessment System Design and Management

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

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

Competency Standards

What is competency?

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

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

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

Contextualisation of Units of Competency by RTOs

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

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

- must not remove or add to the number and content of elements and performance criteria
- may add specific industry terminology to performance criteria where this does not distort or narrow the competency outcomes
- may make amendments and additions to the range statement as long as such changes do not diminish the breadth of application of the competency and reduce its portability, and/or
- may add detail to the evidence guide in areas such as the critical aspects of evidence or resources and infrastructure required where these expand the breadth of the competency but do not limit its use.

Components of Units of Competency

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

Unit Title

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

Unit Descriptor

The unit descriptor broadly communicates the content of the unit of competency and the skill area it addresses. Where units of competency have been contextualised from units of

competency from other endorsed Training Packages, summary information is provided. There may also be a brief second paragraph that describes its relationship with other units of competency, and any licensing requirements.

Employability Skills statement

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

Prerequisite Units (optional)

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

Application of the Unit

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

Competency Field (Optional)

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

Sector (optional)

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

Elements of Competency

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

Performance Criteria

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

Required Skills and Knowledge

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

Range Statement

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

Evidence Guide

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

assessor to make determinations, and by providing the assessment context. The evidence guide describes:

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

Employability Skills in units of competency

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

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

How Employability Skills relate to the Key Competencies

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

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

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

Explicitly embedding Employability Skills in units of competency

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

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

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

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

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

Example Employability Skills unit

Unit component	Example of embedded Employability Skill
Unit Title	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	<p>Modify activities depending on differing workplace contexts, risk situations and environments. (learning)</p> <p>Work collaboratively with others during a fire emergency. (teamwork)</p> <p>Instructions, procedures and other information relevant the maintenance of vessel and port security. (communication)</p>

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: <ul style="list-style-type: none">• 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).
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Competency Standards - Industry Contextualisation

Competency Standards - Industry Contextualisation

Plumbing and Service Industry Competency Units

Competency Unit Format

The CTA Board established the competency unit format which was accepted as being relevant to all Sectors. This format complies with ANTA requirements and adopts the following additional criteria.

- 1 The focus and coverage of the unit is clarified within the range statement with the use of the terms, " *is to* " " *are to* ", and " *may* ".
- 2 The critical aspects provide guidance on the minimum outcomes required to satisfy and achieve the competency; and
- 3 The *skills underpinning* coverage is combined with employability skills and anchored against the national key competencies to avoid repetition or ambiguity.

Competency Unit Numbering System

The CTA Board established a revised unit numbering system which reflects the sub-sector specialities and the indicative Australian Qualification Framework (AQF) level of each unit. The unit code contains ten (10) digits eg BCPWT3001A where;

- BCP - is the three digit industry code for Building and Construction Plumbing and Services
- WT - is the sub-sector code or stream, in this case Water (See others below)
- 3 - is the indicative AQF level
- 001 - is the consecutive unit number within the sub-sector and AQF level
- A - is the edition of the unit

Sub-Sector codes (or Streams) for the Plumbing and Services Training Package are as follows:

- CM - Common units, common to two or more Sub-sectors
- DR - Drainage
- FS - Fire protection service
- GS - Gas fitting service
- IG - Irrigation
- MS - Mechanical services
- PS - Plumbing and services
- RF - Roofing

- SN - Sanitary
- WT - Water

BCPCM2001A**Work effectively in the plumbing and services sector****Unit Descriptor**

This unit specifies the competency required to prepare for and sustain effective work within the plumbing and services sector of the Building and Construction Industry.

It covers the identification and clarification of the sector work context and setting, acceptance of responsibility by the individual, criteria for working in a team, individual career path improvement and the participation in meetings.

As a Common unit, it has application to all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Identify the industry work context and setting | <p>1.1 The scope and nature of plumbing and services functions, activities and career paths are identified</p> <p>1.2 The place of plumbing and services in terms of direct and indirect employment and economic importance is identified</p> <p>1.3 Plumbing and services employment conditions, responsibilities and obligations are identified</p> <p>1.4 Trends in technology and processes which are likely to impact on the plumbing and services sector are identified</p> <p>1.5 The requirements of relevant plumbing legislation, regulations, standards and codes of practice are understood and implemented</p> <p>1.6 Specific OH&S requirements of the plumbing industry are understood and implemented</p> <p>1.7 Quality assurance and workplace quality requirements are understood and implemented</p> |
| 2. Organise and accept responsibility for own workload | <p>2.1 Priorities and deadlines are established in consultation with others and recorded</p> <p>2.2 Work activities are planned and progress of work is communicated to others whose personal work plans and timelines may be affected</p> <p>2.3 Work is completed to the standard expected in the workplace and in accordance with any guidelines, directions and instructions</p> <p>2.4 Variations and difficulties affecting work requirement are identified through regular reviews and action is taken to report these issues to appropriate personnel</p> <p>2.5 Additional support or modification of arrangements to improve work outcomes is communicated clearly to appropriate personnel</p> |

- 3. Work in a team
 - 3.1 Workplace goals and the contributions to be made by teams are identified
 - 3.2 Individual contributions to team activities are identified, agreed and reviewed periodically with the team
 - 3.3 Defined roles and strengths of other team members are identified and applied
 - 3.4 Assistance and encouragement are provided to other team members wishing to enhance their role and the role of the team
 - 3.5 Ground rules for team operations are reviewed and changes are made through team consultative processes
 - 3.6 Team improvements are initiated and/or encouraged from team members
 - 3.7 Causes of disharmony and other barriers to achievement are promptly resolved or referred to the appropriate party for resolution

- 4. Participate in identifying and pursuing own development needs
 - 4.1 The competencies for the workplace are identified
 - 4.2 Organisational structure, career paths and development opportunities appropriate to the workplace are identified
 - 4.3 Steps are taken, in consultation with appropriate personnel, to identify own learning needs for future work requirements
 - 4.4 Appropriate opportunities to learn and develop required competencies are identified and pursued with the appropriate people

- 5. Participate in workplace meetings
 - 5.1 Meeting procedures and objectives are identified and applied
 - 5.2 Points of view and comments, including agreement and dissent are presented in a logical, persuasive and orderly manner
 - 5.3 Points of view of other members are given a fair hearing

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires effective participation in a plumbing and services workplace to promote a harmonious and efficient work environment
- Plumbing and services work activities occur in the sector streams of water, sanitation, drainage, irrigation, roofing, and mechanical, fire and gas services
- Structure and employment conditions in the sector, its regulatory and other requirements and the ability to work as a team member is required. It requires the ability to accept instructions, work with others, plan activities and perform tasks as well as participate in workplace planning and meetings
- Plumbing and services sector employment conditions are to include coverage of:
 - enterprise agreement(s)
 - workplace agreement(s)
 - industrial award(s)
 - bulletins and newsletters
 - industry/workplace codes of practice
 - enterprise procedures for handling industrial disputes
 - enterprise procedures for handling grievance
- Organisational requirements may be included in goals, objectives, plans, systems and processes, legal and organisation policy/guidelines and requirements, business and performance plans, anti-discrimination and related policy, access and equity principles and practice, ethical standards, quality and continuous improvement processes and standards and defined resource parameters
- Responsibilities and duties may include job description and employment arrangements, organisation's policy relevant to work role, team structures, supervision and accountability requirements including Occupational Health and Safety, skills, training and competencies and Code(s) of Conduct
- Workgroup members may include but are not limited to coach/mentor, supervisor or manager, employee representative, peers/work colleagues/team/enterprise and other members of the organisation
- Team is a generic term which refers to the site work organisation. Teams may be known/titled locally as crews, gangs, shifts or other industrially and historically acceptable terms
- Development processes include competency achievement/maintenance processes which may include recognition of prior learning, assessment processes, on-the-job training and job rotation, formal vocational

education and training and refresher training

- Meetings may be formal or informal and involve small team, section and workplace meetings. Processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Hazards and risks may include but not be limited to uneven/unstable terrain, overhead objects, fire, gas, electricity, water, working in confined spaces, overhead and underground services, buildings, structures, hazardous materials
- Emergency procedures are to include but may not be limited to fire fighting, medical and first aid and evacuation

Environmental Requirements

- Environmental requirements are to include but are not limited to waste management, stormwater protection, noise, dust and clean-up management

Quality Assurance

- Quality assurance requirements may include but not limited to relevant International Standards Organisation (ISO) and Australian Standards, internal company quality assurance policy and standards, risk management strategy, Environment Protection Authority (EPA) requirements, the site safety plan, workplace operations and procedures

Statutory/Regulatory Authorities

- Statutory/regulatory authorities may include statutory/regulatory Government authorities, Local Government statutory authorities

Communications

- Communications are to include but not limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures related to work performed in plumbing and services worksites
- Regulatory/legislative requirements pertaining to operations and the environment
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
- Relevant State and local Government specifications

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality assurance requirements
- An explanation to others of the scope, employment and economic importance of the plumbing and services sector
- An indication of an awareness of the regulatory requirements and the manner of their adoption and management within the workplace
- The identification of the standards and codes of conduct applicable to their particular stream of the sector
- The identification of work employment conditions and the source of these conditions
- Setting personal and team work goals
- Responding to personal conflict situations
- Identifying personal development needs
- Participating in workplace meetings
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - relevant industrial awards and agreements
 - relevant legislative provisions covering discrimination and equal employment opportunity
 - regulatory, legislative, standards and Codes of Conduct pertaining to the plumbing and services sector
 - plumbing and services streams and career structure/requirements, including business opportunities/requirements
 - typical site/team work structure and methods
 - typical work communication procedures
 - interpersonal communication skills
 - typical training/development systems
 - basic job/skill analysis techniques
 - basic conflict management
 - meeting procedures
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Due to the nature of the mandatory requirements, assessment may require stage management and role playing
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - realistic tasks or simulated tasks covering the mandatory task requirements
 - relevant specifications and work instructions
 - research resources including industry related systems information and data

BCPCM2002A

Carry out interactive workplace communication

Unit Descriptor

This unit specifies the competency required to communicate effectively through oral, visual and written means of communications to facilitate work practices which are safe, meet specifications and provide quality outcomes.

Work associated with this unit is undertaken within the plumbing and services sector. As a Common unit, it has application to all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--|--|
| 1. Apply oral communications | 1.1 Oral instructions are received, clarified and confirmed
1.2 Oral communications with others are clear, accurate and in a language suitable to the workplace
1.3 Oral communications use accepted industry terminology
1.4 Oral communications using telephone or radio follow industry convention
1.5 All oral communications are confirmed and/or acknowledged |
| 2. Apply visual communications | 2.1 The visual communications used follow accepted industry practice or social convention
2.2 The attention of the communicating parties is obtained, confirmed and/or acknowledged
2.3 The intention of the visual communication is clarified and confirmed at each step
2.4 Visual communications which are unclear or ambiguous are questioned or visually cancelled
2.5 Instances of unclear visual communications are followed up to avoid repeated problems |
| 3. Apply written communication and signage | 3.1 Work safety procedures or equivalent are accessed
3.2 Instructions for job or daily activities are accessed and clarified
3.3 Regulatory authorities' and workplace documentation required to record/report work to be undertaken/completed is finalised in accordance with workplace procedures in relation to quality, time and detail
3.4 Technical instructions relating to job process, criteria and equipment operations are accessed, interpreted and applied
3.5 Regulatory and work signage is identified, clarified and responded to correctly
3.6 Written detail is provided to maintain the individual's personal records
3.7 Information bulletins or circulars or equivalent which impact on the individual are accessed and interpreted |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Communication with others is an integral part of routine work. It includes but is not limited to communication with supervisors, contractors, co-workers and clients
- Communication may be oral (face to face or remote), visual or written/signage
- Oral communications are to include work instructions, acknowledgments, safety briefings and requests for information
- Oral communication media are to include face to face and an indirect method such as phone or two-way radio
- Visual communications are to include establishing communication, lateral and vertical movement direction, stop, cancel last communication and a request for a face-to-face meeting and may include other signals appropriate to the task and the workplace
- Written communications are to include work safety procedures or equivalent, work instructions and procedures, work signage, equipment operator instructions, personnel records and input/output documents
- Written communications may include site safety statistics, schedules, rosters, servicing check lists, plans/drawings/specifications, docket/order forms, equipment logs and training records

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

Quality Assurance

- Quality assurance requirements may include but not limited to relevant International Standards Organisation (ISO) and Australian Standards, internal company quality assurance policy and standards, risk management strategy, Environment Protection Authority (EPA) requirements, the site safety plan, workplace operations and procedures

Statutory/Regulatory Authorities

- Statutory/regulatory authorities may include statutory/regulatory Government authorities, Local Government statutory authorities

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures related to interactive workplace communication
- Regulatory/legislative requirements pertaining to interactive workplace communication
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- The receipt, clarification and confirmation of oral work instructions
- Orally communicating with others in a clear and accurate manner
- Adapting and applying oral communications when using a phone or radio
- Communicating effectively using mandatory visual methods including establishing communication, lateral and vertical movement direction, stop, cancel last communication and a request for a face-to-face meeting
- Accessing and interpreting written work safety procedures, job instructions, job processes, equipment and operator instructions
- Completing workplace documentation in relation to work, stores/tools and equipment and personal/ workplace administration
- Reviewing personnel records and completing personal information input proformae

Relationship to other units

- This unit may be assessed in conjunction with other functional units requiring particular aspects of communication

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - workplace English
 - industry terminology
 - phone and two-way radio communication requests
 - visual signalling procedures
 - standardised signage
 - how work schedules, charts, work bulletins and memos are used
 - how instructions are conveyed in the workplace
 - workplace documentation requirements
 - personnel records and their maintenance
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace, and realistic communication situations covering the mandatory oral, visual and written task requirements

BCPCM2003A**Unit Descriptor****Carry out OH&S requirements**

This unit specifies the competency required to carry out OH&S requirements through safe work practices at a plumbing workplace.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant legislation and regulation. As a Common unit, it has application to all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Participate in workplace induction | <ul style="list-style-type: none"> 1.1 Workplace induction is received 1.2 Location of emergency equipment is identified 1.3 Current workplace emergency/evacuation procedures are identified |
| 2. Assess risks | <ul style="list-style-type: none"> 2.1 Hazards in the work area are identified, assessed and reported to designated personnel 2.2 OH&S issues and risks in the work area are identified, assessed and reported to designated personnel 2.3 Safe workplace procedures and safe work instructions are followed for controlling risks 2.4 OH&S, hazard, accident or incident reports are completed according to workplace procedures and State/Territory legislation |
| 3. Plan and prepare for safe work practices | <ul style="list-style-type: none"> 3.1 Quality assurance requirements of company operations are recognised and adhered to 3.2 Personal protective equipment (PPE) is selected, correctly fitted and used in accordance with the requirements of the job 3.3 Tools and equipment are selected consistent with safe work practice requirements, checked for serviceability and any faults reported to supervisor 3.4 Required barricades, hoardings and signage are determined and erected at job location 3.5 Material safety data sheets are identified and applied |
| 4. Use safe work practices to carry out work | <ul style="list-style-type: none"> 4.1 Work is carried out safely and in accordance with State or Territory and company policy 4.2 Safety hazards and common workplace accidents/incidents are identified in the course of work and reported in accordance with policy 4.3 Industry/site/personal safety rights and responsibilities are applied 4.4 Fire fighting equipment is selected and operated correctly according to type of fire 4.5 Current site emergency and first aid procedures are followed |

- | | |
|---------------------------------|---|
| 5. Maintain safety of self | 5.1 Safety signs, identified in terms of colour and shape, symbols and alarms, are adhered to |
| | 5.2 Recommended safe practices in handling non-hazardous chemicals and materials are applied |
| | 5.3 Hazardous chemicals and materials identified and incidents reported are according to workplace procedures |
| | 5.4 Common causes of accidents in the industry are known and prevention measures implemented |
| | 5.5 Site area is maintained to prevent and protect self and others from incidents and accidents |
| 6. Use 240V power supply safely | 6.1 Safest supply and route for electrical supply is determined |
| | 6.2 Leads are supported and placed in accordance with regulations |
| | 6.3 Power board visual check is conducted |
| | 6.4 Leads are checked for tags and visual damage |
| 7. Apply emergency response | 7.1 The requirement for emergency response is identified |
| | 7.2 Emergency response is provided in accordance with company procedures and requirements |
| | 7.3 Details of actions taken are reported in accordance with company procedures and requirements |
| 8. Clean up work site area | 8.1 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices |
| | 8.2 Work area is cleared and materials disposed of or recycled in accordance with state or territory legislation |
| | 8.3 Documentation is completed in accordance with company requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the performance of work in a safe manner through awareness of risks, work requirements and the planning and performance of safe working practices with concern for personal safety and the safety of others
- It includes the initial response to emergency and the safe use of electricity
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure/fitting being renovated, extended, restored or maintained. It could also be conducted on or off-site workshop or at a customer's premises

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Environmental Requirements
- Environmental requirements are to cover workplace quality management and may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the local council statutory authority
- Site induction
- Site induction may include but is not limited to work site locations, specific site OH&S issues, first aid officers and kits and specific site requirements
- Hazards
- Hazards may include but not be limited to risks associated with tools and equipment, lighting, gases, electricity and water, toxic and hazardous substances, inflammable materials and fire hazards, lifting practices, working in confined spaces, working at height, spillage, waste and debris
- Emergency procedure
- May include that relating to sudden illness, accidents, injuries, fire or workplace evacuation involving staff and customers
- Signage
- Signage may include but is not limited to site direction, safety barricades and warning signs, common site signs, facility or location signs, traffic signs and equipment tags

Communications

- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the performance of work within the workplace
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for applying safe work practices in the workplace
- Apply safety requirements throughout the performance of work sequences, including the use of personal protecting clothing and equipment
- As a minimum:
 - undertake site/workplace induction
 - assess risk and interpret and apply safe working practices
 - understand workplace requirements for emergency response including evacuation procedures
 - correctly locate and operate workplace fire fighting and other safety equipment and appliances
 - correctly select and use appropriate processes, tools and equipment
 - safely complete all work to specification
 - comply with regulations, standards and workplace instructions, procedures and processes including reporting/documentation
- Communicate and work effectively and safely with others

Relationship to other units

- This unit has application in the performance of all other units
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the relevant legislation, regulation and workplace requirements relating to OH&S including hazard reduction and personal safety
 - risk assessment
 - material safety data sheets
 - workplace response to emergencies
 - safe working practices in normal working environment
 - manual handling techniques
 - requirements for working in confined spaces and at height, including on rooves
 - workplace hazards and their precautions/ reduction
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - an induction procedure/requirement
 - tools and equipment appropriate to applying safe work practices
 - support materials appropriate to activity
 - workplace instructions relating to safe working practices and addressing hazards and emergencies
 - material safety data sheets
 - research resources including systems information and data

BCPCM2004A**Unit Descriptor****Read plans and calculate plumbing quantities**

This unit specifies the competency required to use and interpret plans and specifications associated with construction work and the ability to accurately complete measurements and calculations to establish quantities of materials for plumbing work.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit, it has application in all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Prepare for work | 1.1 Plans/drawings/specifications/standards are obtained and the required calculations are identified
1.2 OH&S requirements associated with reading plans and calculating plumbing requirements, and the workplace environment, are adhered to throughout the work
1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements
1.4 Work area and materials are prepared to support the efficient reading of plans and calculation of plumbing requirements |
| 2. Identify types of drawings and their functions | 2.1 Main types of plans and drawings used in the plumbing industry are identified
2.2 Key functions of each type of drawing are identified
2.3 Key users of drawings are identified |
| 3. Recognise commonly used scales, symbols and abbreviations | 3.1 Commonly used scales, symbols and abbreviations are applied
3.2 Function of legend is understood and identified |
| 4. Locate and identify key features on a services plan | 4.1 Key features and dimensions of sectional details and elevations are identified and located
4.2 Location and types of services are identified
4.3 General and/or structural features and major horizontal and vertical measurements are located |
| 5. Read and interpret job specifications | 5.1 Purpose of job specification is identified
5.2 Details in job specification are obtained
5.3 Job specifications are read in conjunction with plans |
| 6. Obtain measurements and perform calculations | 6.1 Work measurements using rule and/or tape are obtained
6.2 Quality assurance requirements associated with calculations are applied
6.3 Measurements and dimensions are obtained from plans
6.4 Simple calculations involving area, volume, length, perimeter, mass and volume using addition, subtraction, multiplication and division are carried out |

- | | |
|----------------------------------|---|
| 7. Calculate material quantities | <ul style="list-style-type: none"> 7.1 Quantities are calculated from job instruction 7.2 Information from plans, specifications and work area are obtained from job instruction 7.3 Measurements are correctly identified and recorded 7.4 Quantities of materials suitable for work are calculated and recorded to job instructions |
| 8. Clean up | <ul style="list-style-type: none"> 8.1 Work area is cleared in accordance with workplace procedures 8.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 8.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|-------------------|---|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the interpretation of plans, drawings and specifications to interpret requirements and make measurements and calculations to determine quantities of plumbing materials • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained. It may be a customer's premises or employer's workplace, either on or off-site |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices |
| Quality Assurance | <ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures |

- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the local council statutory authority
- Drawings
- Types of drawings may include but are not limited to site plans, floor plans, specifications, elevations and sections, sanitary plans, sewerage plans, mechanical services and drainage plans
- Plan and elevation
- Key features of detailed plans and elevations may include but are not limited to type of structure - structural members, shape of building/structure, type of construction, layout of rooms, service locations, orientation, boundaries, building lines, easements, vertical and horizontal measurements, location of works relative to other buildings and cross-sections of construction details
- Plan reading
- Plan reading skills may include but are not limited to orientation, boundaries, site geography (including levels), existing services, pedestrian and vehicular access, surrounding buildings and fences, site features, set backs, easements (storm water etc), preservation orders and covenants
- Measurements
- Measurements are to be in metric scale, cover all dimensions used in plumbing and involve the use of ruler, dividers, callipers, tape measures or squares. They may involve laser or similar technology
- Calculations
- Calculations are to include area, length, perimeter, diameter, circumference, volume, mass, force, pressure, scales, ratios (ingredients/ elements and triangulation) and require the application of addition, subtraction, multiplication and division processes
 - Calculations are to be performed manually and with the aid of a calculator
 - Calculations require numeracy skills to perform basic arithmetic calculation in order to estimate simple projects, and determine consumables required for a task
- Specifications
- Key features of specifications may include but are not limited to material details, quality of finishes, quantities, preferred suppliers and skill requirements

- Tools and equipment
- Tools and equipment are to include ruler, dividers, tape measures or squares, logarithmic tables, regulatory authority approved tables and formulae and calculators
 - Tools and equipment which may be used include laser measuring devices
- Materials
- Materials for reading plans and calculating plumbing quantities include plans, drawings and specifications for a job
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the reading plans and calculating plumbing requirements
 - Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Recognised formulae or tables accepted by the regulatory authority
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the reading of plans and the calculation of plumbing quantities
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and specifications for a project, complete the following in respect of interpreting the plans and determining quantities:
 - identify the type and purpose of the plan/drawing
 - identify its dimensions, symbols, abbreviations and key features, title and reference date (as current version)
 - identify the required specifications and their impact/influence on the plumbing requirements of the project
 - draw a free hand sketch of the plumbing requirement of the project
 - from measurement and calculation, indicate the items of plumbing material required
- ensuring:
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- This unit may be assessed in conjunction with other functional units requiring the reading of plans and the calculation of plumbing quantities

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - a range of drawings and specifications relevant to the plumbing industry
 - tools, equipment and materials relative to drawings/specifications
 - measurements, calculations and quantities
 - symbols, dimensions, terminology and key features of plans
 - work schedules, work plans, charts, work bulletins and memos
 - workplace safety requirements
 - relevant acts, regulations and Codes of Practice
 - common industry calculations
 - JSA/s/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the interpretation, measurement and calculation processes
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2005A**Unit Descriptor****Handle and store plumbing materials**

This unit specifies the competency required to safely handle and store plumbing materials and to identify and address environmental concerns and associated hazards, including the disposal of waste.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit, it has application in all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 OH&S requirements associated with handling and storage of plumbing materials, and the workplace environment, are adhered to throughout the work 1.2 Personal protective equipment (PPE) is selected, correctly fitted and used in accordance with the requirements of the job 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Environmental and waste management requirements are recognised and applied 1.5 Tools and equipment for handling materials/goods, non-toxic waste and liquids are selected for the job requirements and checked for serviceability and any faults reported to supervisor 1.6 Run off devices are installed and the maintenance process is determined 1.7 MSDS are located and interpreted for plumbing materials to be handled |
| 2. Identify hazard and risk control measures | <ul style="list-style-type: none"> 2.1 Hazards are recognised and reported to designated personnel according to workplace procedures 2.2 Procedures and instructions for controlling hazards and risks are identified and adhered to 2.3 Procedures for dealing with accidents, fires and emergencies are adhered to |

- 3. Handle, sort and stack materials
 - 3.1 Materials are identified and selected for sorting and stacking/stockpiling according to supervisor's instructions or workplace requirements
 - 3.2 Handling characteristics of materials are identified and safe manual handling techniques are applied
 - 3.3 Specific handling requirements and protection for non hazardous materials and chemicals are applied
 - 3.4 Materials are stored, stacked/stockpiled and protected, clear of trafficways, for ease of identification, retrieval, prevention of damage and cross contamination in accordance with workplace requirements
 - 3.5 Signage and barricades are erected to isolate stored materials from workplace traffic or access
 - 3.6 Hazardous material is identified for separate handling by authorised persons
 - 3.7 Dust suppression procedures are used to minimise health risk to personnel in the workplace vicinity
- 4. Store and transport materials
 - 4.1 Materials are stored and transported correctly and safely according to MSDS and regulatory authorities' requirements
 - 4.2 Hazardous material is identified for separate storage, transport and handling by authorised persons
 - 4.3 Materials, including flammable liquid and material, gases, bulk liquids and petroleum products are stored in their allocated areas/identified bins/containers in accordance with workplace requirements
 - 4.4 Hazardous materials are transported and handled in accordance with regulatory requirements, including appropriate signage, markings and safety precautions
 - 4.5 Storm water system is protected
- 5. Clean up
 - 5.1 Tools, equipment and signage are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 5.2 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 5.3 Spilt liquids and waste material is removed/disposed of in accordance with environmental and safety plan(s) and workplace requirements
 - 5.4 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the identification of handling and storage requirements for materials used in a plumbing work environment, including the identification, handling and disposal of toxic and non-toxic waste
- It applies to work conducted in a stores holding facility, a work vehicle or on a worksite and addresses OH&S and environmental requirements to minimise risk to health and safety of personnel and to the environment
- Site location for work application may be a new construction site, an existing structure being renovated, extended, service restoration or maintenance, an on off site workshop, a work vehicle or a customer's premises

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Hazards may include but not be limited to toxic waste (such as asbestos), unsafe storage of materials, air borne contamination, water contamination, unsafe work practices, fire, gas leaks, water egress and faulty or damaged components or fittings
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

Environmental Requirements

- Environmental requirements are to address air pollution precautions, waste management, stormwater protection and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities

- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the local council statutory authority

- Tools and equipment
- Tools and equipment are to include manual handling equipment including hand trolleys, rollers, chain blocks, hoists and jacks, signage, barriers and may include forklifts
- Materials
- Materials for handling and storing plumbing materials are to include plumbing stores and materials which may be solid, liquid, non-toxic, gaseous or air borne
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, material safety data sheets (MSDS), work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, diagrams or sketches
 - Safe work procedures relating to the handling and storing of plumbing materials, including the disposal of waste
 - Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for handling and storing plumbing materials
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, complete the following in respect of handling and storing plumbing materials:
 - lay out a facility for the storing/stacking of pipes, fittings, components, non-toxic liquids and flammable liquids and materials in a workshop and a worksite
 - design and lay out a work vehicle for the carriage of plumbing materials
 - identify categories of toxic and non-toxic waste and indicate specific handling and disposal requirements
 - indicate the requirement for transporting hazardous materials, such as oxy-acetylene cylinders
 - indicate the requirement for handling and storing toxic materials
- ensuring:
 - correct identification of handling, storing and disposal procedures
 - OH&S and environmental concerns are correctly addressed
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - OH&S and environmental legislation and requirements
 - workplace safety requirements
 - categories of materials and their safe handling, storage and transport requirements
 - material safety data sheets (MSDS)
 - types of waste and their disposal (including an awareness only of the requirements for asbestos handling and disposal)
 - environmental plans, air and water contamination, erosion and sedimentation
 - workplace hazard reporting and hazard handling procedures
 - workplace processes and procedures
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the material handling, storing and waste disposal processes
 - a goods carrying vehicle
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2006A**Unit Descriptor****Use plumbing hand and power tools**

This unit specifies the competency required to use hand and power tools in plumbing work applications.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit, it has application to all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-----------------------------------|--|
| 1. Identify hand and power tools | 1.1 OH&S requirements associated with the use of plumbing hand and power tools, and the workplace environment, are adhered to throughout the work
1.2 Quality assurance requirements for company operations are identified and adhered to
1.3 Types of hand and power tools and their functions are identified
1.4 Power source(s), and access to power supply is recognised |
| 2. Select appropriate hand tools | 2.1 Hand tools are selected consistent with the needs of the job
2.2 Hand tools are checked for serviceability and safety and any faults reported to supervisor in accordance with workplace requirements
2.3 Equipment is selected to hold, position or support material for hand tools application |
| 3. Use appropriate hand tools | 3.1 Material is located and held in position for hand tool application
3.2 Hand tools are safely and effectively used according to their intended use
3.3 Hand tools are safely located when not in immediate use |
| 4. Select appropriate power tools | 4.1 Appropriate personal protective equipment is selected, correctly fitted and used
4.2 Power tools are selected consistent with the needs of the job in accordance with conventional work practice
4.3 Power tools are visually checked for tags, serviceability/safety in accordance with OH&S requirements and any faults reported to supervisor in accordance with enterprise procedures
4.4 Equipment is selected to hold, position or support materials for power tool application |
| 5. Use appropriate power tools | 5.1 Material is located and held in position for power tool application
5.2 Power tools are safely and effectively used in application processes
5.3 Power tools are safely switched and located when not in use |

- | | |
|-----------------------|--|
| 6. Clean up work area | 6.1 Work area is cleared in accordance with workplace procedures |
| | 6.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 6.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------------|---|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the operation of hand and power tools in applications relating to the plumbing and services sector. It involves their identification, their correct application and their effective operation • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices |
| Environmental Requirements | <ul style="list-style-type: none"> • Environmental requirements are to cover water quality management and may include waste management and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures |
| Statutory/Regulatory Authorities | <ul style="list-style-type: none"> • Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the local council statutory authority |

- Hand tools
- Plumbing hand tools are to include hacksaw, tube cutters, cutting snips, wood saw, screwdrivers, pipe wrenches, tube flaring tools, copper tube expanders, battery operated and manual drills, tube benders, pipe bender, files and rasps, spirit levels, squares, pop riveters, ladders, silicon gun and pipe dies
 - Plumbing hand tools may include customised tools (to meet manufacturers' specifications)
- Power tools
- Plumbing power tools are to include drop saw, electric drills, power saw, grinder, electric nibbler, electric dies (up to 100mm), roll groove machines, oxy-acetylene, arc and MIG&TIG welding equipment
 - Plumbing power tools may include compressed air and hydraulic tools and equipment
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the safe use of plumbing hand and power tools
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Demonstrate compliance with Occupational Health and Safety regulations applicable to work place operations
- Adopt and carry out correct procedures prior to, during and after use of hand and power tools
- Follow work instructions, operating procedures and inspection practices to use the listed plumbing hand and power tools for their appropriate application ensuring:
 - there is no damage to materials, tools or equipment
 - all work is completed to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- Other units within this Training Package require the use of plumbing hand and power tools. This unit may be assessed progressively in conjunction with the assessment in those units

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - workplace safety requirements and OH&S legislation
 - function and purpose of hand and power tools used in plumbing applications
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the plumbing application
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2007A**Unit Descriptor****Carry out levelling**

This unit specifies the competency required to plan and use levelling equipment to establish, record and apply those levels to plumbing work applications

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit, it has application to all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|----------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Requirements of the job are determined and various levels are obtained 1.2 OH&S requirements associated with levelling activities, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tools and equipment, including personal safety equipment, are selected and checked for serviceability |
| 2. Perform levelling | <ul style="list-style-type: none"> 2.1 Height to be transferred is identified from drawings, plans or instructions 2.2 Levelling equipment is set up in accordance with manufacturers' instructions and/or workplace procedures 2.3 Laser levels are operated in accordance with the relevant Australian Standards 2.4 Levels shot, recorded and marked in accordance with job requirements and workplace procedures within the required tolerance and specifications |
| 3. Clean up | <ul style="list-style-type: none"> 3.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 3.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 3.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope	<ul style="list-style-type: none"> • The unit requires the operation of levelling equipment to read, record, establish and check levels, both horizontal and vertical. It may be used for the placement of pipe/piping, recording levels at specific points along a set out and recording and checking levels in drainage and sanitary excavations and plumbing operations • Levelling equipment includes water level (U Tube), spirit level, boning rods, tripod mounted automatic level, rotating laser level and pipe laser level • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained
Safety (OH&S)	<ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
Environmental Requirements	<ul style="list-style-type: none"> • Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
Quality Assurance	<ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none"> • Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none"> • Tools and equipment are to include hand tools, measuring equipment, spirit levels, string line, rotating laser levels (class 1) and pipe laser levels • Tools and equipment may also include water level (U Tube), boning rods and tripod mounted automatic levels

- | | |
|-----------------|--|
| Communications | <ul style="list-style-type: none"> • Communications are to include, voice and hand signals and may include two-way radio and site specific instructions |
| Fault reporting | <ul style="list-style-type: none"> • Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal |
| Information | <ul style="list-style-type: none"> • Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches • Safe work procedures relating to the establishing, recording and checking levels • Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements • Manufacturers' specifications and instructions • Organisation work specifications and requirements. • Instructions issued by authorised organisational or external personnel • Relevant Australian Standards |

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the establishment, recording and checking of levels
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, using either a pipe or rotary laser and either a boning rod or string line, grade a pipe (or equivalent) over 10 metres on a grade to a tolerance of +/- 5mm ensuring:
 - correct identification, recording and checking of level
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2004A, Read plans and calculate quantities is directly related to this unit
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the relevant statutory and authority requirements related to establishment, recording and checking of levels
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the different types of levelling equipment, their applications and their method of operation
 - the process of establishing, recording and checking levels and alignment
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and levelling equipment appropriate to the levelling task
 - calculators or equivalent
 - appropriate standards
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2008A**Unit Descriptor****Cut and join sheet metal**

This unit specifies the competency required to cut and join sheet metal associated with the fabrication, installation and repair functions of the plumbing sector.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit, it has application in all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|----------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained from supervisor for planned work activity 1.2 OH&S requirements associated with cutting and joining sheet metal, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient cutting and joining of sheet metal |
| 2. Identify joining requirements | <ul style="list-style-type: none"> 2.1 Selected sheet metal is checked for compliance with plans/specifications 2.2 Joining materials are selected to comply with plans/specifications 2.3 Sealants, fixing materials and sheet metal materials are checked for compatibility and are appropriate for the job |
| 3. Cut and join sheet metal | <ul style="list-style-type: none"> 3.1 Sheet metal is marked out in accordance with plans/specifications 3.2 Sheet metal is cut to pattern using appropriate cutting tool 3.3 Laps are measured and shaped for joining using appropriate tools and equipment in accordance with plans/specifications 3.4 Surface is prepared and cleaned of grease and other contaminants 3.5 Sheet metal is joined to comply with plans/specifications, avoiding damage to all surrounding surfaces 3.6 Joins are cleaned and visually inspected ensuring materials are correctly aligned, joined and sealed |

- | | |
|-------------|--|
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------|---|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the cutting and joining of sheet metal in the fabrication of plumbing components • Types of joints include grooved seam, knock up, solder, Pittsburgh lock, resistance (spot) weld, lap, riveted and screwed • Unit requires the selection of the suitable join and sealant for the application/material • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices |
| Environmental Requirements | <ul style="list-style-type: none"> • Environmental requirements may include waste management and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures |

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, measuring equipment, guillotines, soldering equipment, tin snips, lock seam machine and other special joining tools and machines
Materials	<ul style="list-style-type: none">• Materials are to include sheet metal, rivets, silicone, self-drilling and tapping fasteners, silicon and other sealants• Sheet metal includes galvanised sheet steel, zincalume, aluminium sheet, sheet lead and zinc sheeting• Materials may also include copper sheet, stainless steel and colourbond
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to cutting and joining of sheet metal• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for cutting and joining sheet metal
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum:
 - cut and join 8 items of sheet metal in differing materials demonstrating all joining techniques and a variety of sealants; and
 - plan, fabricate and assemble a sheet metal product incorporating at least three joining techniques
- ensuring:
 - correct identification of requirements and details of proposed joins/assemblies
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements, BCPCM2010A Mark out materials, BCPCM3001A Flash penetrations through rooves and walls
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements including relevant statutory regulations, codes and standards
 - characteristics of various metal materials and their compatibility with different joining methods
 - organisational quality procedures and processes within the context of cutting and joining of sheet metal
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - appropriateness of different fastening methods for different applications
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace.
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints.
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context.
- Assessment is to comply with relevant regulatory or Australian Standards requirements.

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

What are the specific resource requirements for this unit?

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the cutting and joining process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2009A**Unit Descriptor****Cut with oxy-LPG/acetylene**

This unit specifies the competency required to use oxy-LPG or oxy-acetylene equipment to carry out basic cutting of mild steel in support of plumbing applications and fabrication to meet job specifications.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit it has application in all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|----------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Job drawings/specifications are obtained from job supervisor and job requirements are adhered to 1.2 OH&S requirements associated with the cutting with oxy-LPG/acetylene, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient cutting with oxy-LPG/acetylene |
| 2. Identify cutting requirements | <ul style="list-style-type: none"> 2.1 Cutting requirements are identified from drawings/specifications 2.2 Safety precautions are undertaken prior to welding in compliance with the job specification and/or standards |
| 3. Perform cuts and inspect | <ul style="list-style-type: none"> 3.1 Oxy-LPG acetylene cutting equipment is set up in accordance with manufacturers' guidelines 3.2 Tip size is selected as appropriate for the materials to be cut 3.3 Cutting pressures are adjusted to manufacturers' recommendations for the materials to be cut 3.4 Materials are prepared for cutting in accordance with the plans/specification 3.5 Materials are marked out and clamped prior to cutting 3.6 Flame is set and cuts are performed in accordance with the specified cutting procedures to effect a clean cut 3.7 Completed cuts are visually inspected for compliance with job specifications, with defects being repaired using appropriate techniques |

- | | |
|-------------|--|
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the marking out and accurate cutting of mild steel up to 8mm thick and mild steel pipe up to 100mm diameter without manual force
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with pressurised and inflammable gases, trip hazards, surrounding structure and facilities, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover waste management and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include measuring equipment, oxy welding equipment, hand and power tools, grinders and clamps
Materials	<ul style="list-style-type: none">• Materials are to include mild steel sheet (up to 8mm thick), mild steel pipe (up to 100mm diameter) and oxygen, LPG and acetylene gases
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to cutting with oxy-LPG/acetylene• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to cutting with oxy-LPG/acetylene
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, mark out and cut the following items of plumbing material:
 - using an oxy acetylene profile cutter, cut a 150mm x 150mm sheet of mild steel sheet (up to 8mm thick) into three equal pieces;
 - using a hand held oxy acetylene torch, cut an 8mm mild steel disc to fit a 100mm diameter mild steel pipe; and
 - using a hand held oxy acetylene torch, cut holes to fit three 50mm branch pipes into a length of 100mm diameter mild steel pipe
- ensuring:
 - a clean cut and fit of the materials
 - correct identification of requirements and details of proposed cuts
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - application of organisational quality procedures and processes within the context of oxy welding
 - dangers of high pressure settings with oxy-acetylene equipment
 - properties of materials and the effect of heat on the properties of metal
 - potential fumes and health and safety risks from high temperatures on fluxes and materials
 - operating principles of oxy acetylene equipment
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the cutting process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2010A**Unit Descriptor****Mark out materials**

This unit specifies the competency required to mark out plumbing materials prior to fabricating piping, steel sections, ducting (sheet materials), roofing and cladding.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit it has application in all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained from job supervisor and job requirements are determined 1.2 OH&S requirements associated with the marking out of materials, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient marking out of materials |
| 2. Determine job requirements | <ul style="list-style-type: none"> 2.1 Selected materials are checked for compliance with plans/specifications 2.2 Quantity and type of material required is calculated from plans/specifications 2.3 Job requirements are determined from plans/specifications |
| 3. Mark out job | <ul style="list-style-type: none"> 3.1 Dimensions for fabrication and assembly are determined and transferred 3.2 Relevant standards, codes and symbols are interpreted 3.3 Selected development method is applied as appropriate and is applied in accordance with workplace procedures 3.4 Calculations are performed to specified job requirements 3.5 Material is marked out in conformance with specified measurements 3.6 Dimensions are checked for accuracy and compliance to plans/specifications |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------------|---|
| Unit scope | <ul style="list-style-type: none">• The unit requires the marking out of plumbing materials in accordance with plans and specifications for the fabrication of plumbing components and applications• Development methods may be parallel line development, triangulation and radial line development• Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with trip hazards, underground services, surrounding structure and facilities, dangerous materials, working in proximity to others, worksite visitors, the public |
| Environmental Requirements | <ul style="list-style-type: none">• Environmental requirements are to cover waste management and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures |
| Statutory/Regulatory Authorities | <ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority |
| Tools and equipment | <ul style="list-style-type: none">• Tools and equipment are to include rulers, tape measures, squares, adjustable bevels, dividers, protractors and scribes |

- Materials
- Materials are to include piping (metal and non-metallic), steel sections, sheet metal, insulating materials (for roofing, piping and ducting), roof sheeting (metal, fibreglass, plastic), cladding and timber
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the marking out of materials
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to marking out of materials
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and specifications and using the three development methods, mark out and measure the following items of plumbing material:
 - roofing sheets
 - copper tubing
 - PVC and CPVC pipe
 - steel pressure pipe
 - a 200mm square and a 200mm diameter round penetration in a roofing sheet
 - sheet metal for a 200mm square to 200mm round ducting transition
 - develop a 50 to 100mm cone of 100mm height
 - develop a piece of ductwork using parallel line method
- ensuring:
 - correct identification of requirements and details of proposed markings
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - workplace operating procedures including required standards for marking out
 - identification and correct use of measuring and marking out equipment
 - operation requirements of equipment used for measuring and calculating
 - impact of accurate marking out on fabrication process, work time and finished work quality
 - sources of information on characteristics and applications of the materials being marked out
 - processes of marking out plumbing materials
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the marking out process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2011A**Unit Descriptor****Apply first aid in the workplace**

This unit specifies the competency required to provide basic first aid in the workplace.

Work associated with this unit is undertaken within the plumbing and services sector. As a Common unit, it has application to all streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Identify first aid needs | <ul style="list-style-type: none"> 1.1 The safety of injured person, bystanders and self in an accident situation is assessed in accordance with first aid procedures 1.2 OH&S requirements associated with applying first aid in the workplace, and the workplace environment are adhered to 1.3 Quality assurance requirements of company operations recognised and adhered to 1.4 The condition of the injured or ill person is assessed in accordance with first aid procedures |
| 2. Provide first aid within regulatory requirements | <ul style="list-style-type: none"> 2.1 Hazards to the patient are identified and appropriate action taken to prevent further injury 2.2 Symptoms and appropriate first aid treatment are identified 2.3 Common injuries and minor disorders are managed until medical assistance is available in accordance with first aid procedures 2.4 Emergency is dealt with in accordance with workplace procedures 2.5 One person and two person Cardio Pulmonary Resuscitation (CPR) is performed following safety procedures 2.6 Techniques for moving sick/injured persons are used 2.7 Referrals to appropriate internal personnel or external medical services are made 2.8 Cultural differences in the workplace are considered in the approach taken to provide first aid |
| 3. Follow workplace procedures for first aid | <ul style="list-style-type: none"> 3.1 Accessing support from other first aid personnel or external providers and for reporting incidents and emergency situations is undertaken in accordance with workplace procedures 3.2 Action is taken to complete reports within regulatory requirements and in accordance with workplace procedures 3.3 Records of affected personnel, including names, nature of injury or illness and follow up treatment are made and filed by the workplace to maintain appropriate confidentiality |

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| 4. Clean up | 4.1 First aid equipment is recovered (if practical), cleaned, inspected/tested, refurbished, replaced and stored as appropriate |
| | 4.2 Medical waste is disposed of in accordance with workplace requirements |
| | 4.3 Equipment faults are rectified and reported in accordance with workplace procedures |
| | 4.4 Documentation is completed as required by legislative, regulatory and workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------------|--|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the provision of appropriate first aid for a workplace injury, illness or accident • Workplace injuries, illnesses or accidents are to include shock, soft tissue injuries, fractures, external bleeding, open wounds, electrocution, EAR and CPR, asphyxiation/breathing difficulties, burns/scalds, eye injuries, spinal injury, nausea, venomous bites, drowning and collapsed or unconscious patient • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices |
| Quality Assurance | <ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures |
| Statutory/Regulatory Authorities | <ul style="list-style-type: none"> • Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority |

Communications

- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Fault reporting

- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the provision of first aid
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to the provision of first aid
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, demonstrate the correct first aid treatment for the following workplace injuries/illnesses:
 - shock
 - soft tissue injuries, external bleeding and open wounds
 - fractures and spinal injury
 - electrocution
 - asphyxiation and breathing difficulties
 - burns and scalds
 - eye injuries
 - nausea
 - venomous bites
 - drowning
 - collapsed or unconscious patient (including EAR and CPR)
- ensuring:
 - correct identification of symptoms and treatment
 - correct application of treatment and use of appropriate equipment
 - maintenance of patient's comfort and wellbeing
 - compliance with regulations, standards and organisational procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- There are no other units which could be assessed with this unit

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - relevant agreements, Codes of Practice and other legislative requirements in relation to first aid
 - work flow in the area in which first aid is being administered
 - reporting responsibilities and requirements
 - priorities for life support (danger, response, airway, breathing, ventilation and circulation (DRABC) model)
 - principles of initial patient management
 - EAR and CPR
 - symptoms of and treatment for workplace injuries and illnesses
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the provision of first aid
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2012A**Unit Descriptor****Weld using oxy-acetylene equipment**

This unit specifies the competency required to weld metals associated with the fabrication, installation and repair of plumbing components and systems, using oxy-acetylene equipment.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit it may be applied in all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained from job supervisor 1.2 OH&S requirements associated with oxy- acetylene welding tasks, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Personal protective equipment applicable to oxy-acetylene welding is selected and checked for serviceability 1.6 Work area is prepared to support the efficient welding with oxy-acetylene equipment |
| 2. Prepare materials and welding equipment | <ul style="list-style-type: none"> 2.1 Weld requirements are identified from specifications or given information 2.2 Materials to be welded are identified and selected in accordance with workplace procedures 2.3 Material is cleaned and prepared using appropriate tools and techniques in accordance with workplace procedures 2.4 Welding equipment including cylinders and regulators are assembled and set up in accordance with workplace procedures 2.5 Welding tips, settings and consumables are selected to meet job requirements and welding procedures in accordance with workplace procedures |
| 3. Perform welding | <ul style="list-style-type: none"> 3.1 Materials are welded to job requirements using safe welding practices 3.2 Appropriate action is taken to report or remedy defects in materials or welding equipment, including adjustments to settings/welding technique 3.3 Welds are cleaned in accordance with workplace requirements |

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| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

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|----------------------------|--|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the welding of mild steel plate and pipe by oxy-acetylene welding • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with pressurised and inflammable gases, trip hazards, surrounding structure and facilities, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces |
| Environmental Requirements | <ul style="list-style-type: none"> • Environmental requirements may include waste management and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures |

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, measuring equipment, jigs, clamps and oxy-acetylene welding equipment
Materials	<ul style="list-style-type: none">• Materials are to include low carbon mild steel (plate and pipe) and oxygen and acetylene
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to oxy-acetylene welding• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for oxy-acetylene welding
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, weld:
 - a flat butt weld in 3mm mild steel plate, 150mm long;
 - a vertical butt weld in 3mm mild steel plate, 150mm long; and
 - a run of beads around a 40mm mild steel pipe located in a horizontal position and rotated during welding
- ensuring:
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2010A Mark out materials
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements including relevant statutory regulations, codes and standards
 - organisational quality procedures and processes within the context of oxy-acetylene welding
 - dangers associated with oxy-acetylene welding in the fabrication and installation of plumbing systems
 - the effect of heat on the properties and shape of welded metals
 - operating principles of oxy-acetylene welding equipment
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the oxy-acetylene welding process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM2013A**Unit Descriptor****Weld using arc welding equipment**

This unit specifies the competency required to weld metals associated with the fabrication and installation of plumbing components, using arc welding equipment.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. While it has particular application to mechanical services, it may be applied in all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

BCPCM3001A**Unit Descriptor****Flash penetrations through roofs and walls**

This unit specifies the competency required to set out, cut and flash a roof or wall penetration.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit it has application to all streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-----------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained from job supervisor and site inspection 1.2 OH&S requirements associated with the flashing of penetrations through roofs and walls, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient flashing of penetrations through roofs and walls |
| 2. Identify flashing requirements | <ul style="list-style-type: none"> 2.1 Roof and wall penetrations are identified from drawings and specifications 2.2 Penetrations are assessed as required to allow for the location of existing and future services 2.3 Material requirements are calculated from the job specification, in compliance with standards 2.4 Materials are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with docket/order form and for acceptable condition |
| 3. Flash penetrations | <ul style="list-style-type: none"> 3.1 Any fabrication is undertaken in accordance with plans/specification 3.2 Penetration is positioned and cut in compliance with plans/specification and site measurements 3.3 Structural supports are installed in accordance with plans/specifications 3.4 Opening is prepared in compliance with specifications, manufacturers' and regulations 3.5 Propriety or purpose made flashing is fitted in accordance with standards, plans/specifications and regulations 3.6 Sealant is applied in compliance with specifications and manufacturers' specifications 3.7 Penetration is performance tested to ensure correct fit of the completed installation and remedied as required |

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|-------------|--|
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------|---|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the setting out, cutting and flashing of roof and wall penetrations • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of drilling and cutting tools, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public |
| Environmental Requirements | <ul style="list-style-type: none"> • Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures |

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include ladders, hand and power tools, measuring equipment and fall protection equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevating work platforms, restricted height scaffolds, forklifts, cranes, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials for flashing roof penetrations are to include rainwater goods, thermal insulation of reflective foil, laminate, fibreglass, polyethylene, straw or wool, metal roof covers of concealed or pierce fixed types, plastic building sheets for walls and roofs, metal self drilling and tapping screws, rivets and sealants (silicon and solder)
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the flashing of roof penetrations• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to the flashing of penetrations through roofs and walls
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the drawings and specifications, set out, cut and flash openings of at least 300mm diameter and 300mm square through a roof and wall for the installation of ventilation/flue pipe
- ensuring:
 - correct identification of requirements and details of the proposed penetration
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and fall protection codes and requirements
 - the relevant statutory and authority requirements related to the flashing of roof and wall penetrations
 - characteristics of various roofing and wall cladding materials and their compatibility with different joining methods
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - corrosion prevention treatment requirements of cut sheets
 - the processes of flashing roof and wall penetrations
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the flashing of roof and wall penetrations
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM3002A**Weld polyethylene (PE) pipe using fusion method****Unit Descriptor**

This unit specifies the competency required to fusion weld polyethylene pipes.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. As a Common unit it has application in all plumbing streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|----------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Job drawings/specifications are obtained from job supervisor and job requirements 1.2 OH&S requirements associated with the fusion welding of PE pipes, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for the fusion welding of PE pipes, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient the fusion welding of PE pipes |
| 2. Identify welding requirements | <ul style="list-style-type: none"> 2.1 Weld requirements are identified from specification or given information 2.2 Welding equipment is assembled and checked for correct operation in accordance with manufacturers' instructions |
| 3. Weld and pressure test pipes | <ul style="list-style-type: none"> 3.1 Joints are prepared using tools and techniques in accordance with standards and job specifications 3.2 Test welds are undertaken and verified in accordance with job specifications 3.3 Fusion welds are carried out in accordance with standards and plans/specifications 3.4 Fusion welds are visually inspected for conformance with standards 3.5 Pipe joints are pressure tested and inspected in accordance with standards and job specifications 3.6 Test details and monitored results are checked for accuracy and documented in accordance with requirements of regulatory authority and plans/specifications |

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|-------------|--|
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------|---|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the heat fusion welding and testing of joints in PE pipe up to 100mm in diameter • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of PE Welding equipment, trip hazards, surrounding structure and facilities, dangerous materials, working in proximity to others, worksite visitors, the public and may include working in confined spaces |
| Environmental Requirements | <ul style="list-style-type: none"> • Environmental requirements are to cover waste management and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures |

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include measuring equipment, PE welding equipment and hand and power tools
Materials	<ul style="list-style-type: none">• Materials are to include polyethylene pipe• Materials may include emerging technologies of polypropylene and polybutylene
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the fusion welding of PE pipe• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to perform fusion welding of PE pipe
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and specifications, butt weld four joints in 100mm PE pipe using appropriate fusion welding processes. All welds are to be in horizontal and vertical and tested to manufacturers' recommendations
- ensuring:
 - correct identification of requirements and details of proposed cuts
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - application of organisational quality procedures and processes within the context of fusion welding of PE
 - dangers associated with fusion welding of PE
 - the effect of heat on the properties of PE pipe
 - operating principles of fusion welding equipment
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the welding process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM3003A**Fabricate and install non-ferrous pressure piping****Unit Descriptor**

This unit specifies the competency required to determine installation requirements and to fabricate, install and test non-ferrous pressure pipe. It applies to pipe systems with operating pressures not exceeding 21 kPa and 200 degrees C.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to both the mechanical services and fire streams.

Employability Skills

This unit has employability skills.

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the fabrication and installation of non-ferrous pressure piping, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient fabrication and installation of non-ferrous pressure piping |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Pipework configuration is identified from authorities' requirements and plans/specifications 2.2 Position of pipes and equipment is determined from plans/specifications, site requirements and so as not to cause damage or interference to surrounding structures or fittings 2.3 Measurements for fabrication or assembly are determined and transferred 2.4 Quantity and type of materials required are calculated from plans/specifications in accordance with regulatory authorities and workplace requirements 2.5 Materials are identified and ordered/collected in accordance with workplace procedures 2.6 Materials are checked for compliance with docket/order form and for acceptable condition |

- | | |
|--|--|
| 3. Fabricate, install and test pipe system | 3.1 System is set out in compliance with design drawings or instructions
3.2 Fixings and supports are installed to manufacturers' requirements, job plans/specifications and workplace requirements
3.3 Pipe system is fabricated and jointed in accordance with job plans/specification and manufacturers' requirements for mechanical type joints
3.4 Pipe system is installed in specified location without damage or distortion to pipework or surrounding environment or other services
3.5 Pipe system is tested and documented to comply with job specification, authorities' requirements, standards, codes of practice and workplace requirements |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- This unit requires the joining of non-ferrous pipe materials by mechanical and manual means, the prefabrication of components and the fixing and testing of the system for soundness
- Pipes may convey condensate, water and other liquids, fuel oil, medical gas and compressed air
- The unit also applies to low pressure applications (including refrigerant gases) and food processing applications
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of fabrication tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, traffic control, working at heights, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, silver brazing equipment, ladders, testing equipment, heating equipment and mechanical bending equipment• Tools and equipment may include elevated work platforms and lifting/load shifting equipment including scaffolding, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include copper and alloy tubes, stainless steel, aluminium tubes and polyethylene pipes
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Fault reporting

- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the determination, fabrication installation and testing of non-ferrous pressure pipe systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, fabrication, installation and testing of non-ferrous pressure pipe systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum fabricate, install and test a 25mm copper line from a header to a unit heater. The line is to be at least 3 metres long with two changes in direction, brazed and mechanical joints and with a branch to be fabricated for testing purposes
- ensuring:
 - diameters are correct and system is manufactured to required dimensions and branches, bends and flanges are square
 - correct identification of design and details of proposed non-ferrous pressure pipe system
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPMS3004A Install medical gas pipeline systems
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the relevant statutory authority requirements and standards related to the fabrication, installation and testing of non-ferrous pressure pipe systems
 - the SI system of measurements
 - properties/characteristics of conveyed materials including pressure, flow rates and temperature implications
 - the sources of information and the processes for the calculation of material requirements
 - the fabrication, installation and testing process for non-ferrous pressure pipe systems
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the fabrication, installation and testing processes
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR2001A**Unit Descriptor****Locate and clear blockages**

This unit specifies the competency required to locate and clear blockages to sanitary plumbing, water and sewerage pipe installations and drainage/roof installations, with the use of mechanically operated drain clearing machines and attachments, and manually operated drain cleaning tools and equipment.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the sanitary and drainage streams.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained from job supervisor 1.2 OH&S requirements associated with locating and clearing blockages and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient locating and clearing of the blockage |
| 2. Locate and clear blockage | <ul style="list-style-type: none"> 2.1 Section containing blockage is located and isolated 2.2 Blockage clearing equipment is selected in accordance with the job 2.3 Where necessary, mechanical drain clearing equipment is assembled and used in accordance with manufacturers' instructions 2.4 Blockage is cleared without causing damage to pipework and fittings 2.5 Pipework is tested to confirm blockage is cleared from pipe system 2.6 Pipework is repaired/resealed to permit normal use 2.7 Authorities are advised of work completion |
| 3. Clean up | <ul style="list-style-type: none"> 3.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation 3.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 3.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the location and clearance of blockages, such as tree roots and other refuse, from sanitary plumbing, water and sewerage pipe installations and drainage/roof installations, with the use of mechanically operated drain clearing machines and attachments, and manually operated drain cleaning tools and equipment
- Mechanically operated drain clearing machines and attachments is to include the use of a sanitary snake
- Manually operated drain cleaning tools and equipment are to include plungers and rods
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with blockage clearance tools and equipment, trip hazards, services, surrounding structure and facilities, dangerous materials, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, measuring equipment, heating equipment, hacksaw, plungers, rods and mechanically operated drain clearing equipment (such as sanisnake)• Tools and equipment may include pipe locating equipment and pipe cameras
Materials	<ul style="list-style-type: none">• Materials may include UPVC, vitreous clay, concrete and cast iron pipework
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the location and clearance of blockages• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to locate and clear blockages
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- At a minimum, locate and clear blockages from drainage pipework using both manual tools and mechanical equipment ensuring:
 - correct identification of location and clearance process
 - correct selection and use of appropriate tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements
 - characteristics of different pipes, fittings and fixture supports, including fixing and joining techniques
 - properties of water, including pressure and flow rates
 - the application of mechanical and hydraulic principles for clearing blockages
 - effective isolation processes and procedures
 - correct materials handling processes
 - the processes of clearing blockages
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the clearance of blockages
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR2002A**Unit Descriptor****Install domestic treatment plants**

This unit specifies the competency required to install pre-cast concrete and/or glass reinforced plastic domestic treatment plants.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the drainage stream.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/drawings/specifications are obtained 1.2 OH&S requirements associated with installing domestic treatment plants and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area and is prepared to support the efficient installation of domestic treatment plants |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Position of domestic treatment plant is determined in accordance with plans/specifications and site requirements, and does not cause damage or interference to surrounding structures or services 2.2 The design and capacity of the plant is confirmed to comply with standards and the requirements of the regulatory authorities, the installation and the site 2.3 Quantity and type of materials required are calculated from plans/drawings/specifications 2.4 Materials are ordered and checked for compliance with docket/order form and for acceptable condition |
| 3. Install domestic treatment plant | <ul style="list-style-type: none"> 3.1 Size and location of excavation is marked out to comply with drawings/specifications, installation and site requirements 3.2 Site is excavated and preparation for installation is undertaken in accordance with installation requirements for the plant, plans, permits and site requirements, ensuring minimal damage to surrounding structures or environment 3.3 Domestic treatment plant is installed and secured in specified position to prevent movement or damage to plant in compliance with requirements of the responsible authority for the installation and inspection of domestic treatment plants 3.4 Plant is filled with water to prevent flotation 3.5 Excavation is backfilled to specifications |

4. Clean up
- 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of either a pre-cast concrete or a glass reinforced plastic (GRP) domestic treatment plant, including the excavation of the plant site
- Domestic treatment plants include septic tanks
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with excavation equipment and plant, uneven/unstable terrain, pits, poles, trip hazards, dirt mounds, underground services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, measuring equipment, ladders, manual excavation equipment, excavation plant and equipment, lifting/load shifting equipment
- Materials
- Materials may include a pre-cast concrete, or a glass reinforced plastic (GRP) domestic treatment plant
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of domestic treatment plants
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install a domestic treatment plant
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- At a minimum, mark out, excavate a site for and install either a pre-cast concrete or a glass reinforced plastic (GRP) domestic treatment plant ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities and BCPCM2007A Carry out levelling
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- Prior to being assessed for competency, it is important for the individual to have a knowledge of:
 - the principles and techniques of effluent treatment and/or disposal
 - excavation processes and procedures
 - levelling and alignment processes
 - load lifting/handling procedures
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and jointing techniques
 - regulations and requirements of regulatory authorities regarding effluent disposal and the installation of domestic treatment plants
 - the standards applicable to the installation
 - the SI system of measurements
 - the sources of information and the processes for the calculation of material requirements
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation processes
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR2003A**Unit Descriptor****Maintain effluent disinfection systems**

This unit specifies the competency required to maintain disinfection systems for domestic treatment plants.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the drainage stream.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with maintaining effluent disinfection systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient maintenance of the effluent disinfection system |
| 2. Identify system requirements | <ul style="list-style-type: none"> 2.1 Request for maintenance approval is submitted to regulatory authority in accordance with their requirements 2.2 Site is inspected to confirm compliance with standards and authorities' requirements for effluent drainage systems 2.3 Detention capacity, effluent flow and effluent disinfection flow in the contact chamber is checked for compliance with regulatory authorities requirement for effluent disinfection 2.4 Quantity and type of materials required are calculated from design drawings/specifications in compliance with standards, local authorities' and manufacturers' requirements, and job plans/specifications 2.5 Materials are identified and ordered/ collected in accordance with workplace procedures 2.6 Materials are checked for compliance with docket/order form and for acceptable condition |

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|--|--|
| 3. Maintain effluent disinfection system | <p>3.1 System is maintained in accordance with standards and authorities requirements to ensure effluent is thoroughly mixed, discharge meets treatment requirements and access is maintained</p> <p>3.2 Effluent is tested and dosage rate is adjusted to achieve the levels and stability required by standards and regulatory authorities</p> <p>3.3 Inspection chamber is returned to normal operation</p> <p>3.4 Relevant authorities are advised of the completion of the work and of any continuing inspection and maintenance requirements</p> |
| 4. Clean up | <p>4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation</p> <p>4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures</p> <p>4.3 Documentation, including advice of completion and subsequent inspection/maintenance requirements of the system, is completed in accordance with regulatory authorities and workplace requirements</p> |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

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|----------------------------|---|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the maintenance of an effluent disinfection system for the treatment of secondary effluent in a domestic treatment plant or installations identified by regulatory authorities as requiring an effluent disinfection system • Site location for work application may be domestic and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices |
| Environmental Requirements | <ul style="list-style-type: none"> • Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection |

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, measuring equipment, levelling equipment, lifting equipment and testing equipment
- Materials
- Materials are to include fibreglass effluent disinfection systems
 - Materials may also include concrete effluent disinfection systems and appropriate materials from manufacturers' catalogues
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the maintenance of effluent disinfection systems
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to maintain effluent disinfection systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given plans/specifications, maintain an effluent disinfection system for a domestic treatment plant ensuring:
 - correct identification of maintenance requirement
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003 Carry out OH&S requirements
- BCPDR2004A Read plans and calculate plumbing quantities, BCPDR2002A Install domestic treatment plants
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - principles of drainage design
 - the principles of effluent disinfection and the operation of effluent disinfection systems, including their adjustment to meet necessary output measures
 - the relevant statutory and authority requirements related to the installation of effluent disinfection systems
 - the standards applicable to the installation
 - inspection and assessment procedures for effluent disinfection systems
 - the SI system of measurements
 - the sources of information and the processes for the calculation of material requirements
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation processes
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR2004A**Install stormwater and sub-soil drainage systems****Unit Descriptor**

This unit specifies the competency required to install stormwater and sub-soil drainage systems up to the point(s) of connection.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the drainage stream.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with installing stormwater and sub-soil drainage systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of the stormwater and sub-soil drainage system |
| 2. Determine installation requirements | <ul style="list-style-type: none"> 2.1 Position of installation is determined in accordance with plans/specifications and site requirements 2.2 Quantity and type of materials required are calculated from design drawings/specifications and comply with standards, local authorities' requirements and job plans/specifications 2.3 Materials are identified and ordered/collected in accordance with workplace procedures 2.4 Materials are checked for compliance with docket/order form and for acceptable condition |

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| 3. Install stormwater and sub-soil drainage | 3.1 Size and location of excavation is marked out to comply with drawings/specifications, installation and site requirements |
| | 3.2 Site is excavated in accordance with drawings/specifications, site requirements and standards, ensuring minimum damage to surrounding structures or environment |
| | 3.3 Pipework and stormwater/subsoil drainage system is installed in accordance with drawings/specifications, site requirements or job instructions and standards, with consideration to existing pipework and other services |
| | 3.4 Installation is tested to comply with standards and relevant authorities' requirements |
| | 3.5 Inspection openings and covers are fitted in accordance with standards and job specifications |
| | 3.6 Excavation is back-filled in accordance with standards and job specifications |
| 4. Clean up | 4.1 Work area is cleared in accordance with workplace procedures, including reinstatement of ground level |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of a drainage system to take stormwater from a downpipe or surface collection pit, and ground water to a legal point of discharge
- A legal point of discharge may be a stormwater drain or easement, an on-site storage tank or disposal pit, a gutter, or a sub-soil distribution system
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with excavation equipment and plant, uneven/unstable terrain, pits, poles, trip hazards, dirt mounds, underground services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public and may include working in confined spaces
- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, hacksaws, dropsaws, grinders, compression cutters, files, hand excavating tools, testing equipment, levelling equipment and measuring equipment
 - Tools and equipment may include mechanical excavating equipment and trench shoring equipment
- Materials
- Materials may include UPVC, reinforced concrete, cast iron, and vitreous clay pipes
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets and diagrams or sketches
- Safe work procedures relating to the installation of stormwater and sub-soil drainage systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to set out, install, and test stormwater and sub-soil drainage systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, install a stormwater and sub-soil drainage system, including:
 - a stormwater drain which is to connect from a downpipe to a legal point of discharge
 - a subsoil drain which is to connect to a disposal/collection pit
 - both drains are to be at least 6 metres in length
- ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities and BCPCM2007A Carry out levelling
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and jointing techniques
 - excavation processes and procedures
 - levelling and alignment processes
 - the relevant statutory and authority requirements related to the installation of stormwater and sub-soil drainage systems
 - the standards applicable to the installation
 - the SI system of measurements
 - the sources of information and the processes for the calculation of material requirements
 - water and air test systems and procedures
 - the process of installing stormwater and sub-soil drainage systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR2005A**Unit Descriptor****Drain worksite**

This unit specifies the competency required to remove water from a work site, either temporarily or permanently, through stormwater and sub-soil drainage systems. It includes the installation of submersible and non-submersible type pumps, suitable for pumping unscreened roof water, sub-soil water and surface water.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the drainage stream.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with draining a work site, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient draining of the worksite |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Proposed location of stormwater connection points, sumps, wells and pumps are determined from drawings and specifications 2.2 Quantity and type of materials and equipment required are calculated from design drawings/specifications and comply with standards and local authorities' requirements 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with docket/order form and for acceptable condition |
| 3. Prepare and excavate site | <ul style="list-style-type: none"> 3.1 Excavation site is set out to comply with drawings/specifications, installation and consideration for the location of existing services 3.2 Site is excavated in accordance with drawings/specifications, site requirements and standards, ensuring minimum damage to surrounding structures and environment 3.3 Sedimentation controls are constructed and positioned in accordance with specifications |

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|---|---|
| 4. Install permanent/
temporary drainage | 4.1 Sumps and wells are constructed at specified levels and locations
4.2 Suction inlet point is prepared in accordance with drawings/specifications and manufacturers' requirements
4.3 Appropriate pumps are installed, in specified locations
4.4 Pipework and hoses are connected/fitted to pumps in accordance with drawings/specifications, manufacturers' requirements and site drainage specifications |
| 5. Operate drainage system | 5.1 Pumps are activated to lower water level by specifications
5.2 Pump control system is adjusted to meet specification requirements
5.3 Pumps are maintained in accordance with manufacturers' specifications and workplace requirements |
| 6. Clean up | 6.1 Ground area is restored and work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
6.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
6.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the removal of water from a worksite, which may be a trench, pit or well, using a pump
- Pumps may be submersible, vacuum, surface and sludge pumps
- The installation of the pump(s) may be for temporary or permanent drainage
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with site drainage tools, plant and equipment, uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, underground services, surrounding structure and facilities, dangerous materials, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public
- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include pumps, manual and mechanical excavation equipment, hand and power tools, trench shoring equipment, measuring and levelling equipment
- Materials
- Materials may include polypropylene, flexible and PVC pipes, fittings and jointing
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the drainage of work sites
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to drain a work site
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- At a minimum, drain the water from a pit, trench or hole containing water to a depth of at least half a metre, using a submersible pump. The site must remain effectively drained for the duration of the job ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2007A Carry out levelling, BCPDR2004A Install stormwater and sub-soil drainage systems
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - principles of drainage and installation processes
 - properties of water including pressure and flow rates
 - characteristics of stormwater installations including capacity and installation procedures
 - the positioning/construction of sedimentation and scouring controls
 - excavation processes and procedures
 - levelling and alignment processes
 - the relevant statutory and authority requirements related to the draining of worksites
 - the standards applicable to the work
 - the SI system of measurements
 - the sources of information and the processes for the calculation of material requirements
 - workplace and equipment safety requirements
 - the process of draining a site
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the draining process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR2006A**Install pre-fabricated inspection openings and enclosures****Unit Descriptor**

This unit specifies the competency required to install pre-fabricated inspection openings and enclosures.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the drainage stream.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with installing pre-fabricated inspection openings and enclosures, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area and is prepared to support the efficient installation of pre-fabricated inspection openings and enclosures |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Location of the installation is determined, in accordance with plans/specifications and site requirements 2.2 Quantity and type of materials required are calculated from design drawings/specifications and comply with local authorities' requirements 2.3 Quantity and type of materials required are calculated from plans/drawings/specifications 2.4 Materials are ordered and checked for compliance with docket/order form and for acceptable condition |
| 3. Install pre-fabricated inspection opening and enclosure | <ul style="list-style-type: none"> 3.1 Site and location of the excavation is marked in accordance with plans/specifications ensuring existing services are not disturbed 3.2 Site is excavated and prepared for installation in accordance with plans/specifications and regulatory authorities' requirements with minimal damage to surrounding structures or the environment 3.3 Pre-fabricated inspection opening/enclosure is installed in accordance with plans/specifications and the regulatory authorities' requirements |

4. Clean up
- 4.1 Excavation is backfilled to specifications and work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace and regulatory authorities' requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of a pre-fabricated inspection opening/enclosure in a drainage system, including the connection of the inlet and outlet pipes
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools, plant and equipment, trip hazards, dirt mounds, underground services, surrounding structure and facilities, dangerous materials, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, measuring equipment, levelling equipment, hand excavation tools and water testing equipment
 - Tools and equipment including lifting/load shifting equipment may also include mechanical excavation equipment, trench shoring equipment, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include concrete, UPVC and polyethylene pre-fabricated inspection openings and enclosures
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of a pre-fabricated inspection openings and enclosures
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to set out, assemble, install, and test pre-fabricated inspection openings and enclosures
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum install a pre-fabricated inspection openings and enclosure (either concrete, UPVC or polyethylene), including the connection of the inlet and outlet pipes ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities and BCPCM2007A Carry out levelling
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the installation of pre-fabricated inspection openings and enclosures
 - excavation processes and procedures
 - levelling and alignment processes
 - characteristics and the application of pipe fittings and fixture supports, including fixing and jointing techniques
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing pre-fabricated inspection openings and enclosures
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR3001A**Plan the layout for a residential sanitary drainage system****Unit Descriptor**

This unit specifies the competency required to plan the layout for sanitary drainage systems for residential buildings

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards and local statutory codes. It has application to the sanitary stream.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Information and plans/specifications are obtained 1.2 OH&S requirements associated with planning the layout for sanitary drainage systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient planning of sanitary drainage systems layouts |
| 2. Plan the system layout | <ul style="list-style-type: none"> 2.1 Site inspection is undertaken to determine job requirements 2.2 Quantity, location and type of fixtures is determined from design drawings, plans and elevations 2.3 Layout of the sanitary drainage system is planned in accordance with the plans and standards 2.4 Materials and fixtures required are determined from the proposed design 2.5 Plans are recorded in accordance with workplace requirements |
| 3. Clean up | <ul style="list-style-type: none"> 3.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 3.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 3.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope	<ul style="list-style-type: none">• The unit requires the interpretation of a design to plan the layout of a sanitary drainage system for residential buildings connecting to the authorities sewer, or on-site disposal system• Fixtures are to include all approved residential fixtures in AS 3500• Work may be conducted in an office-type environment, in the workplace or realistically simulated workplace.• The site location for the application of the design will be domestic, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained
Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with trip hazards, services, surrounding structure and facilities, dangerous materials, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority

- | | |
|----------------|---|
| Materials | <ul style="list-style-type: none"> • Materials are to include drawing instruments, measuring equipment and plans including building plan, sanitary plan and drainage plan |
| Communications | <ul style="list-style-type: none"> • Communications are to include, voice and hand signals and may include two-way radio and site specific instructions |
| Information | <ul style="list-style-type: none"> • Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches and graphics • Safe work procedures relating to the design of sanitary drainage systems • Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements • Manufacturers' specifications and instructions • Organisation work specifications and requirements • Instructions issued by authorised organisational or external personnel • Relevant Australian Standards |

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to planning the layout for a sanitary drainage system for a residential type building
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, plan the layout for a sanitary drainage system for a two-storey residence requiring the pick-up from five points, including a stack from the second floor, to a legal point of discharge, or on-site disposal system ensuring:
 - correct identification of details of the proposed layout
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to sanitary drainage systems
 - design concepts and performance measures for sanitary drainage installations
 - principles of drainage design
 - the properties/characteristics of sewage including temperature implications and discharges
 - characteristics and the application of different pipe systems, including their fittings and fixture supports and fixing and joining techniques
 - application of various sanitary fixtures and appliances
 - the process of planning the layout for sanitary drainage systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the planning process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR3002A

Install below ground sanitary drainage systems

Unit Descriptor

This unit specifies the competency required to install below ground sanitary drainage systems for sewage and waste discharge from sanitary fixtures to a sewage authority's point.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the drainage stream.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---------------------------------------|---|
| 1. Prepare for work | 1.1 Plans/specifications are obtained |
| | 1.2 OH&S requirements associated with installing sanitary drainage systems, and the workplace environment, are adhered to throughout the work |
| | 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements |
| | 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work |
| | 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability |
| | 1.6 Work area is prepared to support the efficient installation of sanitary drainage systems |
| 2. Identify installation requirements | 2.1 Quantity and type of materials required are calculated from existing installations, plans/specifications and site inspections |
| | 2.2 Allowances for fabrication and assembly are correctly determined and transferred |
| | 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures |
| | 2.4 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

3. Install sanitary drainage systems
 - 3.1 Pipework is set out in accordance with drawings/specifications, site requirements or job instructions, with consideration to the location of existing services
 - 3.2 Pipework is installed in accordance with plans/specifications, standards and workplace procedures and without damage to surrounding environment, existing pipework or other services
 - 3.3 Connections for alterations, additions or repair to existing systems are made in accordance with standards and manufacturers' specifications
 - 3.4 Installation is checked for compliance with design drawings, specifications, site requirements, standards and authorities' requirements
 - 3.5 Installation is tested to comply with standards and relevant authorities' requirements
4. Clean up
 - 4.1 Installation is backfilled in accordance with standards and work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of below ground sanitary drains, transferring sewage from sanitary fixtures to a sewage authority's point, and to make alterations to existing sanitary drainage
- Sewage authority points may also include jump-ups and boundary traps
- Testing is to include air and water testing and may include vacuum testing
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with shoring requirements, uneven/unstable terrain, trees/roots, trip hazards, dirt mounds, services, surrounding structure and facilities, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public and may include working in confined spaces
- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, hand excavation tools, hacksaw, dropsaw, compression cutters, grinders, measuring equipment, heating equipment, levelling equipment and threading and bending equipment
 - Tools and equipment including lifting/load shifting equipment may also include mechanical excavation equipment, trench shoring equipment, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include UPVC pipes
 - Materials may also include cast iron, and vitreous clay pipes and appropriate fixtures from manufacturers' catalogues

Communications

- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation of sanitary drainage systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and test sanitary drainage systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum:
 - install and test a below ground sanitary drain to connect a bathroom, WC, kitchen, laundry and soil and waste stack (to a minimum of 30 fixture units),
 - drain is to be at least 10 metres long and terminate at ground level
 - cut in a branch to connect a new water closet/fixture
- ensuring:
 - correct identification of location, design and details of the proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPCM2007A Carry out levelling
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - hazardous materials
 - principles of drainage design
 - the relevant statutory and authority requirements related to the installation and fitting off of sanitary fixtures
 - the standards applicable to the installation
 - materials relevant to sanitary drainage
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
 - excavation processes and procedures
 - levelling and alignment processes
 - water and air test systems and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing and testing sanitary drains
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and testing process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR3003A**Unit Descriptor****Install on-site disposal systems**

This unit specifies the competency required to install on-site effluent disposal systems from septic sewerage tanks for domestic premises.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the sanitary stream.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with the installation of on-site disposal systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of the on-site disposal system |
| 2. Identify work requirements | <ul style="list-style-type: none"> 2.1 The position of the on-site disposal system is determined in accordance with plans/specifications, authorities' requirements and standards 2.2 Quantity and type of materials required are calculated from design drawings/specifications in compliance with standards and local authorities' requirements 2.3 Materials are identified and ordered/collected in accordance with workplace procedures 2.4 Materials are checked for compliance with docket/order form and for acceptable condition |
| 3. Install on-site disposal system | <ul style="list-style-type: none"> 3.1 Set out is checked for compliance with plans/specifications and authorities' requirements 3.2 Underground services within excavation area are identified and marked 3.3 Site is excavated in accordance with requirements for system, plans, permits and site requirements, ensuring minimum damage to surrounding structures or environment 3.4 On-site effluent disposal system is installed in accordance with plans/specifications, standards and regulatory requirements 3.5 System is checked for compliance with standards and regulatory authorities' requirements and correct operation |

4. Clean up
- 4.1 Excavation is backfilled to specifications and work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with responsible authority and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of perforated pipe in an absorption trench to act as an on-site effluent disposal systems from a septic sewerage tank
- On-site disposal may include: absorption, absorption/transpiration, absorption/transpiration bed, mound and sprinkler system
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with excavation and installation tools and equipment, trip hazards, services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, measuring equipment, levelling equipment, manual and/or mechanical excavation equipment
- Materials
- Materials are to include perforated pipes, piping, sprinklers and fittings, aggregates and geotextiles
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of on-site disposal systems
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install on-site disposal systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- At a minimum, determine the requirements for and install:
 - a perforated pipe in an absorption trench, with the trench being at least three metres in length, running from a distribution pit or outlet of a septic system; and
 - a sprinkler/irrigation on-site disposal system
- ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPCM2007A Carry out levelling BCPCM2002A Install domestic treatment plants
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the principles and techniques of effluent treatment and/or disposal
 - soil testing requirements and procedures
 - excavation processes and procedures
 - principles of drainage design
 - regulations and requirements of regulatory authorities regarding effluent disposal and the installation of on-site disposal systems
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
 - levelling and alignment processes
 - the standards applicable to the installation
 - the SI system of measurements
 - the sources of information and the processes for the calculation of material requirements
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation processes
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPDR3004A**Unit Descriptor****Install water mains pipe systems**

This unit specifies the competency required to install water mains pipe systems, as part of a broader plumbing requirement, to support new services. It includes the minimum criteria for competency assessment.

This unit includes testing of mains pipe systems.

Employability Skills

This unit has employability skills.

Unit Sector

Drainage

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------|---|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied to the allotted task 1.2 Safety requirements are obtained from the site safety plan and organisational policies and procedures, confirmed and applied to the allotted task 1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented 1.4 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported 1.5 Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allotted task |
| 2. Set out and excavate | <ul style="list-style-type: none"> 2.1 Work area and materials are prepared to support the efficient installation of the pipe work 2.2 Dewatering requirements are determined and applied 2.3 Location, alignment direction, level and grade of mains pipe system is determined from job drawings/specifications 2.4 Works are set out to specification 2.5 Plant operator is advised of excavation requirements and levels are monitored 2.6 Mains pipe system support mechanism is installed in accordance with plans, specifications and standards |
| 3. Install mains pipeline | <ul style="list-style-type: none"> 3.1 Pipes are lowered and placed in position to design specifications 3.2 Pipes are joined in accordance with manufacturers specifications 3.3 Pipes are placed and valves, fittings and flow control devices are fitted in accordance with drawings and specifications 3.4 Alignment level and grade is checked continuously for conformance with design plans and specifications 3.5 Side support and/or overlay is positioned beside the pipes 3.6 Mains pipe system support structure is checked 3.7 Backfill procedure is monitored to ensure work is completed to specification, where specified 3.8 Valve chambers, minor structures and thrust blocks are constructed |

- 4. Test mains pipe system
 - 4.1 Test is performed to relevant authority requirements as determined by the specifications
 - 4.2 Mains pipe system test procedures are performed establishing pressurisation, functionality and serviceability
 - 4.3 Test results are recorded and reported

- 5. Clean up
 - 5.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
 - 5.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit Scope

- Mains pipe systems are to include pressurised mains water pipelines
- Types of mains pipe systems are to include in-ground and may include above ground
- Mains pipes may be constructed from but not limited to PVC, UPVC, poly, DICL, steel and copper
- Valves and flow control devices are to include stop valves and may include flow control valves, non return valves, pressure control valves, energy dissipaters and air release valves
- Installation procedures are to include but not be limited to selecting size, type and material of pipe, bedding down pipes, positioning pipes, checking alignment, level and grade and may include repair work
- Testing procedures may include but not be limited to pressure, visual straightness, ovality, tolerance, air and water
- Bedding materials may include aggregate and sand
- Support systems may include bedding for in-ground trenches or concrete shoulders for above ground pipes
- Pipe joining methods are to include but not be limited to rubber ring, solvent welded and may include arc welded and mechanical jointed
- Traffic control signage may include but not be limited to escort vehicle, highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, buildings, parking sites and pedestrian areas

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public
- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, underground services, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
- Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but are not limited to organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management

Quality Requirements

- Quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities

- State/Regulatory Authorities may Federal, State and Local Authorities

Tools and equipment

- Tools and equipment are to include but not be limited to levelling equipment, shovels, lifting equipment, crow bars, hammers, grinders, jointing equipment and may include oxy-acetylene equipment, scaffolding and saws

- | | |
|----------------|---|
| Materials | <ul style="list-style-type: none"> • Materials are to include but not be limited to pipes, concrete, backfill and bedding materials |
| Communications | <ul style="list-style-type: none"> • Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task |
| Information | <ul style="list-style-type: none"> • Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets (MSDS) and diagrams or sketches • Safe work procedures or equivalent related to the installation of mains pipe systems • Regulatory/legislative requirements pertaining to the installation of mains pipe systems • Manufacturers' specifications and instructions • Organisation work specifications and requirements. • Instructions issued by authorised organisational or external personnel • Relevant Australian Standards |

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan, OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Installation of a minimum of six metres of 100mm mains pipe system which is to include two changes of direction and one tee junction
- Installation of a mains pipe system which is, at a minimum, to include two materials and one isolation valve
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:

BCPCM1001B Follow OH&S policies and procedures

Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Plumbing Industry terminology
 - Site and equipment safety requirements
 - Mains pipe systems and installation procedures
 - Confined space entry requirements
 - Dewatering
 - Concrete and concrete fabrication
 - Processes for interpreting engineering drawings
 - Equipment types, characteristics, technical capabilities and limitations
 - Operational, maintenance and basic diagnostic procedures including testing procedures
 - Mains water pressure
 - Valves and flow control devices
 - Water reticulation
 - Processes for the calculation of pipeline grades and percentages
 - Sedimentation and erosion controls
 - Excavation/trench safety
 - Site isolation and traffic control responsibilities and authorities
 - Materials Safety Data Sheets and materials handling methods
 - Project quality requirements
 - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - materials relevant to the installation of mains pipe systems
 - hand and power tools, plant and equipment appropriate to the installation of mains pipe systems
 - specifications and work instructions

BCPFS2001A**Unit Descriptor****Connect static storage tanks**

This unit specifies the competency required to connect static storage tanks to fixed fire protection systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services and water streams.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the connection of static storage tanks, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for connecting static storage tanks, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient connection of static storage tanks |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Materials required for the installation are determined from plans/specification 2.2 Materials are selected which comply with standards and job specifications 2.3 Quantities of materials required are calculated from plans/specifications 2.4 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install and test storage tank | <ul style="list-style-type: none"> 3.1 Storage tank and associated pipework is set out in accordance with drawings/specifications and job instructions 3.2 Pipe supports and fixings, compliant with standards, are installed to plans and manufacturers' specifications 3.3 Tank, piping and materials are installed in accordance with plans/specifications and standards 3.4 Jointing systems are compliant with standards 3.5 Installed system is subjected to pressure testing in accordance with standards or the job specification 3.6 Test data is recorded in the format required by the job specifications and quality assurance procedures 3.7 Installation is backfilled in accordance with specifications |

4. Clean up
- 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the determination of system requirements and the installation and testing of a water distribution system from a static storage tank to a fire protection system
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, hand and mechanical excavation equipment, ladders, welding equipment, cutting and threading equipment and testing equipment• Tools and equipment including lifting/load shifting equipment may also include trench shoring equipment, elevating work platforms, scaffolds, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include galvanised and black steel pipes, and fibre glass/steel/polyurethane storage tanks• Materials may also include copper, brass, PVC and cement lined cast iron pipes
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the connection of static storage tanks• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standard

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to connect static storage tanks
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and specifications of a fire protection system, connect and test a fibreglass static storage tank to a water distribution pipe system, ensuring:
 - correct identification of requirements, design and details of the proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the connection of static storage tanks
 - the operation and components of fire sprinkler systems
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
 - structural systems, building materials, and building services
 - the function and operation of a range of taps and valves
 - excavation processes and procedures
 - levelling and alignment processes
 - pressure test systems and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of connecting static storage tanks
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the connection process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS2002A**Unit Descriptor****Install portable fire equipment**

This unit specifies the competency required to install portable fire extinguishers, fire blankets and signage.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with installing portable fire equipment, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing portable fire equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of portable fire equipment |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Portable fire extinguisher requirements are identified from job design criteria and specifications 2.2 Portable fire equipment is ordered/collected in accordance with workplace procedures 2.3 Portable fire equipment is checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install portable fire equipment | <ul style="list-style-type: none"> 3.1 Portable fire equipment is installed to authorities' requirements and plans/specifications 3.2 Supports, fixings and signage are installed in accordance with manufacturers' instructions and plans/specifications |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope	<ul style="list-style-type: none">• The unit requires the determination of requirements and the installation of fire extinguishers, fire blankets and signage• Extinguishing agents for portable fire extinguishers include, but are not limited to, foam, carbon dioxide gases, dry chemical and chemical reaction suppression systems• Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained
Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools

Materials	<ul style="list-style-type: none"> Materials are to include portable fire extinguishers, supports and brackets
Communications	<ul style="list-style-type: none"> Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Information	<ul style="list-style-type: none"> Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches and graphics Safe work procedures relating to the installation of portable fire equipment Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements Manufacturers' specifications and instructions Organisation work specifications and requirements Instructions issued by authorised organisational or external personnel Relevant Australian Standard National Fire Protection Association (NFPA) and Factory Mutual Performance based Codes of Practice

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install portable fire equipment
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and specifications for an office complex requiring the installation of water, CO2 and dry chemical portable fire extinguishers, fire blankets and signage, install the appliances, ensuring:
 - correct identification of requirement, location and installation of the extinguishers
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the installation of portable fire equipment
 - NFPA and Factory Mutual Performance based Codes of Practice
 - structural systems, building materials, and building services
 - the process of installing portable fire extinguishers
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3001A**Fabricate and install fire hydrant and hose reel systems****Unit Descriptor**

This unit specifies the competency required to fabricate and install fire hydrant and hose reel systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Design drawings and job specifications are obtained from relevant authority 1.2 OH&S requirements associated with fabricating and installing fire hydrant and hose reel systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for fabricating and installing fire hydrant and hose reel systems, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient fabrication and installation of fire hydrant and hose reel systems |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 System requirements are identified from job design criteria, specifications and standards 2.2 Piping and materials are selected in accordance with standards, design drawings/job specifications and authorities' requirements 2.3 Below ground piping and materials are checked to ensure compliance with standards and authorities' requirements 2.4 Required materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

- | | |
|---------------------------------------|---|
| 3. Fabricate, install and test system | 3.1 System is set out in accordance with drawings, specifications and job instructions
3.2 Pipe supports and fixings are installed to plans and manufacturers' specifications
3.3 Piping and materials are installed in accordance with the design drawings, job specifications and standards
3.4 Pipework is connected to the water source in accordance with standards and authorities' requirements
3.5 Piping system is tested in accordance with standards and job specifications
3.6 Test data is recorded in the format required by the job specifications and quality assurance procedures |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|---------------|--|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the fabrication, installation and testing of fire hydrant pipework from a main, or branch into main, to a hose reel system • Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working in proximity to others, worksite visitors and the public |

Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, manual excavation equipment, trench shoring equipment, measuring equipment, levelling equipment welding equipment and elevated work platform• Tools and equipment including lifting/load shifting equipment may also include mechanical excavation equipment, ladders, hand trolleys, rollers, forklifts, scaffolds, elevating work platforms, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include black pipe (steel) and copper pipe• Materials may also include non-ferrous pipe
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the fabrication and installation of fire hydrant and hose reel systems• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards• National Fire Protection Association (NFPA) and Factory Mutual Performance based Codes of Practice

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to fabricate and install fire hydrant and hose reel systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the specifications of a fire hydrant and hose reel system, install a leakfree hydrant and hose reel system from an existing branch in a water supply, using copper and steel piping to design criteria and standards, ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the fabrication and installation of fire hydrant and hose reel systems
 - materials and assemblies relevant to the installation of fire hydrant and hose reel systems
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
 - excavation processes and procedures
 - levelling and alignment processes
 - pressure test systems and procedures
 - the process of fabricating and installing fire hydrant and hose reel systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the fabrication and installation process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3002A

Unit Descriptor

Install distribution and range pipes

This unit specifies the competency required to install distribution and range pipes to carry all commonly used fire extinguishing agents, above and below ground.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Approved plans/specifications are obtained from relevant authority 1.2 OH&S requirements associated with installing distribution and range pipes, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing distribution and range pipes, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of distribution and range pipes |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 System requirements are identified from job design criteria, specifications and standards 2.2 Quantities of materials required are calculated from plans/specifications 2.3 Allowances for fabrication and assembly are correctly determined and transferred 2.4 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install and test piping system | <ul style="list-style-type: none"> 3.1 Pipework is set out in accordance with drawings/specifications and job instructions 3.2 Pipe supports and fixings are installed to plans and manufacturers' specifications 3.3 Piping and materials are installed in accordance with the design drawings, job specifications and standards 3.4 Mechanical jointing systems are compliant with standards 3.5 Pipes are subjected to pressure testing in accordance with standards or the job specification 3.6 Test data is recorded in the format required by the job specifications and quality assurance procedures 3.7 Installation is backfilled in accordance with specifications |

4. Clean up
- 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of an above ground distribution and range pipe system, fitted with branches, to supply water to a sprinkler system
- Pipes may be installed above and below ground
- Extinguishing materials include water, gases, powder or foam
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, ladders, angle grinders, measuring equipment, welding equipment, cutting and threading equipment, bending equipment and testing equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand excavation tools, scaffolds, elevating work platforms, mechanical excavation equipment, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include steel pipes
 - Materials may also include CPVC, copper, copper alloy and cement lined cast iron
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of distribution and range pipes
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and test distribution and range pipes
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and system specifications of an automated fire sprinkler system, install and test steel distribution and range pipes to provide a free flowing and leak free water supply to at least three branches to design criteria and standards, ensuring:
 - correct identification of location, design and details of the proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the installation of distribution and range pipes
 - materials relevant to the installation of distribution and range pipes
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
 - structural systems, building materials, and building services
 - excavation processes and procedures
 - levelling and alignment processes
 - pressure test systems and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing and testing distribution and range pipes
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3003A**Fit-off sprinkler heads, controls and ancillary equipment****Unit Descriptor**

This unit specifies the competency required to install sprinkler heads, system controls and ancillary equipment for sprinkler fire protection systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Approved plans/specifications are obtained from relevant authority 1.2 OH&S requirements associated with installing sprinkler heads, system controls and ancillary equipment, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing sprinkler heads, system controls and ancillary equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of sprinkler heads, system controls and ancillary equipment |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Class of sprinkler system and associated design data is identified from system design specifications 2.2 Components are selected in accordance with job requirements, plans/specifications or other relevant codes or standards 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

- | | |
|--------------------------------------|---|
| 3. Install and test sprinkler system | <ul style="list-style-type: none"> 3.1 System is set out in compliance with plans/specifications and job instructions 3.2 Fixing and pipe supports are installed to plans, manufacturers specifications, standards or regulations 3.3 Sprinkler system components and ancillary equipment are installed in accordance with plans/specifications and standards 3.4 Sprinkler system is pressure tested in accordance with standards and/or job specification 3.5 Test data is recorded in the format required by the job specification and quality assurance procedures |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of sprinkler heads, controls and ancillary equipment of an automated sprinkler system
- Controls include flow switches, pressure switches, multiple jet controls (MJs)
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, ladders, welding equipment, cutting and threading equipment and testing equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, scaffolds, elevating work platforms, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include sprinkler heads, flow switches, pressure switches and MJCs
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of sprinkler heads, controls and ancillary equipment
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and test sprinkler heads, controls and ancillary equipment
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and system specifications of a simple automated fire sprinkler system, install and test at least two sprinkler heads, a flow switch and a pressure switch, ensuring:
 - correct identification of location, design and details of the proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the installation of sprinkler heads, controls and ancillary equipment
 - properties and characteristics of water pressure and flow rates
 - fire sprinkler systems for commercial, industrial, domestic or residential application
 - the functions and operation of a range of taps and valves
 - pressure test systems and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing and testing sprinklers, controls and ancillary equipment
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3004A**Install control valve assemblies, actuating devices and local alarms****Unit Descriptor**

This unit specifies the competency required to install control valve assemblies, actuating devices and local alarms for fire protection systems in commercial, industrial, residential and domestic situations.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained from relevant authority 1.2 OH&S requirements associated with installing control valve assemblies, actuating devices and local alarms, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing control valve assemblies, actuating devices and local alarms, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of control valve assemblies, actuating devices and local alarms |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 System requirements are identified from job design criteria, specifications and standards 2.2 Quantities of materials required are calculated from plans/specifications 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

- | | |
|---------------------------------------|---|
| 3. Install and test system components | <ul style="list-style-type: none"> 3.1 Components are set out in accordance with plans/specifications and job instructions 3.2 Pipe supports and fixings are installed to plans and manufacturers' specifications 3.3 Assemblies, devices, alarms, piping and materials are installed in accordance with standards and plans/specifications 3.4 Jointing systems are installed in compliance with standards 3.5 Installed system is subjected to pressure testing in accordance with standards and plans/specifications 3.6 Test data is recorded in the format required by the job specifications and quality assurance procedures |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|---------------|--|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the installation and testing of control valve assemblies, actuating devices and alarms for an automated fire sprinkler system • Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public |

- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, ladders, welding equipment, cutting and threading equipment, testing equipment and may include elevating work platforms
- Materials
- Materials are to include control valve assemblies, actuating devices, local alarms and pipes
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of control valve assemblies, actuating devices and local alarms
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and test control valve assemblies, actuating devices and local alarms
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and system specifications of an automated fire sprinkler system, install and test a control valve assembly, two actuating devices and an alarm to design criteria and standards, ensuring:
 - correct identification of location, design and details of the proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the installation of control valve assemblies, actuating devices and local alarms
 - materials relevant to the installation of control valve assemblies, actuating devices and local alarms
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
 - structural systems, building materials, and building services
 - the function and operation of a range of taps and valves
 - pressure test systems and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing control valve assemblies, actuating devices and local alarms
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3005A**Unit Descriptor****Test fire protection systems for pressure**

This unit specifies the competency required to perform air or water pressure testing of fire protection systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|----------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Approved plans/specifications are obtained from relevant authority 1.2 OH&S requirements associated with testing fire protection systems for pressure, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for testing fire protection systems for pressure, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient testing of fire protection systems for pressure |
| 2. Identify testing requirements | <ul style="list-style-type: none"> 2.1 Test requirements are determined from plans/specifications and system pressure/flow specifications 2.2 Appropriate testing equipment is identified and prepared for application in accordance with standards and workplace requirements |
| 3. Test fire protection system | <ul style="list-style-type: none"> 3.1 Test equipment is connected to system and pressure tested in accordance with standards and/or job specification 3.2 Test data is recorded in the format required by the job specification and quality assurance procedures |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------------|--|
| Unit scope | <ul style="list-style-type: none">• The unit requires the testing of a fire protection system for pressure using air and water test as testing media (to design parameters)• Fire protection systems include fire sprinkler and fire hydrant systems• Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public |
| Environmental Requirements | <ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures |
| Statutory/Regulatory Authorities | <ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority |

- Tools and equipment
- Tools and equipment are to include hand and power tools, ladders and testing equipment
 - Tools and equipment may also include scaffolds, elevating work platforms and fall protection devices
- Materials
- Materials are to include fire sprinkler and hydrant system components
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the testing of fire protection systems for pressure
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to test fire protection systems for pressure
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given a fire sprinkler system and a fire hydrant system, conduct an air pressure test on one and a water pressure test on the other to achieve the design/performance specifications of each system, ensuring:
 - correct identification of requirements, design and details of the systems
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the testing of fire protection systems for pressure
 - properties and characteristics of water pressure and flow rates
 - the components and operation of fire sprinkler systems and fire hydrant systems
 - the functions and operation of a range of taps and valves
 - the test procedures for sprinkler and hydrant systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the testing process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3006A**Unit Descriptor****Install special hazards systems**

This unit specifies the competency required to install special hazard extinguishing systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with installing special hazard extinguishing systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing special hazard extinguishing systems, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of special hazard extinguishing systems |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 System requirements are identified from job design criteria, specifications and standards 2.2 Components for the special hazard system is selected in accordance with plans/specifications, standards, manufacturers' recommendations and job requirements 2.3 Components are identified and ordered/collected in accordance with workplace procedures 2.4 Components are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install and test the special hazard system | <ul style="list-style-type: none"> 3.1 System is set out in accordance with drawings/specifications and job instructions 3.2 Fixings are installed to plans and manufacturers' specifications 3.3 Pipe supports are compliant with standards and plans/specifications 3.4 Pipes, fittings and components are installed in accordance with plans/specifications and standards 3.5 Piping system is subjected to pressure testing in accordance with standards and plans/specification 3.6 Test data is recorded in the format required by the plans/specifications and authorities' requirements |

4. Clean up
- 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of a special hazard protection system consisting of an extinguishing agent, piping, actuating devices and sprinkler delivery
- Special hazard extinguishing systems include, but are not limited to, foam, water mist, carbon dioxide and other gases (such as halon, inergen, argonite and NAFS III), water, dry chemical, chemical reaction and explosion suppression systems
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, ladders, angle grinders, welding equipment, cutting and threading equipment, testing equipment and may include scaffolds and elevating work platforms
- Materials
- Materials are to include pipes, actuating devices, sprinkler/delivery systems and extinguishing agents
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of special hazard systems
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards
 - National Fire Protection Association (NFPA) and Factory Mutual Performance based Codes of Practice

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and test special hazard systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and system specifications of a special hazard extinguisher system, identify the requirement and install the system, incorporating a high pressure CO₂ gas storage cylinder, connected by piping to a simple sprinkler system with one actuating device, to design criteria and standards, ensuring:
 - correct identification of requirement, design and details of the proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the installation of special hazard systems
 - NFPA and Factory Mutual Performance based Codes of Practice
 - the function and operation of system components
 - structural systems, building materials, and building services
 - hazard categories, classes of fire hazard, extinguishing agents and application methods
 - pressure test systems and procedures
 - the process of installing and testing special hazard systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3007A**Install domestic and residential life safety sprinkler systems****Unit Descriptor**

This unit specifies the competency required to install domestic and residential life safety fire sprinkler systems in buildings up to four storeys in height.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with installing domestic and residential life safety sprinkler systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing domestic and residential life safety sprinkler systems, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of domestic and residential life safety sprinkler systems |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 System requirements are identified from plans/specifications and standards 2.2 Materials selected are to comply with standards 2.3 Quantities of materials required are calculated from plans/specifications 2.4 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

3. Install and test system components
 - 3.1 System is set out in accordance with plans/specifications and job instructions
 - 3.2 Pipe supports are to comply with standards and plans/specifications
 - 3.3 Fixings are installed to plans/specifications and manufacturers' specifications
 - 3.4 Assemblies, devices, alarms, piping and materials are installed in accordance with standards and plans/specifications
 - 3.5 Jointing systems are installed in compliance with standards
 - 3.6 Installed system is subjected to pressure testing in accordance with standards and plans/specifications
 - 3.7 Test data is recorded in the format required by the plans/specifications and quality assurance procedures
4. Clean up
 - 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of a fire sprinkler system including piping, control valve assemblies, actuating devices, alarms and sprinkler heads
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, ladders, welding equipment, cutting and threading equipment, silver brazing equipment, testing equipment and may include elevating work platforms
Materials	<ul style="list-style-type: none">• Materials are to include sprinkler heads, control valve assemblies, actuating devices, local alarms and UPVC, steel or copper pipes
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation of domestic and residential life safety sprinkler systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
- National Fire Protection Association (NFPA) and Factory Mutual Performance based Codes of Practice

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and test domestic and residential life safety sprinkler systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans and system specifications of domestic fire sprinkler system for a two storey residential building, install and test a domestic and residential life safety sprinkler system consisting of a water supply, piping, control valves, actuating devices, alarms and sprinkler heads to design criteria and standards, ensuring:
 - correct identification of location, design and details of the proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the installation of domestic and residential life safety sprinkler systems
 - National Fire Protection Association (NFPA) and Factory Mutual Performance based Codes of Practice
 - components and materials relevant to the installation of domestic and residential life safety sprinkler systems
 - structural systems, building materials, and building services
 - the function and operation of a range of alarms, actuating devices, sprinkler heads and valves
 - pressure test systems and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing domestic and residential life safety sprinkler systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3008A**Test and maintain fire hydrant and hose reel installations****Unit Descriptor**

This unit specifies the competency required to test and maintain fire hydrant and hose reel installations in commercial and domestic situations.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans, specifications, maintenance manuals, previous maintenance reports and equipment data is obtained 1.2 OH&S requirements associated with testing and maintaining fire hydrant and hose reel installations, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for testing and maintaining fire hydrant and hose reel installations, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient testing and maintaining fire hydrant and hose reel installations |
| 2. Perform routine maintenance | <ul style="list-style-type: none"> 2.1 Maintenance tasks detailed in maintenance schedule are performed to specification 2.2 Mechanical equipment and system components are checked with appropriate instruments in accordance with standards and/or job specifications 2.3 Faulty items or components are identified and appropriate service procedure is selected |

3. Repair/replace faulty components and test job
 - 3.1 Equipment is safely isolated according to regulations and/or health and safety requirements
 - 3.2 Faulty items or components are removed using appropriate tools, equipment and procedures
 - 3.3 Replaceable items are selected from manufacturers' catalogue
 - 3.4 Replacement or service items are fitted in accordance with manufacturers' recommendations and/or site specifications
 - 3.5 Adjustments are made to equipment or components to ensure specifications are met
 - 3.6 Operational check of system is carried out to ensure compliance with job specifications
 - 3.7 Maintenance report is documented in the format required by the maintenance specification

4. Clean up
 - 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the conduct of routine testing and maintenance of fire hydrant and hose reel installations in the full range of domestic and commercial situations. It requires the diagnosis of faults and the effecting of necessary repairs or replacement of faulty components. It includes the conduct of operational checks to confirm the system is operating to specification
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, ladders, testing equipment and may include scaffolds and elevating work platforms
Materials	<ul style="list-style-type: none">• Materials are to include fire hydrants, hose reels, hoses and fittings and connections
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the testing and maintaining of fire hydrant and hose reel connections
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards
- National Fire Protection Association (NFPA) and Factory Mutual Performance based Codes of Practice

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to test and maintain fire hydrants and hose reel installations
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given four faulty fire hydrants and hose reel installations, conduct routine testing and maintenance to diagnose and repair faults and perform component service ensuring:
 - correct identification of the requirement and conduct of testing and maintaining the installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the testing and maintaining of fire hydrants and hose reel installations
 - NFPA and Factory Mutual Performance based Codes of Practice
 - the function and operation of system components
 - structural systems, building materials, and building services
 - test apparatus and procedures
 - the process of testing and maintaining fire hydrant and hose reel installations
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the testing and maintaining process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3009A**Unit Descriptor****Test and maintain automatic fire sprinklers**

This unit specifies the competency required to test and maintain automatic fire sprinkler installations in commercial and domestic situations.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans, specifications, maintenance manuals, previous maintenance reports and equipment data is obtained 1.2 OH&S requirements associated with testing and maintaining automatic fire sprinklers, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for testing and maintaining automatic fire sprinklers, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient testing and maintaining of automatic fire sprinklers |
| 2. Perform routine maintenance | <ul style="list-style-type: none"> 2.1 Maintenance tasks detailed in maintenance schedule are performed to specification 2.2 Mechanical equipment and system components are checked with appropriate instruments in accordance with standards and/or job specifications 2.3 Faulty items or components are identified and appropriate service procedure is selected |
| 3. Repair/replace faulty components and test job | <ul style="list-style-type: none"> 3.1 Equipment is safely isolated according to regulations and/or health and safety requirements 3.2 Faulty items or components are removed using appropriate tools, equipment and procedures 3.3 Replaceable items are selected from manufacturers' catalogue 3.4 Replacement or service items are fitted in accordance with manufacturers' recommendations and/or site specifications 3.5 Adjustments are made to equipment or components to ensure specifications are met 3.6 Operational check of system is carried out to ensure compliance with job specifications 3.7 Maintenance report is documented in the format required by the maintenance specification |

4. Clean up
- 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the conduct of routine testing and maintenance of automatic fire sprinklers in the full range of domestic and commercial situations. It requires the diagnosis of faults and the effecting of necessary repairs or replacement of faulty components. It includes the conduct of operational checks to confirm the system is operating to specification
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, ladders, testing equipment and may include scaffolds and elevating work platforms
- Materials
- Materials are to include sprinkler heads, control valve assemblies, actuating devices, alarms and fittings and connections
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the testing and maintaining of automatic fire sprinklers
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards
 - National Fire Protection Association (NFPA) and Factory Mutual Performance based Codes of Practice

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to test and maintain automatic fire sprinklers
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given a faulty automatic fire sprinkler system in an office complex, conduct routine testing and maintenance to diagnose and repair faults and perform component service ensuring:
 - correct identification of the requirement and conduct of testing and maintaining the system
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the testing and maintaining of automatic fire sprinkler systems
 - NFPA and Factory Mutual Performance based Codes of Practice
 - the function and operation of system components
 - structural systems, building materials, and building services
 - test apparatus and procedures
 - the process of testing and maintaining automatic fire sprinklers
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the testing and maintaining process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPFS3010A**Unit Descriptor****Design pre-calculated fire sprinkler systems**

This unit specifies the competency required to design fire sprinkler systems using pre-calculated tables and charts.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the fire services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Fire protection service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings/job specifications are obtained 1.2 OH&S requirements associated with the design and installation of fire sprinkler systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for the design of fire sprinkler systems, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient design of fire sprinkler systems |
| 2. Identify design requirements | <ul style="list-style-type: none"> 2.1 Relevant data is extracted from job specifications 2.2 Building classification and hazard ratings are established in accordance with standards and other relevant regulations 2.3 Water supply needs are established and graphs are drawn for the automatic fire sprinkler system |
| 3. Design sprinkler system | <ul style="list-style-type: none"> 3.1 Sprinkler system is designed according to job specifications, standards, manufacturers' recommendations and water supply data 3.2 Pipework is sized to manufacturers' specifications, standards and pre-calculated tables 3.3 Sprinkler heads are selected for appropriate size, spray pattern, temperature and finish 3.4 Sprinklers are spaced in accordance with manufacturers' specifications, standards and relevant regulations 3.5 Pipe layout drawings are prepared in accordance with standards and workplace requirements 3.6 Computations and other supporting evidence are appropriately documented to support design 3.7 Fabrication sheets and material lists are prepared |

4. Clean up
- 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with regulatory authorities and workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the development of a fire sprinkler system design using pre-calculated tables and charts. It involves the collection of design data, the spacing of sprinkler heads and the sizing and arranging of pipework (sized using the charts and tables) and the preparation of layout drawings, fabrication sheets and material lists for the installation of the system
- Work will normally be performed in a design office environment. The design application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities

- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority

- Tools and equipment
- Tools and equipment are to include drawing/drafting equipment, calculator, design data, design tables and reference materials
 - Tools and equipment may include computer design software
- Materials
- Materials are to include drafting materials and plans
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the design of fire sprinkler systems
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards
 - National Fire Protection Association (NFPA) and Factory Mutual Performance based Codes of Practice

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to test and maintain automatic fire sprinklers
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans/specifications for an office complex (requiring at least 15 sprinkler heads and two branches) and using pre-calculated charts and tables, design a fire sprinkler system indicating the spacing of sprinkler heads, the sizing and arranging of pipework and including layout drawings, fabrication sheets and material lists ensuring:
 - correct identification of the requirement, design and details of the proposed system
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- There are no other units which could be assessed with this unit

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace design standards and safety requirements
 - the relevant statutory and authority requirements related to the design and installation of fire sprinkler systems
 - NFPA and Factory Mutual Performance based Codes of Practice
 - the function, specifications and operation of system components
 - properties of water including pressure and flow rates
 - structural systems, building materials, and building services
 - technologies for fire sprinkler systems, measurements and drawings
 - sources of information on performance characteristics of fire sprinkler systems including the theory underpinning the pre-calculated charts and tables, including hydraulic calculations
 - the process of designing fire sprinkler systems using pre-calculated charts and tables
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the design process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3001A**Unit Descriptor****Install gas piping systems**

This unit specifies the competency required to select, install and test gas consumer piping carrying NG, LPG, or TLP up to 200kPa.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Identify gas piping system requirements | <ul style="list-style-type: none"> 1.1 Building plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation of gas piping systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Gas load/design requirements are determined from design drawing or given information 1.5 Size of piping is calculated in accordance with standards, authorities' and workplace requirements 1.6 Set out of piping systems is in accordance with design drawing or instruction and complies with standards, authorities' and workplace requirements 1.7 Quantity and type of materials to conform to appropriate standards are estimated from design drawings or on-site dimensions |
| 2. Prepare for installation | <ul style="list-style-type: none"> 2.1 Materials and equipment are ordered and checked for compliance with docket/order form and for acceptable condition 2.2 Appropriate tools and equipment for the installation of the piping system, including personal protective equipment, are identified, selected and checked for serviceability 2.3 Appropriate testing equipment is selected 2.4 Work is planned in conjunction with others involved in, or affected by, the work 2.5 Work area and materials are prepared to support the efficient installation of the system |

- | | |
|-----------------------------------|--|
| 3. Install and test piping system | 3.1 Support system and installation method (including fixings) are selected to comply with manufacturers' instructions, standards and workplace requirements |
| | 3.2 Pipe system is installed and jointed in accordance with design drawing or instruction and complies with standards and workplace requirements |
| | 3.3 System is tested in accordance with job requirements, standards and workplace requirements |
| | 3.4 Leaks are located, repaired and the system retested |
| | 3.5 System is purged of air in accordance with standards |
| | 3.6 Test data is recorded in the format required by the regulating authority and workplace requirements |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with regulatory and workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the determination of pipe requirements and the installation and testing of gas piping systems
- The installation is to be in conformance with standards or the requirements of the local regulatory authority
- The design requirements of this unit are limited to the application of the design to the layout and installation
- Site location for work application may be a customer's premises

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of installation tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements may include waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
- Tools and equipment
- Tools and equipment are to include hacksaws, hand and power tools, pipe benders, crimpers, threading equipment, measuring equipment, testing equipment, test instruments, wrenches, spanners, flaring tools and silver brazing equipment
 - Tools and equipment including lifting/load shifting equipment may also include ladders, oxy and arc welding equipment, hand trolleys, rollers, chain blocks, hoists and jacks
- Materials
- Materials are to include acceptable fittings and joints, mechanical jointed steel, copper, UPVC, polyethylene and composite (PE/AL) pipes and corrosion control materials
 - Materials may include steel piping

Communications

- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation and testing of gas piping systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Recognised formulae or tables accepted by the regulatory authority
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, the installation and testing of consumer gas piping systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, determine the requirements, install and test two gas piping systems, each consisting of at least two materials and serving three Type A appliances:
 - one being a NG pipeline from the outlet of a meter
 - and the other being an LPG pipeline from a storage cylinder or tank ensuring:
 - correct identification of design and details of proposed piping system
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPGS3002A Size consumer piping systems for Type A appliances, BCPGS3011A Purge consumer piping, BCPGS3008A Install gas pressure control equipment, BCPCM3002A Weld polyethylene pipes using fusion method, BCPGS3015A Install gas meters
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the installation and testing of gas piping systems
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the material requirements determination process
 - the characteristics of piping materials, joining methods, fittings and sealants
 - procedures for installing and testing gas piping systems including brazing and mechanical pipe jointing
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and testing processes
 - appropriate standards
 - calculators or equivalent
 - piping and support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3002A**Unit Descriptor****Size consumer piping systems**

This unit specifies the competency required to size consumer piping carrying NG, LPG, or TLP up to 200kPa.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|------------------------------|---|
| 1. Identify job requirements | 1.1 Installation requirements are determined from plans, load and specifications or site inspection
1.2 OH&S requirements associated with sizing consumer piping systems and the workplace environment, are adhered to throughout the work
1.3 Quality assurance requirements for company operations are identified and adhered to
1.4 Piping materials are selected in compliance with appropriate standards and workplace requirements
1.5 Gas loads and pipe lengths or instructions are calculated/determined from design drawings, instructions or site inspection |
| 2. Size piping systems | 2.1 Pressure drop is selected in accordance with standards, regulating authorities' requirements, specifications and workplace requirements
2.2 Appropriate sizing table is selected for the gas supply type, piping material and pressure drop
2.3 Sizing procedure is undertaken consistent with standards, regulating authorities' requirements, specifications and workplace requirements |
| 3. Clean up | 3.1 Work area is cleared
3.2 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit

Unit scope

- The unit requires the sizing of consumer gas piping supplying appliances at an operating pressure not exceeding 200 kPa
- Piping may carry NG, LPG or TLP
- Site location for work application may be either a workplace or customer's premises

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Environmental Requirements
- Environmental requirements may include waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA, site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the determination of requirements, the sizing of consumer piping systems
 - Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Recognised formulae or tables accepted by the regulatory authority
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements and the design of consumer piping systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, from scaled plans/drawings, size consumer gas piping systems of at least three materials for up to five appliances each, at least one of them being a two stage LP gas system, ensuring:
 - correct identification of sizing requirements of proposed piping system
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2004A Read plans and calculate plumbing quantities, BCPGS3001A Install gas piping systems
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the sizing of consumer gas piping systems
 - appliance pressure requirements and gas consumption requirements
 - the SI system of measurements
 - the characteristics of piping materials, joining methods, fittings and sealants
 - the sources of information including the appropriate standards
 - procedures for sizing consumer gas piping systems
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the sizing of consumer gas piping systems
 - appropriate standards
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3003A**Install and commission Type A gas appliances****Unit Descriptor**

This unit specifies the competency required to install and commission Type A appliances approved for use with NG, LPG, or TLP up to 200kPa.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Building plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation and commissioning of Type A gas appliances, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Appropriate work notices and required documentation is completed and despatched in accordance with the authorities' requirements 1.5 Tasks are planned in conjunction with others involved with or affected by the work 1.6 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.7 Work area is prepared to support the efficient installation of Type A appliances |
| 2. Identify appliance requirements | <ul style="list-style-type: none"> 2.1 Appropriate appliance for the gas supply type is selected in accordance with the job specification, ensuring the currency of the AGA/ALPGA approval number 2.2 Existing piping is checked to ensure its compliance with standards and its capacity is adequate for the additional load 2.3 Appliance is located in conformance with regulatory requirements, standards and appropriate for appliance use and for piping, flue and ventilation requirements |
| 3. Determine installation requirements | <ul style="list-style-type: none"> 3.1 Appropriate pipe fittings and components for the installation are selected in accordance with standards 3.2 Size of branch line is calculated in accordance with regulating authorities' requirements 3.3 Ventilation openings and the source of air supply are calculated in conformance with standards and in the format required by the job specifications 3.4 Quantity and type of materials and other components required are estimated from design drawing or on-site dimensions |

- | | |
|-----------------------------|---|
| 4. Install appliance | 4.1 Piping system is installed in accordance with design drawing or instruction and standards |
| | 4.2 Pipe system is tested in accordance with standards and regulatory authorities' requirements |
| | 4.3 Appliance is installed in accordance with standards and the manufacturers' instructions and without damage or distortion to the surrounding environment or other services |
| 5. Commission the appliance | 5.1 Electrical safety check is conducted |
| | 5.2 Consumer piping is purged and joints reconnected in accordance with workplace requirements |
| | 5.3 Appropriate testing instrument is selected and operated, with data being recorded in accordance with workplace requirements |
| | 5.4 Appliance is adjusted, reassembled and operation checked in accordance with manufacturers' specifications |
| | 5.5 The operation of appliance is explained to customer |
| 6. Clean up | 6.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 6.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 6.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit

- | | |
|------------|--|
| Unit scope | <ul style="list-style-type: none">• The unit requires the installation and commissioning of Type A gas appliances• Type A gas appliances are badged appliances of less than 500mJ for which an approval scheme exists. They include, but are not limited to space heaters, ducted heating systems, hot water storage, instant hot water heaters, decorative heaters and gas stoves/hot plates• Site location for work application may be a customer's premises |
|------------|--|

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include measuring equipment, test equipment/instruments, wrenches, spanners, flaring tools, silver brazing equipment, hacksaws, tin snips and drills,• Tools and equipment including lifting/load shifting equipment may also include limited height scaffolding, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials for the installation and commissioning of Type A gas appliances are to include Type A appliance(s), piping materials, flue(s) and ventilation materials/components• Materials are to comply with the appropriate standards for the installation and commissioning of Type A gas appliances

Communications

- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation and commissioning of Type A appliances
- Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Recognised formulae or tables accepted by the regulatory authority
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, the installation and commissioning of Type A appliances
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, determine the requirement for, install and commission:
 - a water heater,
 - a space heater and
 - a cooking appliance
 - at least one of which is to be a domestic installation, one a commercial installation and one being a power flued appliance
- ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPGS3001A Install gas piping systems, and BCPGS3002A Size consumer piping systems
- BCPGS3009A Install a Type A appliance flue and BCPGS3014A Calculate and install natural ventilation for Type A gas appliances are co-requisite units for the purpose of assessment of this unit
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the installation and commissioning of Type A gas appliances
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the material requirements determination process
 - procedures for installing and commissioning Type A appliances, including flashing and the requirements for flues and ventilation
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and commissioning process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3004A**Install LP gas storage of aggregate storage capacity up to 500 litres****Unit Descriptor**

This unit specifies the competency required to install LP gas storage facilities with a storage capacity up to 500 litres for consumer piping systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|--|
| 1. Identify LP gas storage requirements | <ul style="list-style-type: none"> 1.1 Design/drawings/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation of LP gas storage facilities, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Gas load/design requirements are determined from plans/specifications/job drawing or workplace instructions 1.5 Storage capacity is calculated in compliance with regulatory authority and workplace requirements 1.6 Type of storage is determined in accordance with job and workplace requirements 1.7 Containers and type of system (one or two stage) is selected in accordance with standards, job and workplace requirements 1.8 Appropriate regulator(s) are determined to meet the capacity and load of the system in accordance with workplace requirements 1.9 Appropriateness of the selected location to provide the required service is established in conformance with standards and workplace requirements 1.10 Quantity of materials required is calculated from design/drawings/specifications in conformance with workplace requirements |
| 2. Prepare for installation | <ul style="list-style-type: none"> 2.1 Materials and equipment are ordered and checked for compliance with docket/order form and for acceptable condition 2.2 Appropriate tools and equipment for the installation of the storage facility, including personal protective equipment, are identified, selected and checked for serviceability 2.3 Appropriate testing apparatus is selected 2.4 Work is planned in conjunction with others involved in, or affected by, the work 2.5 Work area and materials are prepared to support the efficient installation of the system |

- | | |
|---|--|
| 3. Install and test LP gas storage system | 3.1 Container supports/base, piping, fittings and components are selected in conformance with standards and workplace requirements |
| | 3.2 Size and method of connection are selected in conformance with standards and workplace requirements |
| | 3.3 Tank is purged in accordance with standards |
| | 3.4 System (from cylinder outlet) is tested to be gastight in conformance with the regulating authority and workplace requirements |
| | 3.5 Test data is recorded in the format required by regulatory authority and workplace requirements |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the selection, location and installation of LP gas storage facilities with a storage capacity of up to 500 litres, either single tank or multiple cylinder installations and the testing of the associated piping system. The storage is connected to consumer piping systems with operating pressures less than 200kPa
- Storage containers are to conform to standards and/or the requirements of the local regulatory authority
- The design requirements of this unit are limited to the application of the design to the layout and installation
- Site location for work application may be a customer's premises

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include manual brazing equipment, grinders, hacksaws, hand and power tools, measuring equipment and testing equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials for the installation of LP gas storage facilities are to include container supports/bases, gas regulators, gas cylinders/storage tanks, copper tubing, stainless steel, non-metallic hose assemblies and fitting/fixing materials• Materials are to comply with job specifications and the appropriate standards for the storage of LP gas

Communications

- Communications are to include, voice and hand signals and may include site specific instructions
- State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the determination of requirements, the installation and testing of LP gas storage systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Recognised formulae or tables accepted by the regulatory authority
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, the selection, location, installation and testing of LP gas storage systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, determine the LPG storage requirements, install and test two LPG storage facilities of less than 500L capacity, one being a multiple cylinder installation ensuring:
 - correct identification of location, design and details of proposed storage installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPGS3001A Install gas piping systems, BCPGS3008A Install gas control equipment
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the installation and testing of gas storage facilities
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the material requirements determination process
 - procedures for installing and testing gas storage facilities
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and testing processes
 - appropriate standards
 - calculators or equivalent
 - cylinder(s), tank(s), container support(s)/base(s), regulator(s) and support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3005A**Install LP gas storage of aggregate capacity exceeding 500 litres and less than 8KL****Unit Descriptor**

This unit specifies the competency required to install LP gas storage facilities with a storage capacity of more than 500 litres but less than 8KL.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Identify installation requirements | <ul style="list-style-type: none"> 1.1 Building plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation of LP gas storage facilities, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Gas load/design requirements are determined from plans/specifications/job drawing or workplace instructions 1.5 Storage capacity is calculated in compliance with regulatory authority and workplace requirements, ensuring adequacy to meet load details 1.6 Regulator size and the size of connections to cylinders are determined to meet the capacity and load of the system in accordance with workplace requirements 1.7 Appropriateness of the selected location to provide the required service is established in conformance with standards, design instruction and workplace requirements 1.8 Quantity of cylinders and materials required is estimated from design instruction and selected to comply with standards and authorities' requirements |
| 2. Prepare for installation | <ul style="list-style-type: none"> 2.1 Materials and equipment are ordered and checked for compliance with docket/order form and for acceptable condition 2.2 Appropriate tools and equipment for the installation of the storage facility, including personal protective equipment, are identified, selected and checked for serviceability 2.3 Appropriate testing apparatus is selected 2.4 Work is planned in conjunction with others involved in, or affected by, the work 2.5 Work area and materials are prepared to support the efficient installation of the system |

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|----|--|-----|--|
| 3. | Install and test LP gas storage system | 3.1 | LPG cylinders/tank, piping, fittings and components are installed in conformance with standards and workplace requirements |
| | | 3.2 | Regulator and associated pipework is installed in compliance with standards and workplace requirements |
| | | 3.3 | Regulator is adjusted to provide flow pressure in conformance with standards and workplace requirements |
| | | 3.4 | System is purged in accordance with standards |
| | | 3.5 | System is tested in conformance with standards and workplace requirements |
| | | 3.6 | Test equipment is removed and test data is recorded in the format required by regulatory authority and workplace requirements |
| 4. | Clean up | 4.1 | Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | | 4.2 | Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | | 4.3 | Documentation is completed in accordance with workplace requirements |
| | | 4.4 | Relevant authorities/supervisors are advised of job completion in conformance to regulatory requirements and workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the selection, location, installation and testing of LP gas storage facilities with a storage capacity of more than 500 litres but less than 8KL. The storage is connected to consumer piping systems with an operating pressure not exceeding 140kPa
- Installation is normally a two-stage system. It may be from storage to point of use requiring regulators and from storage to a second stage regulator
- Installation and materials are to be in accordance with the relevant standards
- The design requirements of this unit are limited to the application of the design to the layout and installation
- Site location for work application may be a customer's premises

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include brazing equipment, grinders, hacksaws, ladders, hand and power tools, flaring tools, silver brazing equipment, measuring equipment and testing equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials for the installation of LP gas storage facilities are to include container supports/bases, gas regulators, gas cylinders/storage tanks (500L-8KL) copper tubing, non-metallic hose assemblies and fitting/fixing materials• Materials are to comply with job specifications and the appropriate standards for the storage of LP gas

Communications

- Communications are to include, voice and hand signals and may include site specific instructions
- State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the determination of requirements, the installation and testing of LP gas storage systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, the selection, location, installation and testing of LP gas storage systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans for a gas storage facility of capacity greater than 500 litres (but less than 8KL), determine the requirements, locate, install and test the installation. The installation is to include the installation, connection and testing of first and second stage regulators ensuring:
 - correct identification of location, design and details of proposed storage installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPGS3001A Install gas piping systems
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the installation and testing of gas storage facilities
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the material requirements determination process
 - procedures for installing and testing gas storage facilities
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the storage, installation and testing processes
 - appropriate standards
 - calculators or equivalent
 - cylinder(s)/tank (types and sizes 500 litres - 8KL), container support(s)/base(s), regulator and support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3006A**Install LP gas systems in caravans/mobile homes, water craft and mobile work places****Unit Descriptor**

This unit specifies the competency required to install and commission LP gas systems in caravans, mobile homes, water craft and mobile work places.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Identify LP gas system requirements | <ul style="list-style-type: none"> 1.1 Plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation and commissioning of LP gas systems in caravans, mobile homes, water craft and mobile work places, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Gas load/design requirements are determined from plans/specifications/job drawing or workplace instructions 1.5 Capacity of the system is calculated to ensure adequacy for the required load and compliance with standards and workplace requirements 1.6 Appropriate regulator and piping is identified in terms of size, connection sizes and capacity in accordance with standards and workplace requirements 1.7 The location of cylinders, appliances and piping set out is identified in accordance with job requirements and in compliance with standards and workplace requirements 1.8 Quantity of piping, components and fittings are estimated in compliance with standards and workplace requirements |
| 2. Prepare for installation | <ul style="list-style-type: none"> 2.1 Materials, equipment, appliance(s) and cylinder(s) are ordered and checked for compliance with docket/order form and for acceptable condition 2.2 Appropriate tools and equipment for the installation and commissioning of LP gas systems in caravans, mobile homes, water craft and mobile work places, including personal protective equipment, are identified and selected 2.3 Work is planned in conjunction with others involved in, or affected by, the work 2.4 Work area and materials are prepared to support the efficient installation of the system |

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|----|--|-----|---|
| 3. | Install LP gas system (including flue and ventilation) | 3.1 | Cylinder(s), regulator(s), associated pipework, appliance(s) and fixings are installed in compliance with manufacturers' requirements, standards and workplace requirements |
| | | 3.2 | Compliance plates are located and fitted in accordance with regulatory requirements, standards and workplace requirements |
| 4. | Test and commission LP gas system | 4.1 | Appropriate test equipment is selected |
| | | 4.2 | System is tested in accordance with standards and workplace requirements |
| | | 4.3 | System is adjusted to provide the required flow pressure in conformance with standards and workplace requirements |
| | | 4.4 | Test data is recorded in the format required by regulatory requirements and workplace requirements |
| 5. | Clean up | 5.1 | Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | | 5.2 | Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | | 5.3 | Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the determination of requirements, the installation and commissioning of LP gas systems with an operating pressure not exceeding 2.75kPa in caravans, mobile homes, water craft and mobile work places
- The LP gas system includes cylinder(s), regulator(s), piping and appliance(s)
- The design requirements of this unit are limited to the application of the design to the layout and installation
- Site location for work application may be a purpose built workshop or customer's premises

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements may include waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
- Tools and equipment
- Tools and equipment are to include hacksaws, power cutting tools, measuring equipment, wrenches, spanners, files, flaring tools, silver brazing equipment and testing equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, chain blocks, hoists and jacks
- Materials
- Materials are to include gas operated appliances, gas regulators, gas cylinders, copper tubing, stainless steel, non-metallic hose assemblies and fitting/fixing materials
 - Materials are to comply with job specifications and the appropriate standards for gas installations

Communications

- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the determination of requirements, and the installation and commissioning of LP gas systems in caravans, mobile homes, water craft and mobile work places
- Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Recognised formulae or tables accepted by the regulatory authority
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, and the installation and commissioning of LP gas systems in caravans, mobile homes, water craft and mobile work places
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, complete the following in respect of the determination of requirements, and the installation and commissioning of LP gas systems in caravans, mobile homes, water craft and mobile work places:
 - determine the gas load and storage capacity requirements for two gas appliances in both a caravan and a water craft,
 - install and commission the gas systems for the installations
- ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate quantities, and BCPGS3002A Size consumer pipe systems for Type A appliances, BCPGS3003B Install and commission Type A gas appliances
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the installation and testing of gas storage facilities
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the material requirements determination process
 - procedures for installing and commissioning gas systems in caravans, mobile homes, water craft and mobile work places
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and commissioning processes
 - appropriate standards
 - calculators or equivalent
 - appliance(s), cylinder(s), regulator(s) and support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3007A**Unit Descriptor****Install gas detection devices**

This unit specifies the competency required to select and fit gas detection equipment to LP gas systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|--|
| 1. Identify gas detection system requirements | <ul style="list-style-type: none"> 1.1 Plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation of gas detection systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 System design requirements are determined from design drawing or given information 1.5 The compliance of the design, including the selected gas detection unit, the system set out and the location of the detection unit and its sensors (in relation to appliances and cylinder(s), with standards and its appropriateness, is confirmed 1.6 Any design faults are reported in accordance with workplace requirements and corrective action taken |
| 2. Prepare for installation | <ul style="list-style-type: none"> 2.1 Materials, equipment and cylinder(s) are ordered and checked for compliance with docket/order form and for acceptable condition 2.2 Appropriate tools and equipment for the installation, including personal protective equipment, are identified and selected 2.3 Work is planned in conjunction with others involved in, or affected by, the work 2.4 Work area and materials are prepared to support the efficient installation of the system |
| 3. Install and test gas detection system | <ul style="list-style-type: none"> 3.1 Gas detection system is installed in accordance with appropriate authority requirements and complies with standards and job specifications 3.2 Low voltage wiring is installed in accordance with the manufacturers' instructions 3.3 Consumer instruction plates and labels are positioned in accordance with standards and workplace requirements 3.4 System is adjusted to comply with standards 3.5 Test equipment selected is appropriate for the work and the system is tested in accordance with standards 3.6 Test data is recorded in the format required by the authority or job specification |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- This unit requires the determination of the design of an LP gas detection system, confirmation that it complies with standards and its installation and testing
- The LP gas detection system includes a gas detection unit, sensor(s), low voltage wiring (to a limit of 32 volts) and an LP gas supply
- The design requirements of this unit are limited to the application of the design to the layout and installation
- Site location for work application may be a customer's premises

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, measuring equipment and testing equipment
Materials	<ul style="list-style-type: none">• Materials for installation of LP gas detection systems are to include gas detection unit, sensors, solenoid valves and low voltage wiring.• Materials may include gas operated appliances, gas cylinders, copper tubing, stainless steel, non-metallic hose assemblies and fitting/fixing materials• Materials are to comply with job specifications and the appropriate standards for gas installations
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the installation and testing of LP gas detection devices• Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the confirmation of requirements, and the installation and testing of LP gas detection systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, from a design drawing, ensure a gas detection system complies with the appropriate standards, ascertain its requirements, and install and test its operation in a water craft ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities and BCPGS3006A Install LP gas systems in caravans and marine craft
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - principles of low voltage electrical wiring
 - the relevant statutory and authority requirements related to the installation and testing of gas detection systems
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - procedures for installing and testing gas detection systems
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and testing processes
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3008A**Unit Descriptor****Install gas pressure control equipment**

This unit specifies the competency required to install and commission gas control and regulating equipment for consumer gas piping carrying NG, LPG, or TLP up to 200kPa.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Identify requirements for gas pressure control equipment | <ul style="list-style-type: none"> 1.1 Plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation of gas pressure control and regulating equipment, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Gas load/design requirements are determined from design drawing or workplace instructions 1.5 Available gas pressure is measured and its suitability of supply determined 1.6 Calculations are recorded in the format required by the job specification or workplace requirements 1.7 The selected gas pressure controls/regulator, the specified locations and venting requirements are checked for compliance against standards and workplace requirements 1.8 Quantity and type of materials are estimated from design drawing or on site dimensions 1.9 Materials, pipe fittings and components are selected to comply with standards and/or the regulatory authorities' requirements |
| 2. Prepare for installation | <ul style="list-style-type: none"> 2.1 Materials, equipment and cylinder(s) are ordered and checked for compliance with docket/order form and for acceptable condition 2.2 Appropriate tools and equipment for the installation, including personal protective equipment, are identified and selected 2.3 Work is planned in conjunction with others involved in, or affected by, the work 2.4 Work area and materials are prepared to support the efficient installation of the equipment |

- | | |
|--|---|
| 3. Install and commission control and regulating equipment | 3.1 Gas control and regulating equipment is installed in compliance with standards and the regulating authorities' requirements |
| | 3.2 Appropriate test apparatus is selected for commissioning the control and regulating equipment |
| | 3.3 Commissioning is carried out in accordance with standards, authorities' and manufacturers' requirements and the commissioning data is recorded in the format required by the authority or job specification |
| | 3.4 Pressure is correctly adjusted to comply with standards and job specification |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- This unit requires the determination of the requirements for gas control and regulating equipment (for pressures up to 200 kpa), its installation, testing and commissioning in accordance with standards
- Gas pressure control equipment is to include over pressure regulators (including internal relief and OPSO) and may include safety shut off valves, boosters, UPSO and pressure switches
- The design requirements of this unit are limited to the application of the design to the layout and installation
- Site location for work application may be a customer's premises

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements may include waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include grinders, hacksaws, ladders, measuring equipment, wrenches, spanners, flaring tools, silver brazing equipment and testing equipment
 - Tools and equipment, including load/lifting equipment, may include hand trolleys, scaffolding, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials for installation of gas pressure control and regulating equipment are to include gas pressure regulators, gas cylinders, copper tubing, stainless steel, non-metallic hose assemblies and fitting/fixing materials
 - Materials are to comply with job specifications and the appropriate standards for gas installations
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation and testing of gas pressure control and regulating equipment
 - Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, and the installation and commissioning of gas pressure control equipment
- Apply safety requirements throughout the work sequence, including the use of personal protecting clothing and equipment
- As a minimum, given the plans for the installation of gas pressure control and regulating equipment, determine the requirements, install, test and commission a single and a two stage gas regulator ensuring:
 - it operates to the appropriate reduced pressure
 - correct identification of requirements, installation and commissioning of the pressure control and regulating equipment
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the installation and commissioning of gas control and regulating equipment
 - the SI system of measurements
 - gas pressure control equipment
 - the sources of information including the appropriate standards
 - procedures for installing and testing gas pressure control and regulating equipment
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and commissioning processes
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3009A**Unit Descriptor****Install a Type A appliance flue**

This unit specifies the competency required to install and test flues for Type A gas appliances.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Design drawings, specifications and data are obtained 1.2 OH&S requirements associated with the installation of Type A appliance flues, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Appropriate work notices and required documentation is completed and despatched in accordance with the authorities' requirements 1.5 Tasks are planned in conjunction with others involved with or affected by the work 1.6 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.7 Work area is prepared to support the efficient installation of Type A flues |
| 2. Identify flue requirements | <ul style="list-style-type: none"> 2.1 Proposed flue location, installation requirements and route is determined 2.2 Dimensions and load are determined from design drawing or instruction and manufacturers' instructions 2.3 Size of flue, flue material and components are determined in accordance with standards, regulatory authorities' requirements and manufacturers' instructions 2.4 Ventilation requirements are calculated in compliance with standards and are determined as appropriate for the job specifications 2.5 Quantity and type of materials required are estimated from design drawing or on-site inspection and ordered in accordance with workplace requirements |
| 3. Install and test flue | <ul style="list-style-type: none"> 3.1 Flue is installed in compliance with standards and job specifications 3.2 Flue is weatherproofed in accordance with manufacturers' specifications and site requirements 3.3 Flue is tested for operation and adjusted as required in accordance with manufacturers' specifications |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of flues for Type A gas appliances
- Types of flues are to include balanced single and multiple flues and may include forced draft flues (interlocks)
- Flues may be required by, but not limited to, space heaters, ducted heating systems, hot water storage, instant hot water heaters, decorative heaters and wall ovens
- Site location for work application may be a customer's premises

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
- Tools and equipment
- Tools and equipment are to include measuring equipment, test equipment/instruments, wrenches, spanners, flaring tools, hand and power tools, hacksaws, tin snips, drills, grinders and ladders
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, limited height scaffolding, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include Type A appliance flue components/materials including twin wall flues, stainless steel and fibre cement and flashing materials, including lead and sheet metal
 - Materials may include propriety flashings
 - Materials are to comply with the appropriate standards for the installation and testing of Type A gas appliance flues
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
 - State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation and testing of Type A appliance flues
 - Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Recognised formulae or tables accepted by the regulatory authority
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, the installation and testing of Type A appliance flues
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, determine the requirement for, install and test:
 - a powered flue,
 - a forced draft flue, and
 - a natural draft flue
- ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPGS3001A Install gas piping systems, BCPGS3002A Size consumer piping systems for Type A appliances and BCPCM3001A Flash penetrations through rooves and walls
- BCPGS3003A Install and commission Type A appliances and BCPGS3014A Calculate and install natural ventilation for Type A gas appliances are co-requisite units for the purpose of assessment of this unit
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the installation and testing of Type A gas appliance flues
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the material requirements determination process
 - procedures for installing and testing of flues for Type A appliances, including flashing of penetrations
 - workplace and equipment safety requirements
 - JSA's/ Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and testing process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3010A**Unit Descriptor****Install a Type B appliance flue**

This unit specifies the competency required to install flue systems for Type B gas appliances.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Work plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation of flues for Type B gas appliances, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Approval of the system design is obtained in accordance with authorities' and workplace requirements 1.5 Tasks are planned in conjunction with others involved or affected by the work 1.6 Sequence of work is prioritised to suit job requirements 1.7 Tools and equipment are selected consistent with installing a Type B appliance flue and checked for serviceability |
| 2. Identify flue requirements | <ul style="list-style-type: none"> 2.1 Details of dimensions and loads are checked for compliance with plans/specifications 2.2 Size of flue is calculated in accordance with authority requirements and is appropriate for the type of appliance burner 2.3 Flue is selected for the type of appliance and its determined route in compliance with standards 2.4 Quantity and type of materials for the installation are calculated from plans/specifications |
| 3. Install flue | <ul style="list-style-type: none"> 3.1 Preparatory work, including any penetration of walls and rooves, is performed in accordance with industry and workplace requirements 3.2 Installation is completed without damage or distortion to the surrounding environment or other services 3.3 Flue is installed in compliance with standards and authority requirements |

- | | |
|-------------|--|
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of flues for Type B gas appliances
- Work may also involve the installation of power flue applications
- Type B appliances are those complex gas installations of greater than 10 MJ rating for which there is no approval scheme
- The flue materials and the installation of Type B appliance flues is to accord with the appropriate Australian Standards
- The design requirements of this unit are limited to the application of the design to the layout and installation
- Site location for work application may be a customer's premises

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
- Tools and equipment
- Tools and equipment are to include oxy welding cutting equipment, manual metal arc welding equipment, measuring equipment, hacksaws, tin snips, hand and power tools, grinders and ladders
 - Tools and equipment including lifting/load shifting equipment may also include MIG and TIG welding equipment, hand trolleys, rollers, forklifts, chain blocks, hoists, jacks, restricted height scaffolding and elevated work platform
- Materials
- Materials are to include Type B flue materials including fibre cement, mild steel and stainless steel
 - Materials are to comply with the appropriate standards for Type B gas appliance flues
- Development methods
- Development methods are to include parallel line development and triangulation method
 - Design may be manual or computer design
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
 - State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation of Type B appliance flues
- Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Recognised formulae or tables accepted by the regulatory authority
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the installation of Type B appliance flues
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given a specified drawing and regulatory authority approval, install a mild steel flue from a boiler flue spigot to terminate above the roofline ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPGS3001A Install gas piping systems, and BCPCM3001A Flash penetrations through rooves and walls
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the installation of flues for Type B appliances
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the material requirements determination process
 - procedures for installing Type B appliances, including roof and wall penetration and flashing
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation processes
 - calculators or equivalent
 - tanks and support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3011A**Unit Descriptor****Purge consumer piping**

This unit specifies the competency required to purge consumer gas piping systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for purging | <ul style="list-style-type: none"> 1.1 Design drawing/specification is obtained 1.2 OH&S requirements associated with the purging of consumer gas piping systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Work is planned in conjunction with others involved in, or affected by, the work 1.5 Appropriate tools and equipment for the conduct of the purging, including personal protective equipment, are identified, selected and checked for serviceability 1.6 Work area and materials are prepared to support the efficient purging of the consumer gas piping system |
| 2. Identify purge requirements | <ul style="list-style-type: none"> 2.1 Installation is checked to ensure compliance with standards and relevant specifications 2.2 Volume of piping system is determined from design drawing and standards, recording calculations in the format required by job specification 2.3 Method of purging is selected in compliance with standards and the authorities' requirements 2.4 Purge medium is selected in compliance with standards, with calculations of the purge medium volume being recorded in the format required by job specification |
| 3. Carry out and test purge operation | <ul style="list-style-type: none"> 3.1 Outlet point for purge gas is located and the purge site is checked for ignition sources 3.2 Purge is carried out in accordance with standards or the authorities' requirements 3.3 Completion of purge is verified by test equipment or recognised/approved workplace testing procedures |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the determination of purging requirements of a consumer gas piping system in terms of volume, the method and medium of purge, the conduct of purging and testing for its completeness
- Purging may occur before commencing work and on completion of work using either air, fuel gas or an inert gas on pipe volumes exceeding 0.03 cubic metres, as appropriate
- The installation to be purged, calculations, method, medium and conduct of purging is to be in conformance with standards or the requirements of the local regulatory authority
- Methods of purging are to include purge stack and purge bucket
- Site location for work application may be a customer's premises

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
- Tools and equipment
- Tools and equipment are to include ladders, hand and power tools, testing equipment, purge stacks, buckets, gas analyser, signs and barriers and may include restricted height scaffolding
- Materials
- Materials for purging may include purging media of air, nitrogen, carbon dioxide or fuel gas
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
 - State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the purging and testing of consumer gas piping systems
 - Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Recognised formulae or tables accepted by the regulatory authority
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, the purging and testing of consumer gas piping systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment and the elimination of possible ignition sources
- As a minimum, given a consumer gas piping system of greater than .03 cubic metres and/or a piping system in excess of 50mm diameter, which includes a subsidiary meter and a regulator, conduct both bucket and stack purging, including the testing and recording of the purge operations (one to be a fuel/inert purge and the other to be an inert/fuel purge) ensuring:
 - correct identification of method, medium, calculations and procedures to purge the piping system
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPGS3001A Install gas piping systems
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

What specific knowledge is required to achieve the performance criteria?

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, ignition principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the purging of gas piping systems
 - the characteristics of the materials used in the purging process
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the effect of heat on the materials utilised during the purging and testing process
 - procedures for purging gas piping systems including isolation processes and procedures
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the purging and testing processes
 - calculators or equivalent
 - appropriate Australian Standards
 - support and testing materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3012A**Unit Descriptor****Maintain Type A gas appliances**

This unit specifies the competency required to perform basic maintenance on Type A gas appliances.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Appliance specifications and servicing/manufacturers' manuals obtained for planned work activity 1.2 OH&S requirements associated with the conduct of maintenance of Type A gas appliances, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Tools and equipment are selected consistent with maintaining Type A appliances, checked for serviceability and any faults reported to supervisor 1.5 Tasks are planned in conjunction with others involved in or affected by the work 1.6 Work area is prepared to support the efficient conduct of maintenance of the Type A gas appliance |
| 2. Identify maintenance requirements | <ul style="list-style-type: none"> 2.1 Appliance is checked to ensure installation complies with standards and manufacturers' requirements 2.2 Electrical safety check is carried out in accordance with authorities' procedure and data is recorded in the format required by the job specification 2.3 Test equipment is used to support visual inspection and to conduct testing in accordance with authorities' requirements |
| 3. Conduct maintenance | <ul style="list-style-type: none"> 3.1 Maintenance tasks are carried out in accordance with specifications and/or manufacturers' requirements 3.2 Appliances are checked for operation in accordance with specifications, standards and manufacturers' recommendations 3.3 Faults and malfunctions are identified and reported in accordance with workplace requirements |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the performance of routine basic maintenance on Type A appliances, including gas, mechanical and appliance construction components
- Type A gas appliances are badged appliances of less than 500 MJ for which an AGA/ ALPGA approval scheme exists. They include, but are not limited to space heaters, ducted heating systems, hot water storage, instant hot water heaters, decorative heaters and gas stoves/hot plates
- The maintenance of Type A appliances is to accord with the appropriate Australian Standards
- Maintenance is to include the cleaning or adjustment to gas components, including thermocouples, thermostats, TPR valves, pilots, burners and regulators. It also includes the rectification of simple gas supply problems, including meters and regulators
- Site location for work application may be a customer's premises

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the State/Territory/local statutory authority
- Tools and equipment
- Tools and equipment are to include measuring equipment, test equipment/instruments (including manometers, multi-meter, neon tester and volt stick), wrenches, spanners, hand and power tools
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials for the maintenance of Type A gas appliances are to include Type A appliances, piping materials, regulators and meters
 - Materials are to comply with the appropriate standards for the maintenance of Type A gas appliances
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
 - State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches and graphics
 - Safe work procedures relating to the maintenance of Type A appliances
 - Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements and the maintenance of Type A appliances
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, perform cleaning and routine basic adjustment to a space heater and a ducted heater, checking gas supply pressures, effective operation and flue condition ensuring:
 - correct identification of maintenance procedures and requirements
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPGS3003A Install and commission Type A gas appliances
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the maintenance of Type A appliances
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the documentation and reporting requirements
 - procedures for maintaining and testing Type A appliances
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - appropriate Type A appliances
 - tools and equipment appropriate to the maintenance process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3013A**Unit Descriptor****Disconnect and reconnect Type A appliances**

This unit specifies the competency required to disconnect and reconnect services from Type A appliances operating on NG, LPG, or TLP up to 200kPa.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Appliance/equipment specifications and appropriate manufacturers' manuals are obtained 1.2 OH&S requirements associated with the disconnection and reconnection of Type A appliances, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Tools and equipment are selected consistent with disconnecting/reconnecting services, are checked for serviceability and any faults reported 1.5 Appropriate test equipment is selected for the job 1.6 Tasks are planned in conjunction with others involved with or affected by the work |
| 2. Identify appliance requirements | <ul style="list-style-type: none"> 2.1 Appropriate appliance for the gas supply type is selected in accordance with the job specification 2.2 Appliance installation is checked to ensure its compliance with standards 2.3 Appliance is checked for safe operation and its performance is checked against specification |
| 3. Disconnect/reconnect equipment | <ul style="list-style-type: none"> 3.1 Electrical safety check is carried out in accordance with state or territory authorities' procedures and regulatory requirements 3.2 Safety-check data is recorded in the format required by the job specification 3.3 Appliance is isolated from gas service in accordance with statutory and regulatory requirements 3.4 Work is carried out in accordance with job instruction without damage to surrounding equipment or structures |
| 4. Test operation of equipment | <ul style="list-style-type: none"> 4.1 Appliance is operated to ensure it conforms to appliance specification 4.2 Mechanical services, gas, water and other services connections are checked for leaks 4.3 Mechanical services equipment is adjusted in accordance with specification |

5. Clean up
- 5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 5.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the disconnection and reconnection of Type A appliances from mechanical services, gas, water, air and other services to allow replacement, repair or maintenance actions. The work is confined to disconnection/reconnection of a like appliance
- Type A gas appliances are badged appliances of less than 500 MJ for which an approval scheme exists
- Site location for work application may be a customer's premises

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include measuring equipment, test equipment/instruments, wrenches, spanners, ladders• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include Type A appliance(s) and piping materials
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the disconnection and reconnection of Type A appliances• Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the disconnection and reconnection of Type A appliances
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, effectively isolate, disconnect and reconnect at least two Type A appliances, involving at least two services ensuring:
 - correct identification of procedure and sequence of work
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPGS3003A Install and commission Type A appliances, BCPGS3012A Maintain Type A gas appliances
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the application of ignition and combustion principles relating to conveyed materials or materials used in confined work spaces
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the disconnection and reconnection of Type A appliances
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - procedures for disconnecting and reconnecting Type A appliances
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to disconnecting and reconnecting Type A appliances
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3014A**Calculate and install natural ventilation for Type A gas appliances****Unit Descriptor**

This unit specifies the competency required to determine, install and test materials/equipment required to support natural ventilation of Type A gas appliances operating on NG, LPG, or TLP up to 200kPa.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Design drawings/specifications and any special instructions are obtained 1.2 OH&S requirements associated with calculating and installing natural ventilation for Type A gas appliances, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Appropriate work notices and required documentation is completed and despatched in accordance with the authorities' requirements 1.5 Tasks are planned in conjunction with others involved with or affected by the work 1.6 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.7 Work area is prepared to support the efficient calculation and installation of natural ventilation for Type A appliances |
| 2. Identify natural ventilation requirements | <ul style="list-style-type: none"> 2.1 Gas load/design requirements are determined from design drawings/plans/specifications and given information 2.2 Source and path of air supply is determined to comply with standards and plans/specifications of the job 2.3 Free ventilation area is calculated in the required format and confirmed as being in accordance with standards and plans/ specifications 2.4 Ventilation openings are calculated in the required format and positioned in compliance with standards 2.5 Quantity and type of materials and other components required are estimated from design drawing or on-site dimensions and ordered in accordance with workplace requirements |
| 3. Install ventilation and test appliance | <ul style="list-style-type: none"> 3.1 Ventilation is installed in compliance with standards 3.2 Installation is completed without damage to the building structure, surrounding environment or other services 3.3 The appliance and flues are tested for operation and compliance with standards and adjusted |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- Unit scope
- The unit requires the calculation, installation and testing of natural ventilation for Type A gas appliances
 - Ventilation may be required for, but not limited to, space heaters, ducted heating systems, hot water storage, instant hot water heaters, decorative heaters and gas stoves/hot plates
 - Ventilation may be natural or mechanical
 - Site location for work application may be a customer's premises
- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements may include waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA, site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include measuring equipment, test equipment/instruments, hand and power tools, grinders, ladders and may include restricted height scaffolding
Materials	<ul style="list-style-type: none">• Materials are to include Type A appliance(s) and ventilation materials including grills, louvres and ducting• Materials are to comply with the appropriate standards for the installation and commissioning of Type A gas appliances
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions• State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the calculation and installation of natural ventilation for Type A appliances• Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Recognised formulae or tables accepted by the regulatory authority• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the calculation, installation and testing of natural ventilation for Type A appliances
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, calculate the natural ventilation for:
 - a water heater,
 - a space heater, and
 - a cooking appliance
- ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPGS3001A Install gas piping systems and BCPGS3002A Size consumer piping systems for Type A appliances
- BCPGS3002A Install and commission Type A gas appliances and BCPGS3009A Install a Type A appliance flue are co-requisite units for the purpose of assessment of this unit
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - electrical safety and the requisite precautions
 - the relevant statutory and authority requirements related to the natural ventilation requirements for Type A gas appliances
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - mechanical ventilation and associated interlocks
 - procedures for calculating, installing and testing the natural ventilation for Type A appliances
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the work process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPGS3015A**Unit Descriptor****Install subsidiary gas meters**

This unit specifies the competency required to install and test subsidiary gas meters for gas consumer piping systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the gas services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Gas fitting service

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Identify gas piping system requirements | <ul style="list-style-type: none"> 1.1 Plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the installation of subsidiary gas meters, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Gas load requirements are determined from specifications or given information 1.5 Size of meter is determined in accordance with standards, authorities' and workplace requirements 1.6 Meter is located in accordance with specifications or instructions and complies with standards, authorities' and workplace requirements 1.7 Quantity and type of materials to conform to authorities' requirements and appropriate standards are estimated from specifications or on-site dimensions |
| 2. Prepare for installation | <ul style="list-style-type: none"> 2.1 Meter and materials are ordered and checked for compliance with docket/order form and for acceptable condition 2.2 Appropriate tools and equipment for the installation of the meter, including personal protective equipment, are identified, selected and checked for serviceability 2.3 Appropriate testing equipment is selected 2.4 Work is planned in conjunction with others involved in, or affected by, the work 2.5 Work area and materials are prepared to support the efficient installation of the meter |

- | | |
|--|---|
| 3. Install and test subsidiary gas meter | 3.1 Support and installation method (including any fixings) are selected to comply with manufacturers' instructions, standards and workplace requirements |
| | 3.2 Pipe section is isolated |
| | 3.3 Meter is installed in accordance with specifications or instruction and complies with standards and authorities' requirements |
| | 3.4 Installation is purged in accordance with standards |
| | 3.5 Meter is tested and pressure set in accordance with standards and authorities' requirements |
| | 3.6 If required, leaks are located, repaired and the installation is retested |
| | 3.7 Test data is recorded in the format required by the regulating authority and workplace requirements |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation, setting of pressure regulator and testing of subsidiary gas meters for domestic residences
- The installation is to be in conformance with standards and the requirements of the local regulatory authority
- Site location for work application may be a customer's premises

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements may include waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gas authority and the State/Territory/local statutory authority
- Tools and equipment
- Tools and equipment are to include hacksaws, hand and power tools, measuring equipment, testing equipment, test instruments, wrenches, spanners, flaring tools and silver brazing equipment
 - Tools and equipment may also include ladders and hand earth moving tools
- Materials
- Materials are to include gas meters, acceptable fittings and joints
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
 - State/Territory/local regulatory authorities are to be informed of the work and work notices obtained and submitted in compliance with their requirements

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation and testing of subsidiary gas meters
- Regulatory/legislative requirements, particularly those pertaining to plumbing and gas fitting regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Recognised formulae or tables accepted by the regulatory authority
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the installation and testing of subsidiary gas meters
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, install, test and adjust a subsidiary gas meter for a domestic residence ensuring:
 - correct identification of location and operation of the meter
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPGS3001A Install gas piping systems and BCPGS3002A Size consumer piping systems for Type A appliances
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the properties of gas, gas safety, combustion principles, pressure and flow rates
 - the relevant statutory and authority requirements related to the installation and testing of subsidiary gas meters
 - the SI system of measurements
 - the sources of information including the appropriate standards
 - the material requirements determination process
 - procedures for installing and testing subsidiary gas meters
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and testing processes
 - appropriate standards
 - calculators or equivalent
 - piping and support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPIG2001A Unit Descriptor

Design domestic urban irrigation systems

This unit specifies the competency required to prepare basic designs and irrigation drawings for domestic/small commercial projects.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the irrigation stream.

Employability Skills Unit Sector

This unit has employability skills.
Irrigation

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 A site survey is conducted of the proposed irrigation area in accordance with client requirements 1.2 OH&S requirements associated with design of domestic irrigation systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for preparing basic irrigation designs and drawings, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient design of domestic irrigation systems |
| 2. Identify drawing requirements | <ul style="list-style-type: none"> 2.1 Areas requiring irrigation are identified 2.2 Information is obtained on the soil type, ground slope, contours and prevailing wind 2.3 Underground cables/services, buildings, paths and other permanent structures are located and noted 2.4 Water supply is located and its influence on the design requirements is determined 2.5 Appropriate emitters are selected to suit function and design requirements |
| 3. Install and commission irrigation system | <ul style="list-style-type: none"> 3.1 Site plan is drawn to include structures, paths and property boundaries 3.2 Garden areas are sketched to include locations of lawns, garden beds, trees, vegetable patches or ferneries 3.3 Pipe runs and water emitters are sketched to design requirements 3.4 Sizes of pipes are calculated using standard data and recording information in format required 3.5 List of materials is compiled to include number and type of water emitters, control valves, quantities of pipes, fittings and components 3.6 Drawing/design is submitted to client for approval and adjusted |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------------|---|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the design and drawing of a domestic urban irrigation system including site requirements, structures, its layout, the selection and location of its components and identification of material requirements • Work is normally undertaken in a drafting office environment. Location for drawing/design application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none"> • OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices |
| Environmental Requirements | <ul style="list-style-type: none"> • Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none"> • Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures |
| Statutory/Regulatory Authorities | <ul style="list-style-type: none"> • Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority |

- Tools and equipment
- Tools and equipment are to include drawing/drafting equipment, calculator and measuring equipment
 - Tools and equipment may also include computer design software and laser measuring devices
- Materials
- Materials are to include plans and drafting/drawing materials
- System design components
- System design components include pipework, controls, valves, backflow prevention devices and water emitters
 - Water emitters may include pop up (full circle, half, quarter), oscillating, pulsating, impact, hear drive, mist sprays and in line turbo drippers
 - Selection of water emitters is based on site requirements, physical site conditions, types of plants requiring irrigated water, manufacturers' specifications and automatic control systems
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the design of domestic irrigation systems
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to design of domestic irrigation systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the site plan and customer requirements for the irrigation of a 500m² garden (of lawn, shrubs, trees and flowers), design and prepare a drawing of the system, incorporating automatic timers and controls, varying sprinkler heads and zones and indicating the materials required (by number and type) ensuring:
 - correct identification of location, design and details of proposed system
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2004A Read plans and calculate plumbing quantities, BCPIG3001A Set out, install and commission irrigation systems, BCPIG3007A Connect irrigation systems from drinking water supply
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - the relevant statutory and authority requirements related to the drawing and installation of irrigation systems
 - the standards applicable to the installation
 - various types of irrigation systems including the types of materials and components used
 - specifications of the range of irrigation products available
 - technologies for irrigation measurement and drawings
 - the sources of information and the processes for the calculation of material requirements
 - the process and workplace requirements for basic irrigation design
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the drawing process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPIG3001A**Set out, install and commission irrigation systems****Unit Descriptor**

This unit specifies the competency required to set out, install and commission irrigation systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the irrigation stream.

Employability Skills

This unit has employability skills.

Unit Sector

Irrigation

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with setting out, installing and commissioning irrigation systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for setting out, installing and commissioning irrigation systems, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient setting out, installation and commissioning of irrigation systems |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Irrigation system requirements are identified from plans/specifications 2.2 Underground cables, pipes and other existing services are located and allowed for 2.3 Flow rate is correctly measured from water meter or other available source 2.4 Water pressure (static head) is determined at source of supply 2.5 Piping and system components are selected to comply with standards and plans/specifications 2.6 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.7 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

3. Install and commission irrigation system
 - 3.1 Irrigation pipes are set out in accordance with plans/specifications and site requirements
 - 3.2 Pipe trenches are excavated in accordance with plans/specifications
 - 3.3 Pipe system is installed in accordance with plans/specifications, site requirements, manufacturers' recommendations and standards
 - 3.4 Pipelines are flushed of air and foreign matter to installation standard
 - 3.5 Back flow prevention device installed in accordance with standards
 - 3.6 Water emitters are installed and adjusted to produce required spray pattern
 - 3.7 Control valves installed, operated and adjusted to achieve specified flow rate
 - 3.8 Installation is tested to comply with standards, and authorities' requirements and adjusted
 - 3.9 Trenches are backfilled in accordance with plans/specifications and ground surface is reinstated
4. Clean up
 - 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of pipework, controls, valves, backflow prevention devices and water emitters for an irrigation system and its commissioning
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, underground services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public
- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, hand excavation equipment, ladders, water flow and water test equipment
 - Tools and equipment including lifting/load shifting equipment may also include mechanical excavation equipment, trench shoring equipment, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks

Materials

- Materials are to include copper tube, polyethylene, stainless steel and UPVC pipes, joints and components
- System components may include automatic controls, water emitters, back flow prevention devices and low voltage solenoid valves
- Water emitters may include pop up (full circle, half, quarter), oscillating, pulsating, impact, hear drive, mist sprays and in line turbo drippers
- Selection of water emitters is based on site requirements, physical site conditions, types of plants requiring irrigated water, manufacturers' specifications and automatic control systems

Communications

- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the set out, installation and commissioning of irrigation systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to set out, install and commission irrigation systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans/specifications for an irrigation system which is sourced from an isolating valve to supply four water emitters of varying type and requiring a solenoid valve, determine the system requirements, provide its set out, install and commission its operation ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPWT3007A Connect irrigation systems from drinking water supply
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - the relevant statutory and authority requirements related to the installation of commissioning irrigation systems
 - the standards applicable to the installation
 - various types of irrigation systems including the types of materials and components used
 - the protection of potable water supplies
 - characteristics and application of different pipes and fittings including fixing and joining techniques and methods
 - use of test equipment and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of setting out, installing and commissioning irrigation systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and commissioning process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPIG3002A**Install and commission domestic irrigation pumps****Unit Descriptor**

This unit specifies the competency required to install and commission domestic irrigation pumps.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the irrigation stream.

Employability Skills

This unit has employability skills.

Unit Sector

Irrigation

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Irrigation plans/specifications are obtained and the site is inspected 1.2 OH&S requirements associated with installing and commissioning domestic irrigation pumps, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing and commissioning domestic irrigation pumps, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation and commissioning of domestic irrigation pumps |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Irrigation system requirements are identified from plans/specifications 2.2 Pump is selected according to type, installation, range of flow rates, operating head and delivery distance 2.3 Pump is identified and ordered/collected in accordance with workplace procedures 2.4 Pump is checked for compliance with standards, docket/order form and for acceptable condition |

- | | |
|--------------------------------|--|
| 3. Install and commission pump | 3.1 Pump set out position is compliant with irrigation plans and manufacturers' recommendations |
| | 3.2 Pump base is installed in accordance with plans/specifications |
| | 3.3 Pump is fitted onto base, aligned to mark out and fastened/fixes into position |
| | 3.4 Suction line is connected to pump in accordance with specifications and manufacturers' recommendations |
| | 3.5 Discharge line is connected to pump in accordance with specifications and manufacturers' recommendations |
| | 3.6 Piping and pump is pressure tested in accordance with manufacturers' specifications |
| | 3.7 Operation of pump is tested and adjusted to achieve effective operation in accordance with manufacturers' specifications |
| | 3.8 Details of test data are recorded and documented in the format required by quality assurance procedures |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and commissioning of a centrifugal domestic irrigation pump
- Domestic irrigation pumps may be horizontal and vertical shaft centrifugal pumps, primed or self primed pumps, jet pumps and borehole/spear pumps
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with uneven/unstable terrain, trees, pits, poles, trip hazards, dirt mounds, underground services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working in proximity to others, worksite visitors, the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, hand excavation equipment, concreting tools, levelling equipment, water flow and water pressure test equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include pumps, copper tube, polyethylene, stainless steel and UPVC pipes, joints and components, cement and sand
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation and commissioning of domestic irrigation pumps
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and commission domestic irrigation pumps
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans/specifications for a domestic irrigation system, install and commission a centrifugal pump (25mm suction and 25mm delivery) for its operation ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPIG3001A Set out, install and commission irrigation systems, BCPWT3007A Connect irrigation systems from drinking water supply
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - the relevant statutory and authority requirements related to the installation of commissioning domestic irrigation pumps
 - levelling and alignment processes
 - the application of mechanical, hydraulic and electrical principles
 - various types of domestic irrigation pumps
 - characteristics and application of different pipes and fittings including fixing and joining techniques and methods
 - use of test equipment and procedures
 - the sources of information and the processes for the calculation of material requirements and flow rates
 - the process of installing and commissioning domestic irrigation pumps
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and commissioning process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS2001A**Unit Descriptor****Assemble mechanical services components**

This unit specifies the competency required to assemble mechanical services components for heating and cooling systems prior to their installation.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the assembly of mechanical services components, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient assembly of mechanical services components |
| 2. Identify fabrication requirements | <ul style="list-style-type: none"> 2.1 Fabrication to be effected is identified from plans/specifications 2.2 Quantity and type of materials required is calculated from plans/specifications 2.3 Materials are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with docket/order form and standards and for acceptable condition |
| 3. Assemble components | <ul style="list-style-type: none"> 3.1 Dimensions for fabrication and assembly are determined and transferred 3.2 Relevant standards, codes and symbols are interpreted 3.3 Selected development method is identified as appropriate and is applied in accordance with workplace procedures 3.4 Calculations are performed to determine job requirements 3.5 Material is marked out in conformance with determined measurements 3.6 Dimensions are checked for accuracy and compliance with plans/specifications |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the fabrication and assembly of mechanical services components prior to installation in heating, cooling and ventilation systems
- Components include pipework, ductwork, pressure vessels (fired/unfired), boilers, structural sections, chillers, heat exchangers and condensers
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, traffic control, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover waste management, ozone protection and clean-up protection

Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, welding equipment and heating, cutting and bending equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevated work platforms, restricted height scaffolds, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include metal piping, sheet metal, insulating materials (for piping and ducting), and components of steel, copper, brass, iron and poly ethylene materials
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the assembly of mechanical services components• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to assemble mechanical services components
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, assemble and connect:
 - a boiler to a heating coil
 - a fan and ductwork for a warm air heating system
- ensuring:
 - correct identification of requirements and details of assembly
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPMS3005A Install and test ducting systems, BCPMS3006A Install air handling units
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - workplace operating procedures including required standards for assembly
 - classification of assembly types and identification of assembly components
 - operation requirements of equipment used for fabricating and assembling components
 - characteristics of the materials used in the required assembly
 - application of mechanical and hydraulic principles
 - levelling and alignment processes
 - types of fasteners, fixings and sealants
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the assembly process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3001A**Unit Descriptor****Fabricate and install steel pressure piping**

This unit specifies the competency required to determine installation requirements and to fabricate, install and test steel pressure pipe. It applies to pipe systems with operating pressures not exceeding 1750 kPa and 200 degrees C.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications and any special instructions are obtained 1.2 OH&S requirements associated with the fabrication and installation of steel pressure piping, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Work is planned in conjunction with others involved in, or affected by, the work 1.5 Tools and equipment are identified, selected and checked for serviceability 1.6 Work area and materials are prepared to support efficient fabrication and installation of steel pressure piping |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Pipework configuration is identified from authorities' requirements and plans/specifications 2.2 Allowances for fabrication and/or assembly are determined and transferred 2.3 The quantity and type of materials required are calculated from plans/specifications in accordance with regulatory authorities' and workplace requirements 2.4 Materials are identified and ordered/collected in accordance with workplace procedures 2.5 Materials are checked for compliance with docket/order form and for acceptable condition |

- | | |
|--|---|
| 3. Fabricate, install and test pipe system | 3.1 System is set out in compliance with design drawings or instructions |
| | 3.2 Fixings and supports are installed to manufacturers' requirements, job plans/specifications and workplace requirements |
| | 3.3 Pipe system is fabricated and jointed in accordance with job plans/specification and manufacturers' requirements for mechanical type joints |
| | 3.4 Pipe system is installed in specified location without damage or distortion to pipework or surrounding environment or other services |
| | 3.5 Pipe system is tested and documented to comply with job specification, authorities' requirements, standards, codes of practice and workplace requirements |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the cutting and welding with oxy acetylene, welding with arc welding, and the mechanical bending, jointing, fixing and testing of a mild steel pressure piping system
- Pipes may convey condensate, water and other liquids, fuel oil, compressed air refrigerants and low temperature applications (including chilled water and refrigerated gases)
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools, plant and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements may include waste management, ozone protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, ladders, testing equipment, oxy and arc welding equipment, mechanical bending equipment and threading equipment
 - Tools and equipment may include elevated work platforms and lifting/load shifting equipment including scaffolding, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials for the fabrication, installation and testing of pressure pipe systems are to include steel pipes, cutting and welding gases, weldable pipe fittings, threaded pipe fittings and mechanical joint systems and fittings with variable diameters up to 100mm diameter
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Fault reporting

- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the fabrication, installation and testing of pressure pipe systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, fabrication, installation and testing of pressure pipe systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- Apply pipe cutting and welding skills by, as a minimum:
- using oxy acetylene:
 - butt weld a joint in 40mm piping in the fixed horizontal position;
 - weld 40mm and 50mm mild steel branch joints; and
 - construct an 80mm header with 20mm, 40mm and 50mm branch joints using the oxy acetylene method; and
- using arc welding:
 - weld 50mm and 80mm flanges to mild steel pipe; and
 - weld blank ends into 80mm and 100mm mild steel pipe
- Fabricate, install and test a 40mm steel pipeline from a flanged header to a unit heater incorporating:
 - two changes of direction;
 - one position butt welded with oxy welding;
 - an arc welded flange;
 - incorporating a branch for testing purposes; and
 - completed task is to be tested to the required pressure, ensuring the soundness of all joints and the system
- ensuring
 - correct diameters are used, system is manufactured to required dimensions and branches, bends, flanges etc are square
 - correct identification of design and details of proposed pressure pipe system
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2009A Cut with oxy-LPG acetylene
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the relevant statutory authority requirements and standards related to the fabrication, installation and testing of pressure pipe systems
 - the SI system of measurements
 - properties of conveyed materials including pressure, flow rates and temperature requirements
 - the sources of information and the processes for the calculation of material requirements
 - the fabrication, installation and testing process for pressure pipe systems
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the fabrication, installation and testing processes
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3002A**Unit Descriptor****Select and fit insulation and sheathing**

This unit specifies the competency required to install insulating sheathing on hot and cold piping, fittings and vessels. It includes the selection of insulation materials.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the selection and installation of insulating sheathing, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient selection and installation of insulating sheathing |
| 2. Identify insulation requirements | <ul style="list-style-type: none"> 2.1 Insulation materials are selected which comply with plans/specifications 2.2 Quantity and type of materials required are calculated from plans/specification 2.3 Allowances for fabrication and assembly are determined 2.4 Materials are identified and ordered/collected in accordance with workplace procedures 2.5 Materials are checked for compliance with docket/order form and for acceptable condition |
| 3. Install insulation | <ul style="list-style-type: none"> 3.1 Surfaces to be insulated are cleaned of dirt, rust, scale and grease 3.2 Insulating materials are installed in accordance with plans/specifications 3.3 Vapour barriers are applied to suit job requirements |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the selection and installation of the appropriate thermal insulation sheathing to sections of both hot and cold piping, fittings and vessels associated with refrigeration and cooling and heating systems
- Insulation materials may be metal, rigid polyurethane foam in preformed sections, polyisocyanurate foam in preformed sections, flexible, closed cell, chemically blown PVC nitrile rubber sponge in tubular or sheet form, resin bonded mineral wool in flexible blanket form, resin bonded glass fibre in flexible blanket or preformed sections, hydrous calcium silicate with fibrous reinforcement in preformed sections or powder form and jute fibre in strip form
- Metal sheathing includes aluminium, stainless steel, zinc coated steel and aluminium/zinc coated steel
- Vapour barriers may include mastic or plastic type filling compounds and adhesives, reinforced aluminium foil and polyethylene tubular jacket
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover waste management, ozone protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include dust masks/respirators, swaging machines, ladders, hand and power tools, measuring equipment and fall protection equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevating work platforms, restricted height scaffolds, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include metal, foam, PVC nitrile rubber sponge, resin bonded mineral wool, resin bonded glass fibre, hydrous calcium silicate and jute fibre
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the selection and installation of insulating sheathing to hot and cold piping, fittings and vessels
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to select and install insulating sheathing to piping, fittings and vessels
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, insulate:
 - 2 metres of small bore heating line with at least one change in direction
 - 2 metres of refrigeration line with at least one change in direction
 - metal sheath at least 2 metres of pipework with at least one change in direction
- ensuring:
 - correct identification of requirements and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPMS3001A Fabricate and install steel pressure piping, BCPCM3003A Fabricate and install non-ferrous piping, BCPMS3003A Install small bore heating systems, BCPCM2010A Mark out materials
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - set out techniques
 - materials handling processes
 - techniques for fixing insulating materials to piping and vessels
 - techniques for cutting, fabricating and assembling metal sheathing
 - levelling and alignment processes
 - correct waste disposal/recycling processes
 - processes of selecting and insulating pipes, fittings and vessels
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3003A**Unit Descriptor****Install small bore heating systems**

This unit specifies the competency required to install hot water heating systems with a maximum operating pressure and temperature range of 700kPa and 100 degrees C and pipes up to 25mm in size.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the installation of small bore heating systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of small bore heating systems |
| 2. Identify system requirements | <ul style="list-style-type: none"> 2.1 Configuration of pipework is checked for compliance with plans/specifications, and authorities' requirements 2.2 Position of pipes and heating units are determined from plans/specifications or site requirements, so as not to cause damage or interference to surrounding structures 2.3 Allowances for fabrication or assembly are determined and transferred 2.4 Quantity and type of materials required are calculated from plans/specifications 2.5 Materials are identified and ordered/collected in accordance with workplace procedures 2.6 Materials and equipment are checked for compliance with docket/order form and for acceptable condition |

- | | |
|---|--|
| 3. Fabricate, install and commission heating system | <ul style="list-style-type: none"> 3.1 System is set out to comply with plans/specifications 3.2 Fixings and supports are installed to manufacturers' specifications, and plans/specifications 3.3 Pipe system is installed and jointed in compliance with plans/specifications and manufacturers' requirements for mechanical type joints 3.4 Heating unit is installed in accordance with plans/specifications and manufacturers' requirements 3.5 Heating system is installed in the specified location with out damage or distortion to pipework, surrounding environment or other services 3.6 Heating system is tested to comply with the job specification, regulatory authorities' requirements, standards and Codes of Practice, and details recorded in the format required 3.7 Heating system is checked and adjusted for correct operation and balance, including the setting of nominated temperature and adding appropriate inhibitor |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the determination of system requirements, installation and commissioning of a heating system
- Heating system is to include panel radiators, skirting convectors and unit heaters
- Piping materials include steel tubes, copper tubes, polyethylene pipes and polybutylene pipes
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover waste management, ozone protection and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, ladders, measuring equipment, silver brazing equipment, heating and bending equipment and welding equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevated work platforms, scaffolding, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include pipe materials, heaters (panel, skirting and unit) and fixings and supports
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of small bore heaters
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and commission small bore heating systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, using a combination of copper tube, mild steel and polybutylene pipes, install a reverse return balanced heating system to a panel radiator, skirting convactor and a unit heater with a 25mm flow and return with 15mm branches, connected to a boiler/heat exchanger/heating source ensuring:
 - correct identification of requirements and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - properties of water including pressure and flow rates
 - electrical and electronic principles and safety requirements
 - statutory and authority requirements
 - effective isolation processes and procedures
 - characteristics and application of different fixing and joining techniques and methods
 - processes of installing and commissioning of small bore heating systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and commissioning process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3004A**Unit Descriptor****Install medical gas pipeline systems**

This unit specifies the competency required to install and test medical gas pipeline systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained and work requirements are identified 1.2 OH&S requirements associated with the installation of medical gas pipeline systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of medical gas pipeline systems |
| 2. Identify system requirements | <ul style="list-style-type: none"> 2.1 Configuration of system is checked for compliance with plans/specifications, standards and authorities' requirements 2.2 Position of pipes, supports, fixings and terminals are determined from plans/specifications or site requirements, so as not to cause damage or interference to surrounding structures 2.3 Allowances for fabrication or assembly is determined and transferred 2.4 Quantity and type of materials required are calculated from plans/specifications 2.5 Materials are identified and ordered/collected in accordance with workplace procedures 2.6 Materials and equipment are checked for compliance with standards and docket/order form and for acceptable condition |

- | | |
|---|--|
| 3. Fabricate, install, purge and test pipeline system | <ul style="list-style-type: none"> 3.1 System is set out to comply with plans/specifications, standards and authorities' requirements 3.2 Fixings and supports are installed to comply with plans/specifications, standards authorities' requirements and manufacturers' specifications 3.3 Pipe system and terminal units are positioned and labeled in compliance with plans/specifications, standards and manufacturers' requirements 3.4 Pipeline system is installed in the specified location without damage or distortion to pipework, surrounding environment or other services 3.5 Pipeline system is pressure tested to comply with the job specification, regulatory authorities' requirements, standards, regulations and details recorded in the format required 3.6 Pipeline system is purged in accordance with standards and authorities' requirements |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the determination of system requirements, installation, testing and purging of a medical gas pipeline system
- Pipeline system includes gas supply, gas pipeline, terminal units and fittings, fixtures and labels
- Types of gas pipelines include standard oxygen, nitrous oxide, medical breathing air, surgical tool gas, mixtures of medical gases, carbon dioxide and medical suction
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools, plant and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements are to cover waste management, ozone protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, silver brazing equipment, heating and bending equipment
- Materials
- Materials for installing medical gas pipeline systems are to include pipe materials, terminal units, purging gases, labels and fittings and supports
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation of medical gas pipeline systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install medical gas pipeline systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, install and test at least three medical gas pipeline systems (for different medical gases) from a manifold system to terminal units and fittings, ensuring:
 - the cleanliness/sterility of the finished system
 - correct identification of requirements and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM3003A Fabricate and install non-ferrous pressure piping
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - statutory and authority requirements
 - pressure testing procedures and equipment
 - processes and requirements of installing, testing and purging of medical gas pipeline systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation, testing and purging process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3005A

Unit Descriptor

Install and test ducting systems

This unit specifies the competency required to install and test ducting systems used for ventilation systems, heating and/or cooling systems and exhaust systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the installation and testing of ducting systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation and testing of ducting systems |
| 2. Identify system requirements | <ul style="list-style-type: none"> 2.1 Quantity and type of ducting materials, including in-duct equipment are calculated from plans/specifications 2.2 Allowances for fabrication or assembly are determined and transferred 2.3 Materials are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with docket/order form and standards and for acceptable condition |

- 3. Install and insulate duct system
 - 3.1 System is set out to comply with plans/specifications
 - 3.2 Duct supports and fixings are positioned to comply with plans/ specification and manufacturers' specifications
 - 3.3 Ductwork is installed in accordance with plans/specifications
 - 3.4 Circumferential joints are assembled and sealed in accordance with plans/specification and manufacturers' specifications
 - 3.5 Duct system is installed in specified location without damage or distortion to the surrounding environment or other services and in accordance with standards
 - 3.6 Insulation materials are fixed in accordance with plans/specifications
 - 3.7 Insulation materials are installed in specified location without damage to surrounding environment and in accordance with plans/ specifications, manufacturers' recommendations and standards
 - 3.8 Diffusers and terminal devices are installed in accordance with plans/specifications and with no damage to ceiling or finished surfaces

- 4. Test ductwork system
 - 4.1 Test requirements are determined from plans/specifications
 - 4.2 Test equipment is selected appropriate for the specified tests
 - 4.3 Duct system is tested under pressure in accordance with instructions and workplace procedures
 - 4.4 Leak sources are identified and repaired using specified procedures and materials, to ensure correct flow operation
 - 4.5 Details of test data are recorded in the format required by the specification

- 5. Clean up
 - 5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 5.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installing, insulating and testing of ducting for ventilation, heating, cooling and exhaust systems, including in-duct equipment
- Ducting systems include plenum box/chamber, ducting, insulation, in-duct equipment, diffusers and terminal devices, joints, supports and fixings
- Ducting may be sheet metal, flexible or a combination
- Diffusers and terminal devices include registers, grills, combined diffusers, light fittings, cushion heads, outlets taken directly from duct and on flexible branch, VAV boxes, pressure reducing devices and control devices
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover waste management, ozone protection and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, ladders, measuring equipment, in-duct equipment (volume control dampers, fire dampers and noise attenuation fittings) and test equipment (manometers and micromanometers)
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevated work platforms, scaffolds, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include ducting (sheetmetal, flexible and combination), in-duct fittings (sheetmetal or plastic), insulation and fixings and supports
 - Insulation and acoustic materials may be flexible aluminium laminate fabric, sheet materials, acoustic and non-acoustic materials, externally insulated, thermal and acoustic insulation for ductwork and air handling equipment handling air between 2 and 65 degrees C, thermal insulation and sound absorption materials of resin bonded mineral wool or glass fibre in unbound flexible blanket form, weight 20 to 65 kg/cubic metre, resin bonded mineral wool or glass fibre in faced or unfaced semi-rigid batt or board form, weight 20 to 100kg/cubic metre, surface facings of PVC coated fibreglass mesh factory bonded to the insulation, fibreglass tissue factory bonded to the insulation, perforated double sided aluminium foil factory bonded to the insulation and perforated zincanneal or other metal sheet fixed in the duct so that continuous insulation is obtained
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation and testing of ducting heaters
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and test small ducting systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, install, insulate, test and balance from a plenum box or chamber to supply heated air to three outlet grills, incorporating hard and flexible ductwork, the fabrication of one transition piece and dampeners, ensuring:
 - correct identification of requirements and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPM2001A Assemble mechanical services components
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - techniques for setting out, assembly/fixing and jointing requirements for ductwork systems and components including insulation and acoustic materials
 - electrical and electronic principles and safety requirements
 - statutory and authority requirements
 - applicable Australian Standards
 - levelling and alignment processes
 - characteristics of the materials used in the system being tested
 - system types and identification of system components
 - the application of flow rates, pressure and volume principles to testing procedures
 - types of repairs for detected leaks in the ductwork system
 - processes of installing, insulating and testing ducting
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and testing process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3006A**Unit Descriptor****Install air handling units**

This unit specifies the competency required to install and test air heating, cooling and ventilation plenums or enclosures which are fabricated on site.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the installation and testing of air handling units, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation and testing of air handling units |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Requirements for fabricated components and materials are determined from plans/specifications 2.2 Assembly methods are identified from plans/specifications 2.3 Materials are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with standards and docket/order form and for acceptable condition |
| 3. Set out, assemble and test air handling units | <ul style="list-style-type: none"> 3.1 Air handling unit is set out in compliance with plans/specifications 3.2 Fabricated components and equipment are positioned in accordance with plans/specifications 3.3 Equipment is installed in accordance with job and manufacturers' specifications 3.4 Assembly is checked for compliance with plans/specifications 3.5 Air handling unit is tested for correct operation 3.6 Details of test data is recorded in the format required |

- | | |
|-------------|--|
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installing and testing of an air handling plenum which is part of an air heating, cooling and/or ventilation system
- Air handling units may contain fans, coils, filters and other equipment items
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover waste management, ozone protection and clean-up protection

Quality Assurance	<ul style="list-style-type: none">Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), Australian Standards, site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">Tools and equipment are to include hand and power tools, ladders, and measuring equipmentTools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevated work platforms, scaffolds, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">Materials are to include fans, coils, filters and motors
Communications	<ul style="list-style-type: none">Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketchesSafe work procedures relating to the installation and testing of air handling unitsRegulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirementsManufacturers' specifications and instructionsOrganisation work specifications and requirementsInstructions issued by authorised organisational or external personnelRelevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install air handling units
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, fabricate and install a plenum chamber which includes a fan, coil, filter and dampers, including supports/brackets and any fixing requirements, allowing for anti-vibration, ensuring:
 - correct identification of requirements and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPMS2001A Assemble mechanical services components
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - electrical and electronic principles and safety requirements
 - effect of machinery vibrations on structures, ducts and fittings
 - equipment installation techniques which limit the transfer of vibrations from plant and equipment to other components
 - techniques for setting out, assembly/fixing and jointing requirements for ductwork systems
 - statutory and authority requirements
 - testing, balancing and commissioning of air handling units
 - processes of installing and testing air handling units
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and testing process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3007A**Unit Descriptor****Install split system air conditioning**

This unit specifies the competency required to install split system air conditioning.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the mechanical services stream

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the installation of split air conditioning, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of split air conditioning |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Quantity and type of material required for the installation is determined from plans/specifications 2.2 Materials are identified and ordered/collected in accordance with workplace procedures 2.3 Requirements for other services are identified and connection planned in accordance with regulatory requirements 2.4 Materials and equipment are checked for compliance with standards and docket/order form and for acceptable condition |
| 3. Install and test system | <ul style="list-style-type: none"> 3.1 Installation is set out in compliance with plans/specifications 3.2 Existing services are located and installation process adjusted accordingly to avoid any disturbance 3.3 Preparatory work is carried out to specifications without unnecessary damage to surrounding structures or environment 3.4 Structural supports are installed in compliance with plans/specifications 3.5 Ducting and control panels are installed in accordance with authorities' requirements, manufacturers' recommendations and plans and specifications 3.6 System is installed to manufacturers' recommendations and plans and specifications 3.7 Installation is tested in accordance with specification, code or standards for the application 3.8 Test results are documented in the format required |

- | | |
|-------------|--|
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of a split air conditioning system
- Where required, preparatory work may need to be completed, including penetration through building structure, installation of structural supports and installation of plinths
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover waste management, ozone protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include, hand and power tools, ladders, measuring equipment and test equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevated work platforms, scaffolds, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include air conditioning unit, ducting materials, control panels, insulation, diffusers and grills
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches and graphics
 - Safe work procedures relating to the installation of split air conditioning
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install split air conditioning
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given plans/specifications, install and pressure test a split air conditioning system, ensuring:
 - correct identification of requirements and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Imported units MEM 10.9AA Install refrigeration and air conditioning plant and equipment, MEM 10.10AA Install pipework and pipework assemblies and MEM 18.86AA Test evacuate and charge refrigeration systems are pre-requisite competencies to this unit
- There are no other units which could be assessed with this unit

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - electrical and electronic principles and safety requirements
 - environmental impact of gases and EPA requirements
 - statutory and authority requirements
 - effective isolation processes and procedures
 - materials handling techniques
 - characteristics and application of different assemblies including fixing and jointing techniques and methods
 - operating principles of air conditioning and refrigeration systems
 - processes of installing and testing split air conditioning systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3008A**Unit Descriptor****Install air conditioning control equipment**

This unit specifies the competency required to install air conditioning control equipment for the control of pressure, temperature, flow rate, humidity and/or density.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the installation of air conditioning control equipment, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of air conditioning control equipment |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Appropriate controller is selected in accordance with plans/specifications and manufacturers' recommendations 2.2 Controller position is identified from plans/specifications and with consideration to the location of existing services |
| 3. Install control equipment | <ul style="list-style-type: none"> 3.1 Air conditioning system is shut down and isolated according to appropriate Codes of Practice and OH&S requirements 3.2 Control equipment is installed to specification or manufacturers' instructions 3.3 Control equipment is positioned in the specified location without damage or distortion to the surrounding environment or other services 3.4 Manual lifting and handling equipment is used in accordance with OH&S requirements |
| 4. Calibrate and test control equipment | <ul style="list-style-type: none"> 4.1 Control equipment is calibrated in accordance with manufacturers' recommendations and/or job specifications 4.2 Correct operation of system control equipment is checked against operational specification |

5. Clean up
- 5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 5.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of a range of air conditioning control equipment
- Air conditioning control equipment includes thermostats, control valves, control switches, flow switches, pressure switches, limit switches, damper motors and solenoid valves
- Air conditioning may be electric, electronic, pneumatic, self-contained, hydraulic or a combination
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover waste management, ozone protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include, hand and power tools, ladders, measuring equipment and test equipment (multi-meters, thermometers and pressure gauges)
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevated work platforms, scaffolds, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include air conditioning controls for installation
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of air conditioning control equipment
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install air conditioning control equipment
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, install a control valve, a thermostat and flow, pressure and limit switches for an air conditioning system, ensuring:
 - correct identification of requirements and details of proposed installation and location
 - correct operation of the system/equipment
 - correct selection and use of appropriate processes, tools and handling of equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - electrical and electronic principles and safety requirements
 - operating principles of air conditioning and refrigeration systems
 - power and maintenance access requirements for control units
 - statutory and authority requirements
 - effective isolation processes and procedures
 - process of installing and testing air conditioning control equipment
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3009A**Unit Descriptor****Maintain mechanical services equipment**

This unit specifies the competency required to perform general maintenance of heating, ventilating and air conditioning systems and associated mechanical equipment (air distribution systems, hydronic systems and control systems).

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with maintaining mechanical services equipment, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient maintaining of mechanical services equipment |
| 2. Perform routine maintenance | <ul style="list-style-type: none"> 2.1 Maintenance tasks detailed in maintenance schedule are carried out to specification 2.2 Mechanical equipment and system components are checked with appropriate instruments 2.3 Faulty items or components are identified and maintenance procedure selected |
| 3. Repair/replace faulty components and test job | <ul style="list-style-type: none"> 3.1 Equipment is safely isolated according to regulations and/or OH&S requirements 3.2 Faulty items or components are removed using appropriate tools, equipment and procedures 3.3 Replaceable items are selected from manufacturers' catalogue or serviceable items are fitted in accordance with manufacturers' or site specifications 3.4 Adjustments are made to equipment or components to comply with specifications 3.5 Operational check is carried out on system to ensure its compliance with job specification 3.6 Maintenance report is documented in the format required by the maintenance specification |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the conduct of routine maintenance on air distribution and hydronic heating, ventilating and air conditioning systems
- Routine maintenance includes, but is not limited to: lubrication of bearings, cleaning of filters/strainers (air and water systems), alignment of drives, V belt tensioning, vibration isolation checks, cleaning of finned coils and cleaning of equipment drains
- System adjustments include but are not limited to: volume control and fire check operation, pipe and duct system check for leaks, operational check of control valves, check settings and confirm operation of system controls and chemical dosing of water systems
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

- Environmental Requirements
- Environmental requirements are to cover potential health hazards, ozone protection, waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), health warnings/water treatment requirements, site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include, hand and power tools, ladders, test equipment and may include elevated work platforms, scaffolds
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the maintaining of mechanical services equipment
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to maintain mechanical services equipment
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum:
 - for air distribution equipment: replace, realign and tension pullies/belts, check vibration mountings and flexible connections, lubricate bearings, clean air filters, coils and blades and check system for leaks;
 - for hydronic systems: replace gland valves and O rings, replace and adjust pump glands, clean drains, adjust operating control valves and settings, replace chemical dosing systems when required and check water system for leaks
- ensuring:
 - correct identification of requirements and details of proposed maintenance
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - air-conditioning and refrigeration principles
 - the application of mechanical, hydraulic, electrical and electronic principles
 - operating principles of system components used in mechanical services equipment
 - effect of bacteria in water and potential impact on health
 - workplace and statutory requirements for mechanical services equipment
 - processes of maintaining mechanical services equipment
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the maintenance process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPMS3010A**Install and maintain evaporative air cooling systems****Unit Descriptor**

This unit specifies the competency required to install and maintain evaporative air cooling systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the mechanical services stream.

Employability Skills

This unit has employability skills.

Unit Sector

Mechanical services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans and specifications are obtained 1.2 OH&S requirements associated with the installation of evaporative air cooling systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of evaporative air cooling systems |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Quantity and type of materials required for the installation is determined from plans/specifications 2.2 Materials are identified and ordered/collected in accordance with workplace procedures 2.3 Requirements for other services are identified and connection planned in accordance with regulatory requirements 2.4 Materials and equipment are checked for compliance with standards and docket/order form and for acceptable condition |

- 3. Install and test unit
 - 3.1 Installation is set out in compliance with plans/specifications
 - 3.2 Existing services are located and installation process adjusted accordingly to avoid any disturbance
 - 3.3 Preparatory work, including installation of piping and isolating valve and roof penetration and flashing, is carried out to specifications without unnecessary damage to surrounding structures or environment
 - 3.4 Structural supports are installed in compliance with plans/specifications
 - 3.5 Ducting and control panels are installed in accordance with authorities' requirements, manufacturers' recommendations and plans and specifications
 - 3.6 System is installed to manufacturers' recommendations and plans and specifications
 - 3.7 Installation is tested in accordance with specification, code or standards for the application
 - 3.8 Test results are documented in the format required
- 4. Maintain unit
 - 4.1 Service and maintenance requirements are identified from manufacturers' specifications or authorities' requirements
 - 4.2 Replacement components are checked and fitted periodically/as required in accordance with specification
 - 4.3 Maintenance operations are conducted observing manufacturers' and/or authorities' requirements
- 5. Clean up
 - 5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 5.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation, testing and commissioning of an evaporative air cooling system on a roof, with the associated penetration and flashing of the roof, the provision of water and the installation of the required ductwork
- Preparatory work may need to be completed, including the installation of piping and isolating valve in roof cavity, roof penetration and flashing for the installation of the unit, installation of structural supports and the installation of plinths
- Other services to the units may include electrical connections and water supply
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, manual handling, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover waste management, ozone protection and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority, gasfitting authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include, hand and power tools, ladders, roof safety equipment, measuring equipment and test equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevated work platforms, scaffolds, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include evaporative air cooling systems, ducting materials, control panels, insulation, diffusers and grills
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the installation of evaporative cooling systems• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install evaporative units
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, install an evaporative air cooling system on a roof, including:
 - the flashing of the roof penetration;
 - installing a plenum box and ductwork to three diffusers;
 - connect cold water to an isolation valve within 1 metre of the appliance;
 - connect and complete the installation; and
 - test and commission its operation
- ensuring:
 - correct identification of requirements and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPMS3005A Install and test ducting systems
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and PPE requirements
 - statutory and authority requirements
 - the effect of bacteria in water and health implications
 - effective isolation processes and procedures
 - materials handling techniques
 - characteristics and application of different assemblies including fixing and jointing techniques and methods
 - roof penetration and flashing
 - processes of installing and testing evaporative air cooling systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPCM4004A**Unit Descriptor****Prepare simple sketches and drawings**

This unit of competency specifies the outcomes required to produce on-site drawings of work required in buildings up to 5 floors with residential, commercial, industrial or mixed occupancy. Sketches may be used for estimating purposes and show measurements and other requirements for fire, mechanical and/or plumbing services.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of experienced tradespeople, project managers, estimators with a responsibility for preparing sketches and drawings for scoping and estimating work.

Unit Sector

Plumbing and services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Prepare to make sketches and drawings. | 1.1 The types of drawings required and key features to be recorded are identified through consultation and reference to relevant job documentation.
1.2 The OHS requirements on-site are identified and followed.
1.3 The tools and equipment required for inspection and measurement and for producing the drawings are gathered and checked for safety and serviceability. |
| 2. Create simple sketches and drawings. | 2.1 An inspection of the relevant area is carried out and the required measurements are taken and recorded.
2.2 Any incursions into the fabric of the building for inspection and measuring purposes are made with the least amount of disruption and made good to the relevant standards and finish.
2.3 Suitable views are selected and simple sketches and drawings created using standard drawing conventions and incorporating relevant codes and standards .
2.4 Sectional drawings of structural elements are created using standard drawing conventions. |
| 3. Notate and process drawings. | 3.1 Essential information is recorded on the drawing with symbols and abbreviations according to standard drawing conventions.
3.2 Drawing are labelled, dated and processed according to organisational administration and quality procedures. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills

- calculating and measuring techniques and their application
- interpretation and application of the relevant standards and codes
- drawing techniques.

Required knowledge

- drawing conventions and features including direction, scale, key, contours, symbols and abbreviations
- safe work methods
- the requirements of the relevant codes, standards, statutory and authority requirements
- other services and penetrations to be considered.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. 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) may also be included.

Types of drawings required include:

- floor plan
- land boundaries and footprint of building
- orthographic drawings
- schematic drawings of wiring and pipework
- sectional views.

Key features to be recorded may include:

- for plumbing services sketches:
 - drains
 - equipment locations
 - fittings
 - incoming water supplies
 - lighting and power supplies
 - obstructions
 - service penetrations
- for fire services sketches:
 - incoming water supplies
 - layout of automatic fire detection and alarm systems
 - lighting
 - location of hydrants and hose reels
 - obstructions
 - passive fire protection
 - power supplies
 - service penetrations
- for mechanical services sketches:
 - air conditioning requirements
 - ceilings
 - doors
 - lighting and power supplies.
 - obstructions
 - other services
 - walls
 - windows (opening and non-opening).

OHS requirements may include:

- detailing power supplies
- details of all services
- installation of scaffolding
- understanding of any hazards located in the area
- use of personal protective equipment.

Tools and equipment

- recording devices, i.e. pen/paper, computer, digital camera

Standard drawing conventions include:

- standard design symbols common to the construction, plumbing, air conditioning and fire protection industries

Relevant codes and standards include:

- all classes of buildings as defined in the Building Code of Australia:
 - commercial
 - domestic
 - industrial
 - residential.
- plumbing services work, including:
 - gas
 - hydrant and hose reel systems
 - residential and domestic fire sprinkler systems
 - sanitary plumbing and drainage
 - stormwater systems
 - water supply and distribution.
- fire services work, including:
 - alarm and detection systems
 - commercial and industrial fire sprinkler systems
 - emergency evacuation
 - hydrant and hose reel systems
 - passive protection
 - residential and domestic fire sprinkler systems
 - smoke and heat venting and air control systems
 - special hazards.
- mechanical services, including:
 - air handling systems
 - air conditioning systems
 - refrigeration systems
 - smoke and heat venting systems.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by creating a set of sketches and drawings for a small work project in the relevant field of expertise.
- Measurements of components, sub-assemblies, products, models, equipment, layouts or facilities needed for the preparation of the required drawings are made and recorded
- Calculations of required dimensions and other drafting details based on measurements and other relevant information are made

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - the production of clear and effective drawings and sketches with appropriate notations and labelling
 - the application of appropriate techniques for making inspections and taking measurements
 - the ability to make good any incursions into the fabric of a building
 - compliance with OHS regulations applicable to workplace operations
 - application of organisational quality procedures and processes
 - selection and use of appropriate processes, tools and equipment
 - interactive communication with others to ensure safe and effective worksite operations.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - access to an appropriate work-site
 - appropriate documentation and data related to tasks
 - tools and equipment relevant to activity process.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency will need to be demonstrated over a period of time reflecting the scope of the role
 - where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence only taken at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be current and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is to be used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in such a manner as appropriate to the oracy, language and literacy levels of the operator, any cultural issues that may affect responses to the questions, and reflecting the requirements of the unit of competency and the work being performed.

BCPRF2001A**Unit Descriptor****Work safely on roofs**

This unit specifies the competency required to undertake safe working practices when working on roofing structures.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

1. Identify work safety requirements

- 1.1 Scope of the task is identified in accordance with workplace procedures
- 1.2 OH&S requirements associated with working safely on roofs, and the workplace environment, are adhered to throughout the work
- 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements
- 1.4 Site is inspected to determine layout and physical condition, condition of structure, prevailing weather conditions, equipment requirements and potential hazards
- 1.5 Scope of the task and proposed work practices/activities are identified and documented in accordance with workplace procedures
- 1.6 Safety equipment is identified and selected and checked for serviceability in accordance with workplace requirements
- 1.7 Certification of the suitability of the structure to support the safety system is obtained

2. Prepare for work

- 2.1 Work procedures and instructions for the task are identified
- 2.2 Materials, tools and equipment, including personal safety equipment, are selected and checked for serviceability
- 2.3 Fall protection and perimeter protection equipment is inspected/installed ensuring adequacy for work and conformance to regulatory requirements
- 2.4 Roof safety system is installed in accordance with workplace and regulatory requirements
- 2.5 Appropriate signage and barricades are selected and installed

- | | |
|-------------------------|--|
| 3. Perform work on roof | <ul style="list-style-type: none"> 3.1 Access from ground to work area is checked to ensure it is safe and in accordance with regulatory requirements 3.2 Fall protection and personal safety requirements are applied in accordance with regulatory requirements 3.3 Manual handling of materials and equipment is undertaken in accordance with regulatory requirements 3.4 Roof materials and equipment are located on roof ensuring that they are safely secured and distributed to eliminate the risk of distorting or collapsing the building framework 3.5 Safety system is checked periodically for compliance with regulations in accordance with workplace procedures 3.6 Risk control measures are monitored to ensure that they are effective and appropriate to the task and work environment 3.7 Risk control measures are reassessed, as required, in accordance with changed work practices and/or site conditions and alterations are undertaken within scope of authority |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Safety system is dismantled in accordance with sequence and removed from worksite 4.2 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.3 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.4 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|------------|---|
| Unit scope | <ul style="list-style-type: none"> • The unit requires the safety assessment of a roof worksite, the provision of safety measures, including the installation of a roof safety system, and the undertaking of safe working practices • Roof safety systems include scaffolds, handrails, footwalks, kickboards, safety harness and harness fixing points • Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
|------------|---|

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include fall protection, perimeter protection, signage and barricades and ladders
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, forklifts, chain blocks, hoists, jacks, scaffolds, elevated work platforms and lifting equipment (such as cranes)
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to working on roofs
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for working safely on roofs
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the roof working area of a corner, extending at least 4 metres in either direction, and greater than 1.8m high, and the work to be undertaken, assess and provide for:
 - the erection, maintenance and dismantling of the fall and perimeter protection requirements for the site, incorporating handrails and footwalk, harnesses and harness fixing points;
 - safe personal and stores access to the roof;
 - stores and equipment locations; and
 - risk assessment
- ensuring:
 - correct identification of risks and safety requirements
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - the relevant statutory and regulatory authority requirements related to working safely on roofs
 - the nature of work undertaken on roofs
 - roof safety systems
 - the processes of providing for safe working practices
 - safety equipment/systems and considerations to facilitate working safely on roofs
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to providing a safe roof worksite
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPRF2002A**Select and install roof sheeting and wall cladding****Unit Descriptor**

This unit specifies the competency required to select and install roof sheeting and wall cladding for roofs. It includes the selection and installation of non-metallic roof materials associated with metal roofing (excluding roof tiles and slate) and of insulation materials.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained from site inspection 1.2 OH&S requirements associated with the selection and installation of roof sheeting and wall cladding, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient selection and installation of roof sheeting and wall cladding |
| 2. Identify insulation requirements | <ul style="list-style-type: none"> 2.1 Level of insulation from rain (and other) noise, condensation control and heat transfer reduction is determined 2.2 Installation method, insulation supports and insulation materials are identified to meet performance requirements, plans/specifications and regulatory authorities' requirements 2.3 Quantity and type of insulation required are calculated from design drawings/specifications in compliance with local authorities' requirements |

- 3. Select sheeting, cladding and non-metallic materials
 - 3.1 Appropriate roof sheeting and/or wall cladding is identified to comply with design specifications
 - 3.2 Quantity and type of manufactured roof coverings and/or fittings required are calculated from design drawings/specifications in compliance with local authorities' requirements
 - 3.3 Manufactured non-metallic roof materials are identified from plans/specifications and verified as compliant with design requirements and regulatory authorities' requirements
 - 3.4 Proposed roof and/or wall coverings, sealant, non-metallic materials, fixing materials, roofing and catchments are selected/checked for compatibility
 - 3.5 Materials, including insulation, are identified and ordered/collected in accordance with workplace procedures
 - 3.6 Materials and equipment are checked for compliance with docket/order form and for acceptable condition
- 4. Install roof sheeting or wall cladding
 - 4.1 Safety mesh and thermal insulation is fixed in accordance with standards, job specification and manufacturers' requirements
 - 4.2 Required rainwater goods are installed in accordance with standards and drawings/specifications
 - 4.3 Sheets are marked and trimmed prior to fixing and cut edges treated according to manufacturers' specifications
 - 4.4 Sheets, cladding and non-metallic materials are fixed in compliance with standards and manufacturers' specifications
- 5. Clean up
 - 5.1 Roof and rainwater goods and surfaces are cleared of swarf and debris
 - 5.2 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 5.3 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 5.4 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the selection and installation of the appropriate roof sheeting, wall cladding, non-metallic roof materials and insulation for a roof
- Roof sheeting includes metal and plastic (clear and coloured) sheets
- Non-metallic roof materials include PVC, glass and other non-metallic roof sheets, plastic, acrylic and fibre glass and non-metallic rainwater goods
- Installation includes the fitting of safety mesh and rainwater fittings
- Methods of insulation include rolls, batts, interlocking sections and loose fill
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include ladders, hand and power tools, elevating work platforms, measuring equipment and fall protection equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, restricted height scaffolds, cranes, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials for selecting and installing roof sheeting and wall cladding are to include insulation (reflective foil, laminate, fibreglass, polyethylene, straw or wool), insulation supports (wire mesh, plaster board or timber board), metal roof covers of concealed or pierce fixed types, rain water goods (steel, zincalume, aluminium, copper, stainless steel, fibreglass and polycarbonate), plastic building sheets for walls and roofs, trims, moulds, flashings, cappings, fixings and fasteners, self drilling and tapping screws, rivets and sealants
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the selection and installation of roof sheeting and wall covering• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications select and install roof coverings and wall cladding
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the drawings and specifications, calculate the requirements and select and install roof sheeting, wall cladding and insulation for two roof structures each being a minimum of 4 square metres area, one of which incorporates 2 square metres of non-metallic roof sheeting, both installations including insulation, rainwater goods, flashings and cappings, using the pierced and concealed fastening methods ensuring:
 - correct identification of requirements and details of proposed installation
 - correct fit of the completed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPRF2001A Work safely on roofs, BCPRF3003A Fabricate and install external flashings
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and fall protection codes and requirements
 - the relevant statutory and authority requirements related to the installation of roof sheeting and wall cladding, including non-metallic materials
 - types of fasteners, fixings and sealants and their application to the installation of roof coverings
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - corrosion prevention treatment requirements of cut sheets
 - the processes of selecting and installing roof sheeting and wall cladding
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPRF2003A**Unit Descriptor****Collect and store roof water**

This unit specifies the competency required to determine storage requirements and to plan, prepare and install storage tanks and related piping for roof water collection systems, for the collection of roof water.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in both the roofing and water streams.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Identify water storage system requirements | <ul style="list-style-type: none"> 1.1 Plans/specifications and any special instructions obtained 1.2 OH&S requirements associated with the collection and storage of roof water, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements for company operations are identified and adhered to 1.4 Site's annual rainfall is determined from meteorological or other relevant data 1.5 Roof catchment area is determined from plans or site inspection 1.6 Water consumption requirements for the installation is determined 1.7 Total water storage requirements for the installation is determined 1.8 Criteria for tank(s), gutters, downpipes and other system components are calculated in accordance with the relevant Australian Standard |
| 2. Plan and prepare for installation | <ul style="list-style-type: none"> 2.1 Required materials are identified and ordered/collected in accordance with workplace procedures 2.2 Work is planned in conjunction with others involved in, or affected by, the work 2.3 Materials are checked for compliance with docket/order form and for acceptable condition 2.4 Work area and materials are prepared to support efficient installation |
| 3. Install storage system | <ul style="list-style-type: none"> 3.1 Set out complies with design drawings or instructions 3.2 Preparatory work, including the installation of tank stand or standing, is carried out to specification without damage to surrounding structures and/or existing services 3.3 System is installed in accordance with job specification and regulatory authority's requirements 3.4 Cleaning and disinfecting of system is carried out in accordance with the relevant Australian Standard |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with state or territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements.

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- Unit scope
- The unit requires the installation of water storage tanks of at least 1000 litres capacity
 - Storage tanks may be of any authorised material
 - Installation covers both gravity and pump retrieval systems
 - Water collected and stored may be drinking or non drinking purposes
 - Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained
- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, ladders, measuring equipment and levelling equipment• Tools and equipment including lifting/load shifting equipment may also include excavation equipment, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials for installation of storage tanks are to include water storage tank(s), tank stand, copper pipe, polyurethane pipe, PVC, metal guttering, coated steel materials and sealants
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the determination, preparation and installation of collection and storage systems for roof water• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements.• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, planning and installation of storage tanks for drinking water
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum complete the following in respect of roof water collection and storage systems:
 - calculate the water catchment area of a roof, the gutter and downpipe materials required and the amount of water storage required for a given job
 - determine the systems requirements and specifications
 - plan and install a storage tank of not less than 1000 litres capacity, one metre above ground level, incorporating an inlet connection from a roof catchment area, and an outlet to be connected to a stormwater legal point of discharge
- ensuring:
 - correct identification of location, design and details of proposed storage
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - The properties of water including the effect of gravity and atmospheric pressure, the sources of contamination, impurities and procedures for maintaining water quality
 - the relevant statutory and authority requirements related to the collection and storage of roof water
 - the regulations and requirements pertaining to the collection and storage of drinking water and non drinking water
 - the SI system of measurements
 - the sources of information and the processes for the calculation of material requirements
 - water storage installation processes
 - procedures for commissioning water storage tanks for use
 - workplace and equipment safety requirements
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the work processes
 - calculators or equivalent
 - tanks and support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data.

BCPRF2004A**Fabricate roof coverings for curved structures****Unit Descriptor**

This unit specifies the competency required to design and fabricate curved industrial roof coverings.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-----------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained for component to be designed and fabricated 1.2 OH&S requirements associated with the design and fabrication of curved roof coverings, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient design and fabrication of curved roof coverings |
| 2. Design covering | <ul style="list-style-type: none"> 2.1 Roofing material is selected which is suitable for the fabrication process and job requirements 2.2 Curvature of roof covering is ascertained and used to determine the starting and finishing points of curves 2.3 Design and freehand sketch of the roof covering are created to form the basis of fabrication patterns 2.4 Fabrication patterns are drawn based on design and freehand sketch of roof covering |
| 3. Fabricate covering | <ul style="list-style-type: none"> 3.1 Material list is determined from patterns and calculations 3.2 Method of fabrication, tools and machinery for fabrication are determined to suit job requirements 3.3 Roof covering is marked out in accordance with drawings, patterns, and/or calculations and prefabricated 3.4 Components are marked and packaged for delivery to point of installation |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the design and fabrication of industrial curved roof coverings
- A curved roof covering may be hyperbolic, paraboloid, concave, convex or barrel shaped
- Fabrication patterns may be actual size or scaled
- Site will normally be industrial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities

- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority

- Tools and equipment
- Tools and equipment are to include drafting equipment, hand and power tools, machinery for shaping the roof material and measuring equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include drawing materials, metal roof sheeting of concealed or fixed type and accessories
 - Materials may include manufacturers' catalogues and specifications
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the design, and fabrication of coverings for curved roofs
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the design and fabrication of curved roof coverings
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans/specifications of a bull nosed verandah roof incorporating one internal and one external angle, design and fabricate the curved roof coverings, ensuring:
 - correct identification of design criteria and fabrication requirements
 - fabrication conforms with the design requirements
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BSPCM2004A, Read plans and calculate plumbing quantities, BCPCM2010A Mark out materials, BCPRF2002A Select and install roof sheeting and wall cladding, BCPRF3005A Install roof coverings to curved roof structures
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - design concepts and performance measures for curved roof coverings
 - characteristics of various metals and finishes
 - the relevant statutory and regulatory authority requirements related to metal roofs
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - the processes of designing and fabricating curved roof coverings
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the design and fabrication processes
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPRF3001A**Unit Descriptor****Receive roofing materials**

This unit specifies the competency required to coordinate the delivery, receipt and handling of roofing materials on a site.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained and confirmed by site visit 1.2 OH&S requirements associated with materials handling, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tools and equipment, including personal safety equipment and barricades and signs, are selected and checked for serviceability 1.5 Work area is prepared to support the efficient receipt of roofing materials |
| 2. Plan delivery | <ul style="list-style-type: none"> 2.1 Plans, specifications and quantity details are interpreted to determine amount and type of material to be delivered to site 2.2 Site is visited to determine capacity and identify risks and hazards and identify load handling methods and techniques 2.3 Spot load limits on roof frame structure are obtained from structural engineer 2.4 Loads are sequenced in accordance with job requirements and worksite capacity 2.5 Orders are placed specifying items, quantities and sequence of delivery of each load 2.6 Deliveries are planned and sequenced in conjunction with others involved or affected by their arrival |
| 3. Receive materials delivery | <ul style="list-style-type: none"> 3.1 Employees are informed of delivery process 3.2 Access to site for crane and other support vehicles/equipment is cleared/provided 3.3 Delivery sites/spot load sites and material securing equipment are prepared 3.4 Safety barricades and signs are positioned 3.5 Loads are moved from delivery vehicle to spot load positions or other determined site location 3.6 Loads are covered/secured to prevent damage in accordance with standards and manufacturers' requirements |

4. Clean up
- 4.1 Safety barricades and signs removed
 - 4.2 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.3 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.4 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the coordination of the receipt of deliveries of roofing materials to a worksite and its relocation and securing within the site. It involves the correct delivery and positioning of materials for installation in sequence
- Site location for work application may be either domestic or commercial and may be an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, the lifting and placement of loads, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include barricades and signage, ladders and fall protection equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevating work platforms, restricted height scaffolds, forklifts, chain blocks, hoists and jacks
- Materials
- Materials which may be received include rainwater goods, thermal insulation of reflective foil, laminate, blanket and batt types, metal roof covers of concealed or pierce fixed types, plastic building sheets for walls and roofs, industrial roof components, prefabricated roofing components, metal self drilling and tapping screws, metal rainwater products, rivets and sealants (silicon and solder)
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to receiving roofing materials
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to receiving roofing materials
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the drawings and specifications of a roofing project, assess roofing material requirements, sequence their delivery to correspond with a planned construction project, receive the materials including the location of spot points and securing arrangements ensuring:
 - correct identification of requirements and details of their delivery
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and fall protection codes and requirements
 - the relevant statutory and authority requirements related to the transportation and storage of roofing materials
 - delivery of roof plumbing materials techniques and procedures
 - workplace planning and estimation processes for delivery of roof plumbing materials
 - work systems and equipment
 - application of relevant regulations and workplace procedures
 - identification and correct use of equipment, processes and procedures
 - deployment of relevant human and physical resources and facilities
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to receiving roofing materials
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPRF3002A

Fabricate and install roof drainage components

Unit Descriptor

This unit specifies the competency required to fabricate and install roof drainage components and rainwater goods for commercial and residential roof systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---------------------------------------|--|
| 1. Prepare for work | 1.1 Drawings and specifications are obtained and confirmed by site inspection |
| | 1.2 OH&S requirements associated with the fabrication and installation of roof drainage components, and the workplace environment, are adhered to throughout the work |
| | 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements |
| | 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work |
| | 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability |
| | 1.6 Work area is prepared to support the fabrication and installation of roof drainage components |
| 2. Identify installation requirements | 2.1 Water management system is identified as suitable for preventing water penetration through roof covering |
| | 2.2 Roof drainage components required for installation are identified from drawings and specifications |
| | 2.3 Fabrication patterns are drawn based on design and freehand sketch of roof drainage |
| | 2.4 Quantity, type and sizing of drainage components, rainwater materials and/or accessories required are calculated from drawings/specifications in compliance with standards and local authorities' requirements |
| | 2.5 Gutter support system is certified as suitable by a structural engineer |
| | 2.6 Materials are identified from drawings, specifications, patterns and/or calculations and ordered/collected in accordance with workplace procedures |
| | 2.7 Materials and equipment are checked for compliance with docket/order form and for acceptable condition |

3. Fabricate roof drainage components
 - 3.1 Method of fabrication, tools and machinery requirements are determined to suit job requirements
 - 3.2 Materials are marked out from drawings to fabricate roof drainage components
 - 3.3 Roof drainage components are fabricated in compliance with standards, drawings/specifications and site measurements
 - 3.4 Components are marked, packaged and prepared for delivery and installation in accordance with workplace procedures

4. Set out and install roof drainage components
 - 4.1 Components are checked for compliance with docket/order form and for acceptable condition and arranged in order of installation
 - 4.2 Roof drainage components are set out to comply with job specifications and site measurements
 - 4.3 Structural supports are installed in compliance with job specifications
 - 4.4 Roof drainage components are jointed in compliance with job specifications and standards
 - 4.5 Roof drainage system is installed in accordance with standards and job specifications
 - 4.6 System is performance tested for satisfactory installation and remedied

5. Clean up
 - 5.1 Roof and wall claddings, roof drainage components and adjacent areas are cleared of swarf and debris
 - 5.2 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 5.3 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 5.4 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit

Unit scope	<ul style="list-style-type: none">• The unit requires the selection, fabrication, jointing and installation of a gutter and downpipe system to effectively drain a roof to ground level• Roof drainage components include box gutters, valley gutters, parapet gutters, eaves gutters, gutter support system, sumps, rainwater heads, downpipes, standing overflows and siphonic overflows• Fabrication patterns may be actual size or scaled• Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained
Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority

- Tools and equipment
- Tools and equipment are to include drawing equipment, ladders, hand and power tools, measuring equipment and fall protection equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevating work platforms, restricted height scaffolds, forklifts, cranes, chain blocks, hoists and jacks
- Materials
- Materials for fabricating and installing roof drainage components are to include metal rainwater goods, thermal insulation of reflective foil, laminate, fibreglass, PVC sheet goods, polyethylene, straw or wool, metal roof covers of concealed or pierce fixed types, plastic building sheets for walls and roofs, metal gutter and structural supports, metal self drilling and tapping screws, rivets and sealants
 - Materials may include glass sheeting and roof tiles
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the fabrication and installation of roof drainage components
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to the fabrication and installation of roof drainage components
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the drawings and specifications of a roof management system, determine the requirements, select, fabricate and install a box gutter and eaves gutter downpipe system, complete with gutter supports, gutter supports, overflows and sumps/rainheads for a roofed area of at least 4 square metres ensuring:
 - correct identification of requirements and details of proposed installation
 - correct fit of the completed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPRF2002A Select and install roof and wall cladding, BCPCM3001A Flash penetrations through roofs and walls, BCPCM2008A Cut and joint sheet metal, BCPCM2010A Mark out materials, BCPRF2001A Work safely on roofs
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and fall protection codes and requirements
 - design concepts and performance measures for roof drainage components
 - characteristics of various metals and finishes
 - capacity of fabrication machinery involved in the production of roof drainage components
 - the relevant statutory and authority requirements related to the fabrication and installation of roof drainage components
 - types of fasteners, fixings and sealants and their application to the fabrication and installation of roof coverings
 - joining of materials
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - corrosion prevention treatment requirements of cut sheets
 - the processes of fabricating, jointing and fixing roof drainage components
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the fabrication and installation processes
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPRF3003A**Unit Descriptor****Fabricate and install external flashings**

This unit specifies the competency required to fabricate and install external flashings for roof systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained and confirmed by site inspection 1.2 OH&S requirements associated with the fabrication and installation of external flashings, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient fabrication and installation of external flashings |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 External flashings to be installed are identified and working drawings/patterns are developed from job drawings, plans/specifications and site measurements 2.2 Materials, coatings, fixings, sealants and fasteners are checked for compliance with plans/specifications and standards and are compatible with adjacent materials and catchment 2.3 Materials are identified and ordered/ collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with docket/order form and for acceptable condition |
| 3. Fabricate and install external flashings | <ul style="list-style-type: none"> 3.1 External flashings are fabricated in compliance with standards, drawings and specifications and site measurements 3.2 Support framework is set out where required and fixed to comply with in accordance with plans/specifications and manufacturers' recommendations 3.3 Thermal insulation, where required, is fixed in accordance with plans/specifications and manufacturers' recommendations 3.4 Set out and fixing is installed to comply with cladding manufacturers' specifications and job specifications |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit

Unit scope

- The unit requires the fabrication and installation of external flashings to a roof
- External flashings include metal ceilings, associated soffits and fascias
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

Quality Assurance

- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures

Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include ladders, hand and power tools, levelling equipment, measuring equipment and perimeter guard rails• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevating work platforms, restricted height scaffolds, forklifts, cranes, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials for fabricating and installing external flashings are to include metal rainwater goods, insulation materials such as foil laminate, blankets and batts, trims, moulds, flashings, cappings, metal self drilling and tapping screws, rivets and sealants
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the fabrication and installation of external flashings• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to the fabrication and installation of external flashings
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the drawings and specifications:
 - fabricate and install 4 square metres of metal ceiling and associated soffits;
 - fabricate and install metal flashings to include an apron, parapet, apron wall, hanging and step, each to be a minimum length of 1.5 metres; and
 - install a metal fascia of 2 metres in length including one external angle and one internal angle
- ensuring:
 - correct identification of requirements and details of the proposed installations
 - correct fit of the completed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2008A Cut and joint sheet metal, BCPRF2002A Select and install roof sheeting and wall cladding, BCPRF3005A Install roof coverings to curved roof structures
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and fall protection codes and requirements
 - the relevant statutory and authority requirements related to the installation of external flashings
 - types of fasteners, fixings and sealants and their application to the fabrication and installation of external flashings
 - design concepts and performance measures for various external flashings
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - corrosion prevention treatment requirements of cut sheets
 - the processes of fabricating and installing external flashings
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the fabrication and installation processes
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPRF3004A**Unit Descriptor****Install roof components**

This unit specifies the competency required to select and install industrial type roofing components in roofs.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with selecting and installing industrial roof components, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient selection and installation of industrial roof components |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Industrial roof components are identified from plans/specifications and are compatible with adjacent materials 2.2 Proposed sealant, fixing materials, roofing and flashing materials are selected/checked for compliance with plans/specifications and standards 2.3 Materials are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with docket/order form and for acceptable condition 2.5 Location of installation and opening size is identified from plans and manufacturers' specifications 2.6 Location is checked for obstructions which may affect the installation |

- | | |
|----------------------------|--|
| 3. Install roof components | <p>3.1 Where required, the industrial component is erected to comply with manufacturers' recommendations</p> <p>3.2 Industrial roof component is set out to comply with plans/specifications and site measurements</p> <p>3.3 Structural supports are installed to comply with plans/specifications</p> <p>3.4 Openings are prepared to comply with plans/specifications and standards</p> <p>3.5 Mullions, frames, baffles, sheeting and louvre blades are located and fixed to comply with manufacturers' recommendations</p> <p>3.6 Component is installed to comply with plans/specifications and manufacturers' requirements</p> <p>3.7 Flashing and waterproofing, including propriety or purpose made flashing, is installed to comply with standards, plans/specifications, manufacturers' recommendations and regulatory authorities' requirements</p> <p>3.8 Installation is performance tested and remedied as required</p> |
| 4. Clean up | <p>4.1 Industrial components and surrounding areas are cleaned free of swarf and debris</p> <p>4.2 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures</p> <p>4.3 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures</p> <p>4.4 Documentation is completed in accordance with workplace requirements</p> |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of fixed and operating industrial components to a roof. They may be either continuous or unit installations
- Industrial roof components may be ridge vents, dome lights and explosion vents, fixed, manual and automated box type louvre units, continuous louvre blades (single, double or triple pass blades), non-mechanical roof ventilator units and continuous frame sheet type ridge or slope mounted ventilators
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include ladders, hand and power tools, levelling equipment, measuring equipment, cranes, perimeter guard rails and fall protection equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevating work platforms, restricted height scaffolds, forklifts, chain blocks, hoists and jacks
- Materials
- Materials for installing industrial components in roofs are to include insulation (foil laminate, blanket and batt types), roofing materials (steel, zincalume, aluminium, copper, stainless steel, fibreglass, and polycarbonate), metal rainwater goods, trims, moulds, flashings, cappings, fixings and fasteners, self drilling and tapping screws, pop rivets and sealants

- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the selection and installation of industrial components in roofs
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, planning and installation of industrial components in roofs
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans/specifications of an industrial roof, determine the material requirements, select and install the following components in a roof:
 - an explosion vent and a skylight,
 - a non-mechanised ventilator unit,
 - a manual box-type louvre unit, and
 - a continuous roof ventilator (ridge or slope mounted)
- ensuring:
 - correct identification of requirements and details of proposed installations
 - completed installation must fit
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPCM3001A Flash penetrations through roofs and walls
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and fall protection codes and requirements
 - the relevant statutory and authority requirements related to the installation of roof components
 - types of fasteners, fixings and sealants and their application to the installation of roof components
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - corrosion prevention treatment requirements of cut sheets
 - the processes of erecting and installing industrial roof components
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPRF3005A**Install roof coverings to curved roof structures****Unit Descriptor**

This unit specifies the competency required to set out and install roofing to hyperbolic, paraboloid, industrial and barrel vault roof structures.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application to the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained and confirmed by site inspection 1.2 OH&S requirements associated with installing curved roof structures, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of roof coverings to curved roof structures |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Quantity and type of manufactured roof covering and fittings and equipment required are calculated from design drawings/specifications in compliance with standards and local authorities' requirements 2.2 Proposed sealant, fixing materials, roofing and flashing materials are selected/checked for compatibility 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with docket/order form and for acceptable condition |
| 3. Install roof coverings | <ul style="list-style-type: none"> 3.1 Safety mesh and thermal insulation is fixed in accordance with standards, job specification and manufacturers' requirements 3.2 Required rainwater goods are installed in accordance with standards and drawings/specifications 3.3 Sheets are marked and trimmed prior to fixing and cut edges treated according to manufacturers' specifications 3.4 Roof covering is installed in accordance with manufacturers' specifications 3.5 Roof covering is performance tested and remedied |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of roof coverings to a curved roof structure
- A curved roof structure may be hyperbolic, paraboloid, convex, concave or barrel shaped
- Installation includes the fitting of safety mesh, insulation and rainwater gutterings and sumps
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include ladders, hand and power tools, cranes, levelling equipment, measuring equipment and fall protection equipment• Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevating work platforms, restricted height scaffolds, forklifts, chain blocks and hoists
Materials	<ul style="list-style-type: none">• Materials for installing roof coverings to curved roofs are to include thermal insulation of reflective foil, laminate, blanket and batt types, curved metal roof covers of concealed or pierce fixed types, metal rain water goods, plastic building sheets for walls and roofs, metal self drilling and tapping screws, rivets and sealants
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Fault reporting	<ul style="list-style-type: none">• Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the installation of roof coverings to curved roof structures• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications for the determination of requirements, planning and installation of roof coverings to curved roof structures
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the drawings and specifications, calculate the requirements and install the roof covering to a bull nosed verandah, incorporating one internal and one external corner ensuring:
 - correct identification of requirements and details of proposed installation
 - covering fits the structure
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and fall protection codes and requirements
 - the relevant statutory and authority requirements related to the installation of roof coverings to curved roof structures
 - types of fasteners, fixings and sealants and their application to the installation of roof coverings
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - corrosion prevention treatment requirements of cut sheets
 - the processes of fixing covering to curved roof structures
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPRF3006A**Unit Descriptor****Install composite roof systems**

This unit specifies the competency required to install composite roof systems.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian Standards. It has application in the roofing stream.

Employability Skills

This unit has employability skills.

Unit Sector

Roofing

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|----------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained and confirmed by site inspection 1.2 OH&S requirements associated with the installation of composite roof systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of the composite roof system |
| 2. Select composite roof system | <ul style="list-style-type: none"> 2.1 Composite roof system is identified for installation, including the shape and type of roofing and materials required 2.2 Quantity and type of materials and/or fittings required are calculated from design drawings/specifications in compliance with local authorities' requirements |
| 3. Manufacture roofing materials | <ul style="list-style-type: none"> 3.1 Materials are marked out from drawings and/or patterns to fabricate roof coverings and components 3.2 Roof coverings or components are prefabricated in accordance with specifications |
| 4. Prepare for installation | <ul style="list-style-type: none"> 4.1 Quantity and type of manufactured roof covering and fittings required are calculated from design drawings/specifications in compliance with standards and relevant regulatory requirements 4.2 Proposed sealant, fixing materials, roofing and flashing materials are selected/checked for compatibility 4.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 4.4 Materials and equipment are checked for compliance with docket/order form and for acceptable condition |

- | | |
|---|--|
| 5. Install roof covering and components | 5.1 Safety mesh and thermal insulation is fixed in accordance with standards, job specification and manufacturers' requirements |
| | 5.2 Required rainwater goods are installed in accordance with standards and drawings/specifications |
| | 5.3 Sheets are marked and trimmed prior to fixing and cut edges treated according to manufacturers' specifications |
| | 5.4 Sheets are fixed in compliance with standards and manufacturers' specifications |
| 6. Clean up | 6.1 Roof and rainwater goods and surfaces are cleared of swarf and debris |
| | 6.2 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 6.3 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 6.4 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the selection, manufacture and installation of a composite roof for a building
- Installation includes the fitting of safety mesh and rainwater fittings
- Composite roofs include gables, Dutch gable and hip
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, service lines, surrounding structures and facilities, dangerous materials, working at heights, working in proximity to others, worksite visitors and the public
- Environmental Requirements
- Environmental requirements may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include ladders, hand and power tools, levelling equipment, measuring equipment and fall protection equipment
 - Tools and equipment including lifting/load shifting equipment may also include hand trolleys, rollers, elevating work platforms, restricted height scaffolds, cranes, forklifts, chain blocks, hoists and jacks
- Materials
- Materials for installing roof composite roofs are to include thermal insulation of reflective foil, laminate, fibreglass, polyethylene, straw or wool, metal roof covers of concealed or pierce fixed types, rain water goods, plastic building sheets for walls and roofs, metal self drilling and tapping screws, rivets and sealants
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

- Fault reporting
- Reporting of faults is to be in accordance with company's workplace procedures and may be written or verbal
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of composite roofs
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install composite roof systems
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the drawings and specifications, calculate the requirements and select, manufacture and install two composite roof structures (either gable, Dutch gable or hip) including insulation and rainwater goods ensuring:
 - correct identification of requirements and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPRF2002A Select and install roof and wall cladding, BCPCM3001A Flash penetrations through roofs and walls, BCPCM2008A Cut and join sheet metal, BCPCM2010A Mark out materials, BCPMS2001A Assemble fabricated components, BCPRF2001A Work safely on roofs
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - relevant OH&S regulations and fall protection codes and requirements
 - the relevant statutory and authority requirements related to the installation of composite roof systems
 - types of fasteners, fixings and sealants and their application to the fabrication and installation of roof coverings
 - electrolysis and problems associated with the use of dissimilar metals
 - capillary action, thermal expansion and fabrication techniques to prevent leaking installations
 - corrosion prevention treatment requirements of cut sheets
 - the processes of manufacturing and installing composite roof systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPSN3001A**Plan the layout for a residential sanitary plumbing system****Unit Descriptor**

This unit specifies the competency required to plan the layout for a sanitary plumbing system for residential buildings.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the sanitary stream.

Employability Skills

This unit has employability skills.

Unit Sector

Sanitary

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Information and plans/specifications are obtained for planned work activity 1.2 OH&S requirements associated with planning the layout for sanitary plumbing systems, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for planning the layout for sanitary plumbing systems, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient planning the layout for sanitary plumbing systems |
| 2. Plan the system layout | <ul style="list-style-type: none"> 2.1 Site inspection is undertaken to determine job requirements 2.2 Quantity, location and type of fixtures is determined from design drawings, plans and elevations 2.3 Layout of the sanitary plumbing system is planned in accordance with the plans and standards 2.4 Materials and fixtures required are determined from the proposed design 2.5 Plans are recorded in accordance with workplace requirements |
| 3. Clean up | <ul style="list-style-type: none"> 3.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 3.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 3.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

- | | |
|----------------------------------|--|
| Unit scope | <ul style="list-style-type: none">• The unit requires the interpretation of a design to plan the layout of a sanitary plumbing system for residential buildings, at least three floors in height, including fixtures, discharge pipes, stacks and drains• Fixtures are to include all authorised residential fixtures• The site location for the application of the design will be domestic, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained |
| Safety (OH&S) | <ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices |
| Environmental Requirements | <ul style="list-style-type: none">• Environmental requirements may include waste management and clean-up protection |
| Quality Assurance | <ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures |
| Statutory/Regulatory Authorities | <ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority |
| Materials | <ul style="list-style-type: none">• Materials are to include drawing instruments, measuring equipment and plans including building plan, sanitary plan and drainage plan |
| Communications | <ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions |

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the design of sanitary plumbing systems
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to the layout of a sanitary plumbing system for a residential type building
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the design of a sanitary plumbing system for a three-storey residence, which includes a range of residential features, develop a plan for its layout, connecting all fixtures to a legal point of discharge ensuring:
 - correct identification of details of the plan
 - the appropriate sequencing of work and identification of materials and resources required
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- There are no units which could be assessed with this unit

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to sanitary plumbing systems
 - principles of sanitary plumbing
 - principles of drainage
 - characteristics and the application of different pipe systems, including their fittings and fixture supports and fixing and joining techniques
 - application of various sanitary and drainage fixtures and appliances
 - the process of planning the layout of sanitary plumbing systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the planning process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPSN3002A**Unit Descriptor****Install discharge pipes**

This unit specifies the competency required to install pipework from soil and waste water fixtures to a stack or drain.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the sanitary stream.

Employability Skills

This unit has employability skills.

Unit Sector

Sanitary

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained and fixture position is determined 1.2 OH&S requirements associated with installing sewage discharge pipes, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing sewage discharge pipes, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of sewage discharge pipes |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Position of discharge pipes is determined in accordance with plans/specifications, standards, site requirements and does not cause damage or interference to surrounding structures 2.2 Quantity and type of materials required are calculated from design drawings/specifications and comply with standards and authorities' requirements 2.3 Allowances for fabrication and assembly are determined and transferred 2.4 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install and test pipe system | <ul style="list-style-type: none"> 3.1 Pipe system is set out to comply with plans/specifications and standards 3.2 Fixings and supports are installed to manufacturers' specifications, job plans/specifications and standards 3.3 Pipes are installed and jointed in accordance with standards without damage or distortion to pipework, or surrounding environment and other services 3.4 Pipe system is tested to comply with standards and adjusted |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of pipework from soil and waste fixtures to a stack or drain which is connected to an underground drainage system
- Types of pipe systems may include:
 - direct to drain
 - direct to stack
 - elevated pipework
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, dirt mounds, underground services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, measuring equipment, heating equipment, hacksaw, dropsaw and threading and bending equipment
 - Tools and equipment including lifting/load shifting equipment may also include limited height scaffolding, elevated work platforms, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include any material authorised for use
 - Materials may include appropriate fixings from manufacturers' catalogues
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of sewage discharge pipes
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install sewage discharge pipes
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, using any two of the authorised materials, connect a minimum of three soil and waste fixtures:
 - direct to a drain;
 - to a drain by a disconnecter gully; and
 - direct to a drain via elevated pipework at least 8 metres long (to allow for expansion)
- ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPSN3003A Fabricate and install sewage soil and waste stacks, BCPSN3004A Install and fit off sanitary fixtures
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the properties/characteristics of sewage including temperature implications and discharges
 - characteristics and the application of different materials, pipe fittings and supports, including fixing and joining techniques
 - levelling and alignment processes
 - the relevant statutory and authority requirements related to the installation of discharge pipes
 - the standards applicable to the installation
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing sewage discharge pipes
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPSN3003A**Unit Descriptor****Fabricate and install sanitary stacks**

This unit specifies the competency required to fabricate and install sanitary stacks for soil and waste discharges.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the sanitary stream.

Employability Skills

This unit has employability skills.

Unit Sector

Sanitary

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with fabricating and installing sanitary stacks, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for fabricating and installing sanitary stacks, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient fabrication and installation of sanitary stacks |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Venting requirements are checked for compliance with the requirements of standards, plans and specifications 2.2 Stack design and branch positions are checked for compliance with standards, authorities' requirements, and job plans/specifications 2.3 Position of sanitary stacks is determined from plans/specifications, standards, site requirements and not causing damage/interference to surrounding structures 2.4 Quantity and type of materials required are calculated from design drawings/specifications and comply with standards and local authorities' requirements 2.5 Allowances for fabrication and assembly are determined and transferred 2.6 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.7 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

- | | |
|--|---|
| 3. Fabricate, install and test pipe system | 3.1 System is set out to comply with job plans/specifications and standards |
| | 3.2 Fixings and supports are installed to manufacturers' specifications, standards and plans/specifications |
| | 3.3 Pipes are fabricated, installed and jointed in specified location in accordance with job plans/specifications and standards, without causing damage or distortion to pipework or surrounding environment and other services |
| | 3.4 Pipe system is tested to comply with standards and adjusted |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the fabrication and installation of sanitary stacks for soil and waste discharges to various systems of plumbing
- Systems of plumbing may include fully vented, fully vented modified, single stack, single stack modified
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

- Safety (OH&S)
- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
 - Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
 - Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, dirt mounds, underground services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces
- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, measuring equipment, heating equipment, hacksaw, dropsaw and threading and bending equipment
 - Tools and equipment including lifting/load shifting equipment may also include restricted height scaffolding, elevated work platforms, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include those authorised for use
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the fabrication and installation of sanitary stacks
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to fabricate and install sanitary stacks
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- At a minimum, fabricate and install a sanitary stack to various systems of plumbing from any two floors of a building:
 - fixtures to be connected are a WC, a bath, a basin and a shower at each floor;
 - fabricate at least two branches in copper tube (minimum of 50mm diameter)
 - the stack is to incorporate copper, HDPE, UPVC and cast iron
 - a group of fixtures to be connected at a floor
 - the stack is to connect at a drainage point at ground level and extend through two floor levels to terminate
- ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPSN3002A Install discharge pipes
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - the relevant statutory and authority requirements related to the installation of stacks, discharge pipes and vents
 - systems of sanitary plumbing
 - the standards applicable to the installation
 - performance measures and characteristics of the materials used in the required soil and waste stack assembly
 - classification of assembly types and identification of assembly components
 - the properties of soil and waste discharges including temperature and corrosive discharges
 - relevant statutory and authority requirements
 - levelling and alignment processes
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
 - materials handling processes
 - the sources of information and the processes for the calculation of material requirements
 - the process of fabricating and installing sanitary stacks
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPSN3004A**Unit Descriptor****Install and fit off sanitary fixtures**

This unit specifies the competency required to install and fit off sanitary fixtures. It applies to the installation of sanitary plumbing, including the connection of discharge pipes to sanitary plumbing and drainage, and installations using soil/water fixtures and/or flushometer services.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the sanitary stream.

Employability Skills

This unit has employability skills.

Unit Sector

Sanitary

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with installing and fitting off sanitary fixtures, and the workplace environment are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation and fitting off of sanitary fixtures |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Position of sanitary fixtures is determined in accordance with plans/specifications and site requirements 2.2 Quantity and type of materials required are calculated from design drawings/specifications 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install and fit off sanitary fixtures | <ul style="list-style-type: none"> 3.1 Set out is checked for compliance with design drawings, manufacturers' instructions and relevant authority requirements 3.2 Fixtures are positioned and installed to comply with plans/specifications and manufacturers' requirements 3.3 Fixtures, components and pipework are assembled, installed and tested to manufacturers' requirements, job specification and standards 3.4 Fixtures are installed and connected without damage or distortion to fixture, pipework, the surrounding environment, or to other services 3.5 Completed installation is checked for correct functioning and compliance with specifications |

4. Clean up
- 4.1 Work area is cleared with materials disposed of or recycled in accordance with State or Territory legislation
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of sanitary plumbing. It includes the connection of discharge pipes to sanitary plumbing and drainage and the installation of sanitary fixtures
- Sanitary fixtures are as authorised and include water closets, showers, sinks, baths, basins, dishwashing machines, clothes washing machines, troughs and urinals
- Pipe materials are to include copper, copper alloy, and UPVC, and may include stainless steel
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, services, surrounding structure and facilities, hazardous materials, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements may include waste management and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include ladders hand and power tools, measuring equipment and heating, cutting and bending equipment
 - Tools and equipment including lifting/load shifting equipment may also include restricted height scaffolding, elevated work platforms, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include sanitary fixtures, UPVC, copper, copper alloy and stainless steel pipes
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation and fitting off of sanitary fixtures
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and fit off sanitary fixtures
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given a worksite and plans, set out, install and fit off to sanitary plumbing the following sanitary fixtures: a water closet, a shower, a sink, a bath, a basin, a dishwashing machine, a clothes washing machine and a wall hung urinal ensuring:
 - correct identification of location, design and details of the proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPSN3002A Install sewage discharge pipes
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the relevant statutory, authority and manufacturers' requirements related to the installation and fitting off of sanitary fixtures
 - performance measures and characteristics of sanitary fixtures
 - characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
 - levelling and alignment processes
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing and fitting off sanitary fixtures
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPSN3005A**Unit Descriptor****Install pre-treatment facilities**

This unit specifies the competency required to install pre-treatment facilities designed to intercept and retain prohibited discharges to the sanitary plumbing/drainage system.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the sanitary and drainage streams.

Employability Skills

This unit has employability skills.

Unit Sector

Sanitary

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with installing pre-treatment facilities, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing pre-treatment facilities, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of the pre-treatment facility |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Pre-treatment facility to meet the prohibited discharge requirement is identified and located to meet installation requirements, plans/specifications and authorities' requirements 2.2 Materials are identified and ordered/collected in accordance with workplace procedures 2.3 Materials are checked for compliance with docket/order form and for acceptable condition |
| 3. Install and test pre-treatment facility | <ul style="list-style-type: none"> 3.1 Set out is checked for compliance with plans/specifications and authorities' requirements 3.2 Pipework (existing or required) is verified as compliant with standards, manufacturers' and authorities' requirements 3.3 Pre-treatment facility is installed in accordance with authorities' requirements and manufacturers' specifications 3.4 Installation is tested for correct functioning and compliance to specifications and authorities' requirements |

4. Clean up
- 4.1 Work area is cleared in accordance with workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of pre-treatment facilities to intercept and retain prohibited discharges from a sanitary plumbing/drainage system
- Pre treatment facilities may include: grease traps, acid traps/neutralisers, solid traps, solvent/oil interceptors, plaster/clay traps, cooling interceptors and silt interceptors
- Pre-treatment facilities may be installed in such locations as food halls/outlets, butchers, vehicle servicing/repair establishments and processors of meat, chicken, milk and smallgoods, kitchens, mining sites and carparks
- Pre-treatment facilities may be permanent or temporary (portable)
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, dirt mounds, underground services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

- Environmental Requirements
- Environmental requirements are to cover water quality management and may include waste management and clean-up protection
- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include trench shoring equipment, excavation tools, hand and power tools and measuring equipment
 - Tools and equipment including lifting/load shifting equipment may also include mechanical excavation equipment, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of pre-treatment facilities
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and test pre-treatment facilities
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- At a minimum, given the plans, locate, install and test two different pre-treatment facilities to intercept and retain prohibited discharges from the sanitary plumbing/drainage system of a building ensuring:
 - correct identification of location, design and details of the proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPSN3002A Install sewage discharge pipes
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the types and purpose of pre-treatment facilities
 - the relevant statutory and authority requirements related to the installation of pre-treatment facilities
 - prohibited waste discharges to the sewer and their properties/effects
 - materials handling processes
 - classification of assembly types and identification of assembly components
 - levelling and alignment processes
 - fixing and joining techniques and methods
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing pre-treatment facilities
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPSN3006A**Unit Descriptor****Install sewerage pump sets**

This unit specifies the competency required to install sewerage pumps.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the sanitary stream.

Employability Skills

This unit has employability skills.

Unit Sector

Sanitary

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained 1.2 OH&S requirements associated with installing sewerage pump sets, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing sewerage pump sets, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of sewerage pump sets |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Location of pump is determined following site inspection 2.2 Pump base requirements are determined from drawings and specifications 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install sewerage pump equipment | <ul style="list-style-type: none"> 3.1 Pump is set out to comply with drawings and specifications, site requirements or job instruction with consideration to the location of existing services 3.2 Pumping equipment is installed in specified locations using recommended fixings 3.3 Pipework is connected in accordance with drawings and specifications, manufacturers' requirements and standards 3.4 Fuel tanks fitting, alignment of shafts and couplings, and the use of mechanical joints comply with relevant specifications and manufacturers' instructions 3.5 Pumping equipment and related pipework is tested in accordance with standards and manufacturers' recommendations and test data is recorded in the required format |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of a small bore macerator
- Sewerage pump sets may also include compressed air injectors and wet wells (including submersible pumps)
- Pump controls may be manual or automatic. Automatic controls may be float, level or flow switches
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, dirt mounds, underground services, surrounding structure and facilities, hazardous materials, recently filled trenches, other machines, traffic control, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority, statutory gasfitting authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, measuring and alignment tools
 - Tools and equipment including lifting/load shifting equipment may also include concreting tools, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include sewerage pump sets, motors and fittings
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of sewerage pump sets
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install sewerage pump sets
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, install a small bore macerator from a water closet to a legal point of discharge 4 metres away ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - properties of sewerage including pressure and flow rates
 - the relevant statutory and authority requirements related to the installation of sewerage pump sets
 - the standards applicable to the installation
 - performance measures for various sewerage pump sets
 - atmospheric pressure
 - levelling and alignment processes
 - fixing techniques
 - use of test equipment and procedures
 - the process of installing sewerage pump sets
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPWT3001A**Unit Descriptor****Set out and install water services**

This unit specifies the competency required to install hot and cold water services from the water supply to the fixture or point of discharge/storage.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the water stream.

Employability Skills

This unit has employability skills.

Unit Sector

Water

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained 1.2 OH&S requirements associated with setting out and installing water services, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for setting out and installing water piping systems, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient setting out and installation of water services |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Quantity and type of materials required are calculated from drawings and specifications or site inspection and comply with standards 2.2 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.3 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install and test pipe system | <ul style="list-style-type: none"> 3.1 Pipe lines and fixture connection points are set out in accordance with drawings and specifications or job instructions, with consideration to the location of existing services 3.2 Trenches are excavated in accordance with standards and authorities' requirements 3.3 Installation of supports and clips are checked for compliance with the job specification, authorities' requirements and manufacturers' specifications 3.4 Pipes are installed and jointed in accordance with job specifications, design layout and standards without damage or distortion to pipework, or surrounding environment and other services 3.5 Installation is tested to comply with standards, and authorities' requirements and adjusted |

- | | |
|-------------|--|
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation of pipework to carry drinkable water from a water meter, storage tank and/or a hot water service to a point of discharge/storage
- May also include the installation of pipework to carry non-drinkable water from a source to a point of discharge/storage
- Point of discharge may be an isolating valve, tap or fixture
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, uneven/unstable terrain, trees, trip hazards, underground services, surrounding structure and facilities, hazardous materials, other machines, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, hand excavation equipment, measuring equipment, silver brazing equipment, flaring tools, crimping tools, pressure testing equipment and bending equipment
 - Tools and equipment including lifting/load shifting equipment may also include mechanical excavation equipment, trench shoring equipment, scaffolding, elevated work platforms, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials may include those authorised for use
 - Factors influencing choice of materials include type of usage, nature of water conveyed, condition of ground, characteristics of materials and products and environmental factors
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, maps, material safety data sheets, diagrams or sketches and graphics
 - Safe work procedures relating to the set out and installation of water piping systems
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to set out and install water services
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, plan, size, set out, install and test water services:
 - from a meter (or storage tank) to at least five outlets (including a hot water service);
 - from a hot water service to at least five outlets; and
 - from a non-drinkable water source to at least two outlets
- ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - the relevant statutory and authority requirements related to the installation of water piping systems
 - the regulations and requirements for non-drinkable water installations
 - the standards applicable to the installation
 - characteristics and application of different pipes and fittings including fixing and joining techniques and methods
 - levelling and alignment processes
 - use of test equipment and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing water piping systems
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPWT3002A**Install and adjust water service controls and devices****Unit Descriptor**

This unit specifies the competency required to install water service controls and mixing devices used to manually control water mix and flow. It includes the basic adjustment and maintenance of correct flow operation for flushing devices, control valves, pumps and appliances, but does not include the commissioning of backflow prevention devices, thermostatic mixing valves and temperature control devices.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the water stream.

Employability Skills

This unit has employability skills.

Unit Sector

Water

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained 1.2 OH&S requirements associated with installing and adjusting water service controls and devices, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing and adjusting water service controls and devices, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installing and adjusting of water service controls and devices |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Service design requirements are identified from job specifications and in accordance with standards 2.2 Service controls and mixing devices are selected in accordance with standards, authorities' requirements and job specifications 2.3 Available pressure and number of fixtures are determined from job specifications 2.4 Valve size is selected in accordance with regulations, job specifications, manufacturers' specifications and design data 2.5 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.6 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

- | | |
|------------------------------|---|
| 3. Install and adjust device | 3.1 Devices and mixing valves are positioned and installed in accordance with standards, job specifications, manufacturers' recommendations and authorities' requirements |
| | 3.2 Pipework is flushed |
| | 3.3 Devices are commissioned and maintained to ensure correct flow operation in accordance with standards, manufacturers' and job specifications |
| | 3.4 Customer is advised of correct operation of flushing devices, control valves, appliances and pumps |
| 4. Clean up | 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and basic adjustment of water flushing devices, control valves, pumps and appliances for hot and cold water services
- Water controls and mixing devices include thermostatic mixing valves (install only), back flow prevention devices (install only), temperature control devices, line strainers, isolating valves, metal bodied taps and limiting valves
- Types of flushing devices include flushometers (flush valves) and cisterns (manual, automatic and programmed on demand)
- Types of control valves include manual, automatic, programmed, safety, flow control and isolation
- Types of pumps include centrifugal and positive displacement
- Types of appliances include manual, automatic, programmed, domestic and industrial
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, underground services, surrounding structure and facilities, hazardous materials, other machines, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools• Tools and equipment may also include ladders and elevated work platforms
Materials	<ul style="list-style-type: none">• Materials are to include of water flushing devices, control valves, pumps and domestic/industrial appliances
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation and basic adjustment of water service controls and devices
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install and adjust water service controls and devices
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, install and provide basic adjustment for:
 - a cold water service incorporating both manual and programmed flushing devices; and
 - a pumped hot water service consisting of mixing and tempering valves
- ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPWT3003A Install and commission water heating systems, BCPWT3004A Install water treatment equipment, BCPWT3005A Install water pump sets
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the relevant statutory and authority requirements related to the installation of service controls and devices
 - the standards applicable to the installation
 - properties of water including pressure and flow rates
 - hydraulics and mechanics
 - characteristics of the materials and devices being installed
 - effective isolation procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing service controls and devices
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation and adjustment process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPWT3003A**Install and commission water heating systems****Unit Descriptor**

This unit specifies the competency required to install and commission water heaters for domestic and commercial applications.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the water stream.

Employability Skills

This unit has employability skills.

Unit Sector

Water

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained 1.2 OH&S requirements associated with installing water heaters, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing water heaters, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of water heaters |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Installation position is assessed for compliance with authorities' requirements, manufacturers' specifications, standards, job specifications and location of other services 2.2 Quantity and type of materials required are calculated from job specifications, site inspection and comply with standards 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install, commission and maintain system | <ul style="list-style-type: none"> 3.1 Water heating system is installed in accordance with standards, job specifications, manufacturers' specifications and complies with authorities' requirements 3.2 Pipe joints are fitted correctly and in accordance with standards 3.3 Installation is tested in accordance with standards, manufacturers' specifications and authorities' requirements 3.4 Water heating system is commissioned in accordance with standards, manufacturers' specifications and authorities' requirements 3.5 Water heating system is maintained in accordance with manufacturers' instructions |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and commissioning of a low pressure, a mains pressure, an instantaneous (continuous flow) and a solar water heating system
- Water heaters may be electric storage heaters up to 630 litres, other storage heaters up to 700 litres, heat exchange water heaters, instantaneous water heaters, solar water heaters and other authorized water heaters
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, underground services, surrounding structure and facilities, hazardous materials, other machines, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, silver brazing equipment, ladders, flaring tools and mechanical bending equipment
 - Tools and equipment including lifting/load shifting equipment may also include elevated work platforms, restricted height scaffolding, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include water heaters and fittings, including solar panels for solar water heaters
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of water heaters
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install water heaters
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, plan, install and commission:
 - a low pressure storage water heating system;
 - a mains pressure storage water heating system;
 - an instantaneous water heating system; and
 - a solar water heating system, (one of these systems being a manifold system)
- ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPWT3001A Set out and install water services
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - the relevant statutory and authority requirements related to the installation of water heaters
 - the standards applicable to the installation
 - performance measures for various water heaters
 - characteristics and application of different mounting fittings including fixing and joining techniques and methods
 - levelling and alignment processes
 - use of test equipment and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of installing water heaters
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPWT3004A**Unit Descriptor****Install domestic water treatment equipment**

This unit specifies the competency required to install, test and maintain domestic water softeners, water coolers and water filtering equipment.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the water stream.

Employability Skills

This unit has employability skills.

Unit Sector

Water

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained 1.2 OH&S requirements associated with installing water treatment equipment, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing water treatment equipment, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of water treatment equipment |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Water treatment equipment requirements and location are determined in accordance with job specifications or site inspection 2.2 Water system adjacent to the equipment is tested for appropriate pressure 2.3 Materials and equipment are estimated from design drawings or job specification 2.4 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install and test water treatment equipment | <ul style="list-style-type: none"> 3.1 Water treatment equipment is installed in accordance with standards, manufacturers' specifications and complies with authorities' requirements 3.2 Base is provided for water treatment equipment that complies with job specification or manufacturers' instructions 3.3 Connections to water treatment equipment are checked for compliance with authorities' requirements and standards 3.4 Installation is pressure tested for leaks 3.5 Service lines are flushed in accordance with standards 3.6 Appliance is commissioned in accordance with manufacturers' specifications |

- | | |
|---------------------------------------|--|
| 4. Maintain water treatment equipment | 4.1 Service and maintenance requirements are identified from manufacturers' specifications or authorities' requirements |
| | 4.2 Replacement components are checked and fitted in accordance with specification |
| | 4.3 Maintenance operations are conducted observing manufacturers' and/or authorities' requirements |
| 5. Clean up | 5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures |
| | 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures |
| | 5.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and commissioning of water treatment equipment
- Water filters include cartridge filters, disk filters, sand filters and reverse osmosis filters
- Water treatment equipment may also include water softeners and water coolers
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, underground services, surrounding structure and facilities, hazardous materials, other machines, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, silver brazing equipment, flaring tools, crimping tools, testing equipment and measuring and levelling equipment
Materials	<ul style="list-style-type: none">• Materials are to include the water treatment appliance and fittings
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
Information	<ul style="list-style-type: none">• Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches• Safe work procedures relating to the installation of water treatment equipment• Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements• Manufacturers' specifications and instructions• Organisation work specifications and requirements• Instructions issued by authorised organisational or external personnel• Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install water treatment equipment
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, plan, install and commission either a domestic water cooler or a domestic water softener, indicating the continuing maintenance requirement for each installation and ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - the chemistry of water, including osmosis, filtration and purification and the properties of 'hard' and 'soft' water including sources of contamination, impurities, pressure and flow rates
 - the relevant statutory and authority requirements related to the installation of water treatment equipment
 - the standards applicable to the installation
 - characteristics and application of different assemblies, including fixing and joining techniques and materials
 - use of test equipment and procedures
 - the process of installing water treatment equipment
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPWT3005A**Unit Descriptor****Install water pump sets**

This unit specifies the competency required to install water pumps.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the water and fire streams.

Employability Skills

This unit has employability skills.

Unit Sector

Water

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|---|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained 1.2 OH&S requirements associated with installing water pump sets, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing water pump sets, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of water pump sets |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Location of pump is determined following site inspection 2.2 Pump base requirements are identified from drawings and specifications 2.3 Required materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Install water pump sets | <ul style="list-style-type: none"> 3.1 Pump base is set out to comply with drawings and specifications 3.2 Pump base is constructed in accordance with drawings and specifications 3.3 Pump is installed in accordance with standards, drawings and specifications and manufacturers' instructions 3.4 Fuel tank fitting, alignment of shafts and couplings, and the use of mechanical joints comply with relevant specifications and manufacturers' instructions 3.5 Pressure testing of piping system is conducted in accordance with specifications 3.6 Pump set is tested in accordance with specifications and test data is recorded in the required format |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the installation and testing of a centrifugal pump set
- Water pump sets may also include positive displacement, multi-stage turbine, submersible and electric and compression ignition driven pumps and may be close coupled, long coupled with mechanical joints or belt driven by an electric or petrol/diesel motor
- Pump controls may be manual or automatic. Automatic controls may be float, level, flow or pressure switches
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, underground services, surrounding structure and facilities, hazardous materials, other machines, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, measuring and alignment tools
 - Tools and equipment including lifting/load shifting equipment may also include concreting tools, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include water pump sets, motors and fittings
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the installation of water pump sets
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install water pump sets
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, plan, install and test a centrifugal pump ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPWT3001A Set out and install water services
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurements
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - the relevant statutory and authority requirements related to the installation of water pump sets
 - the standards applicable to the installation
 - performance measures for various water pump sets
 - atmospheric pressure
 - levelling and alignment processes
 - fixing techniques
 - use of test equipment and procedures
 - the process of installing water pump sets
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to the activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPWT3006A**Fit off and commission hot and cold water services****Unit Descriptor**

This unit specifies the competency required to fit-off and commission hot and cold water services to appropriate fixtures. It includes the provision for non-drinkable water applications.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the water stream.

Employability Skills

This unit has employability skills.

Unit Sector

Water

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Drawings and specifications are obtained 1.2 OH&S requirements associated with fitting off, connecting and commissioning hot and cold water services, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for fitting off, connecting and commissioning hot and cold water services, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient fitting off, connecting and commissioning of hot and cold water services |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Fit off, connections and fixtures/fittings and their location are identified in accordance with job specifications or site inspection 2.2 Materials and equipment are estimated from drawings or job specification 2.3 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.4 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

- | | |
|--------------------------------------|---|
| 3. Make connections and test service | <p>3.1 Final connections are made to hot and cold water services ensuring fixtures, jointing methods and appliances comply with standards and made without damage to surrounding structures</p> <p>3.2 Labels/signage are positioned for non-drinkable water services in accordance with regulatory authorities' requirements</p> <p>3.3 Water services are hydraulically tested to ensure connections are leak free</p> <p>3.4 Valves, cisterns, taps and other components are checked for correct operation</p> |
| 4. Commission water services | <p>4.1 Service lines are flushed in accordance with standards and regulatory authorities' requirements</p> <p>4.2 Water services are commissioned in accordance with regulatory authorities' requirements and manufacturers' specifications, emphasising the risk of the 'blue water' symptom</p> |
| 5. Clean up | <p>5.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures</p> <p>5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures</p> <p>5.3 Documentation is completed in accordance with workplace requirements</p> |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the fitting off, connecting, testing and commissioning of hot and cold water services to all household fixtures and appliances
- Water services include non-drinkable water services
- 'Blue water' is a symptom which is believed to occur as a result of a less than adequate commissioning process
- Site location for work application may be either domestic or commercial and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, underground services, surrounding structure and facilities, hazardous materials, other machines, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, silver brazing equipment, flaring tools, crimping tools, mechanical and bending tools and testing equipment
Materials	<ul style="list-style-type: none">• Materials are to include hot water services/heaters and cold water fixtures and fittings
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the fitting off, connecting and commissioning hot and cold water services
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to the fitting off, connecting and commissioning of hot and cold water services
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, plan, fit off, connect, test and commission both hot and cold (drinkable) water services of a house, including bathroom, en-suite, kitchen, laundry and outdoor connections ensuring:
 - correct identification of location, fit off, connections, testing and commissioning requirements
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPWT3001A Set out and install water services
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - properties of water including sources of contamination (blue water), impurities, pressure and flow rates
 - non-drinkable water processing, requirements and applications
 - the relevant statutory and authority requirements related to the fitting off, connecting and commissioning of hot and cold water services
 - the standards applicable to the work
 - characteristics and application of different fittings and fixtures, including fixing and joining techniques and materials
 - implications of cross connections and air gaps
 - isolation processes and procedures
 - use of test equipment and procedures
 - the process of fitting off, connecting and commissioning hot and cold water services
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the work
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPWT3007A Connect irrigation systems from drinking water supply

Unit Descriptor

This unit specifies the competency required to connect irrigation and watering systems from a drinking water supply. It does not include the commissioning of the system or backflow arrangements.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the water stream.

Employability Skills

This unit has employability skills.

Unit Sector

Water

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Plans/specifications are obtained 1.2 OH&S requirements associated with connecting irrigation systems from a drinking water supply, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for connecting irrigation systems, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient connecting irrigation systems from a drinking water supply |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Connection size and hazard rating is determined from plans/specification, standards and/or site inspection 2.2 Valve is sized in accordance with plans/ specification 2.3 Back flow prevention devices are confirmed as being in accordance with hazard rating 2.4 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |
| 3. Connect and test system | <ul style="list-style-type: none"> 3.1 Excavation is set out and made in accordance with plans/specifications and undertaken with consideration to existing structures/services 3.2 Service pipe is isolated and cut to accommodate take off branch in accordance with authorities' requirements 3.3 Back flow prevention device is fitted in accordance with standards and manufacturers' specifications 3.4 System is connected and flushed to the required standard 3.5 Water supply is restored and system tested in accordance with standards 3.6 Ground surface is restored |

4. Clean up
- 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures
 - 4.3 Documentation is completed in accordance with workplace requirements

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the cutting into a water supply, installing a take off branch and fitting valves and backflow prevention devices for an irrigation or watering system. The unit does not cover the commissioning of the system or backflow arrangements
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, uneven/unstable terrain, trees, trip hazards, underground services, surrounding structure and facilities, hazardous materials, other machines, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces

Environmental Requirements

- Environmental requirements are to cover water quality management and may include waste management and clean-up protection

- Quality Assurance
- Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
- Tools and equipment
- Tools and equipment are to include hand and power tools, hand excavation equipment, measuring equipment, silver solder/brazing equipment and electrical bonding/bridging strap
 - Tools and equipment including lifting/load shifting equipment may also include mechanical excavation equipment, trench shoring equipment, scaffolding, elevated work platforms, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
- Materials
- Materials are to include steel pipes, copper tube, UPVC pipes, polyethylene pipes, valves, backflow prevention devices, joints, fittings and connections
- Communications
- Communications are to include, voice and hand signals and may include two-way radio and site specific instructions
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
 - Safe work procedures relating to the connection of irrigation systems from a drinking water supply
 - Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
 - Manufacturers' specifications and instructions
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to connect an irrigation system from a drinking water supply
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the plans/specifications for an irrigation system, prepare for, connect and test the cutting into a drinking water supply, the installation of the appropriate valves and backflow prevention devices and the connection to a capped outlet (for the fitting of the irrigation system) ensuring:
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities, BCPIG3001A Set out, install and commission irrigation systems
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - various types of irrigation systems and the types of materials used
 - drinking water (potable) supplies and protection measures
 - the relevant statutory and authority requirements related to the connecting of irrigation systems from a drinking water supply
 - the standards applicable to the connection
 - characteristics and application of different pipes and fittings including fixing and joining techniques and methods
 - implications of cross connections and air gaps
 - use of test equipment and procedures
 - the sources of information and the processes for the calculation of material requirements
 - the process of connecting of irrigation systems from a drinking water supply
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the connection process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCPWT3008A**Unit Descriptor****Install water service**

This unit specifies the competency required to install a water supply system from the authorities' main to the metering device, in accordance with water authority requirements.

Work associated with this unit is undertaken within the plumbing and services sector in accordance with relevant Australian standards. It has application to the water stream.

Employability Skills

This unit has employability skills.

Unit Sector

Water

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------------|--|
| 1. Prepare for work | <ul style="list-style-type: none"> 1.1 Site plans and specifications are obtained to establish the location of the main 1.2 OH&S requirements associated with installing of a water service, and the workplace environment, are adhered to throughout the work 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work 1.5 Tools and equipment for installing water services, including personal safety equipment, are selected and checked for serviceability 1.6 Work area is prepared to support the efficient installation of water services |
| 2. Identify installation requirements | <ul style="list-style-type: none"> 2.1 Location of service is determined following site inspection 2.2 Cables, conduits, pipes or other services are located and noted 2.3 Quantity and type of materials required is calculated or determined from plans/specifications 2.4 Materials and equipment are identified and ordered/collected in accordance with workplace procedures 2.5 Materials and equipment are checked for compliance with standards, docket/order form and for acceptable condition |

- | | |
|------------------------------------|---|
| 3. Install and test water services | <ul style="list-style-type: none"> 3.1 Pipe lines and excavation areas are set out in accordance with plans/specifications 3.2 Trenches are excavated in accordance with standards and/or regulatory authorities' requirements and to required size 3.3 Service control valve position is located 3.4 Main is drilled and tapped in accordance with regulatory authorities' requirements and workplace procedures 3.5 Service line is marked out at 90° to the main in a straight line to the meter 3.6 The selected process for the installation of service pipe under roadway is undertaken in accordance with authorities' requirements 3.7 Pipework is installed in accordance with the job specification, authorities' requirements and design layout including the fitting of designated service control valve(s) 3.8 Water meter is selected and installed in accordance with authorities' requirements, surrounding environment, climatic conditions and in consideration of servicing or cleaning requirements 3.9 Meter control valve is fitted at inlet in accordance with authorities' requirements 3.10 Installation is tested for compliance with job specifications, standards and regulatory authorities' requirements 3.11 Excavation is backfilled in accordance with specifications and authorities' requirements |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of or recycled in accordance with State or Territory legislation and workplace procedures 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and workplace procedures 4.3 Documentation is completed in accordance with workplace requirements |

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- The unit requires the tapping into a water main and the connection and installation of valves, flanges and pipework to a water meter and the testing of the installation
- Tapping may be performed under pressure or with the water turned off
- Site location for work application may be either domestic or commercial, and may be a new worksite, or an existing structure being renovated, extended, restored or maintained

Safety (OH&S)	<ul style="list-style-type: none">• OH&S requirements are to be in accordance with State or Territory legislation and regulations and may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances• Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices• Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with the use of tools and equipment, trip hazards, underground services, surrounding structure and facilities, hazardous materials, other machines, working at heights, working in proximity to others, worksite visitors, the public and may include working in confined spaces
Environmental Requirements	<ul style="list-style-type: none">• Environmental requirements are to cover water quality management and may include waste management, stormwater protection and clean-up protection
Quality Assurance	<ul style="list-style-type: none">• Quality assurance requirements include International Standards Organisation, internal company quality assurance policy and risk management strategy, Environment Protection Authority (EPA), site safety plan and workplace operations and procedures
Statutory/Regulatory Authorities	<ul style="list-style-type: none">• Statutory/regulatory authorities may include statutory plumbing authority and the local council statutory authority
Tools and equipment	<ul style="list-style-type: none">• Tools and equipment are to include hand and power tools, manual excavation equipment, silver brazing equipment, tapping tool and test equipment• Tools and equipment including lifting/load shifting equipment may also include mechanical excavation equipment, trench shoring equipment, hand trolleys, rollers, forklifts, chain blocks, hoists and jacks
Materials	<ul style="list-style-type: none">• Materials are to include those authorised for use
Communications	<ul style="list-style-type: none">• Communications are to include, voice and hand signals and may include two-way radio and site specific instructions

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, job drawing, work bulletins, charts and hand drawings, memos, material safety data sheets, diagrams or sketches
- Safe work procedures relating to the installation of water services
- Regulatory/legislative requirements, particularly those pertaining to plumbing regulations, building codes, OH&S and environmental requirements
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Locate, interpret and apply relevant information, standards and specifications to install water services
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- As a minimum, given the site plans, determine the requirements, tap into a main and connect a 4 metre service line to a meter and test the installation ensuring:
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
- Communicate and work effectively and safely with others

Relationship to other units

- BCPCM2003A Carry out OH&S requirements
- BCPCM2004A Read plans and calculate plumbing quantities
- Where related units form an integral part of workplace responsibilities and roles, they can be assessed concurrently

Specific knowledge required to achieve the performance criteria

- A knowledge of:
 - the SI system of measurement
 - workplace and equipment safety requirements
 - properties of water including pressure and flow rates
 - the relevant statutory and authority requirements related to the installation of water services
 - the standards applicable to the installation
 - characteristics and application of different pipe and fittings including fixing and joining techniques and methods
 - levelling and alignment processes
 - the process of installing water services
 - use of test equipment and procedures
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Plumbing and Services Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - tools and equipment appropriate to the installation process
 - calculators or equivalent
 - support materials appropriate to activity
 - specifications in the form of a job or work order
 - research resources including systems information and data

BCCPL3001B**Unit Descriptor****Install water mains pipelines**

This unit specifies the competency required to install water mains pipelines to service urban and rural community water. It includes the minimum criteria for competency assessment.

This unit includes testing of mains pipe systems.

Employability Skills

This unit contains employability skills.

Prerequisite Unit(s)

BCCCM1001C Follow OH&S policies & procedures

Unit Sector

Pipe Laying

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------|---|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details relevant to the tasks are obtained, confirmed and applied to the allotted task 1.2 Safety requirements are obtained from the site safety plan and organisational policies and procedures, confirmed and applied to the allotted task 1.3 Signage requirements are identified and obtained from the project traffic management plan and implemented 1.4 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported 1.5 Environmental protection requirements are identified from the project environmental management plan, confirmed and applied to the allotted task |
| 2. Set out and excavate | <ul style="list-style-type: none"> 2.1 Work area and materials are prepared to support the efficient installation of the pipe work 2.2 Dewatering requirements are determined and applied 2.3 Location, alignment direction, level and grade of mains pipe system is determined from job drawings/ specifications 2.4 Works are set out to specification 2.5 Plant operator is advised of excavation requirements and levels are monitored 2.6 Mains pipe system support mechanism is installed in accordance with plans, specifications and standards |

- 3. Install mains pipeline
 - 3.1 Pipes are lowered and placed in position to design specifications
 - 3.2 Pipes are joined in accordance with manufacturers specifications
 - 3.3 Pipes are placed and valves, fittings and flow control devices are fitted in accordance with drawings and specifications
 - 3.4 Alignment level and grade is checked continuously for conformance with design plans and specifications
 - 3.5 Side support and/or overlay is positioned beside the pipes
 - 3.6 Mains pipe system support structure is checked
 - 3.7 Backfill procedure is monitored to ensure work is completed to specification, where specified
 - 3.8 Valve chambers, minor structures and thrust blocks are constructed
- 4. Test mains pipe system
 - 4.1 Test is performed to relevant authority requirements as determined by the specifications
 - 4.2 Mains pipe system test procedures are performed establishing pressurisation, functionality and serviceability
 - 4.3 Test results are recorded and reported
- 5. Clean up
 - 5.1 Work area is cleared and materials disposed of or recycled in accordance with project environmental management plan
 - 5.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required knowledge:

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Civil construction terminology
 - Site and equipment safety requirements
 - Mains pipe systems and installation procedures
 - Confined space entry requirements
 - Dewatering
 - Concrete and concrete fabrication
 - Processes for interpreting engineering drawings
 - Equipment types, characteristics, technical capabilities and limitations
 - Operational, maintenance and basic diagnostic procedures including testing procedures
 - Mains water pressure
 - Valves and flow control devices
 - Water reticulation
 - Processes for the calculation of pipeline grades and percentages
 - Sedimentation and erosion controls
 - Excavation/trench safety
 - Site isolation and traffic control responsibilities and authorities
 - Materials Safety Data Sheets and materials handling methods
 - Project quality requirements
 - JSA's/Safe work method statement

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit Scope .

- Mains pipe systems are to include pressurised mains water pipelines
- Types of mains pipe systems are to include in-ground and may include above ground
- Mains pipes may be constructed from but not limited to PVC, UPVC, poly, DICL, steel and copper
- Valves and flow control devices are to include but not be limited to stop valves, flow control valves and may include non return valves, pressure control valves, energy dissipaters and air release valves
- Installation procedures are to include but not be limited to selecting size, type and material of pipe, bedding down pipes, positioning pipes, checking alignment, level and grade and may include repair work
- Testing procedures may include but not be limited to pressure, visual straightness, ovality, tolerance, air and water
- Bedding materials may include aggregate and sand
- Support systems may include bedding for in-ground trenches or concrete shoulders for above ground pipes
- Pipe joining methods are to include but not be limited to rubber ring, solvent welded and may include arc welded and mechanical jointed
- Traffic control signage may include but not be limited to escort vehicle, highway traffic signs, site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Traffic conditions may include but not be limited to congested urban environments, low traffic rural areas, off-road un-trafficked areas, buildings, parking sites and pedestrian areas

Safety (OH&S) .

- OH&S requirements are to be in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to recognising and preventing hazards associated with underground services, other machines, personnel, restricted access barriers, traffic control, working in proximity to others, worksite visitors and the public
- Hazards and risks may include but not be limited to uneven/unstable terrain, trees, underground services, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials
- Safe parking practices are to include but not be limited to ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement
- Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

Environmental Requirements .

- Environmental requirements are to include but are not limited to organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management

Quality Requirements .

- Quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction

Statutory/Regulatory Authorities .

- State/Regulatory Authorities may Federal, State and Local Authorities

Tools and equipment .

- Tools and equipment are to include but not be limited to levelling equipment, shovels, lifting equipment, crow bars, hammers, grinders, jointing equipment and may include oxy-acetylene equipment, scaffolding and saws

Materials .

- Materials are to include but not be limited to pipes, concrete, backfill and bedding materials

Communications .

- Communications are to include but not be limited to verbal instructions and fault reporting and may include two way radio, hand signals, mobile phone, site specific instructions, written instructions or instructions related to job/task

Information .

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, material safety data sheets (MSDS) and diagrams or sketches
- Safe work procedures or equivalent related to the installation of mains pipe systems
- Regulatory/legislative requirements pertaining to the installation of mains pipe systems
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements.
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan, OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Installation of a minimum of 100 metres of water mains pipeline to design specifications
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others

Relationship to other units

- Pre-requisite units are:
 - BCCCM1001C Follow OH&S policies and procedures

Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory or Australian Standards requirements

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's Civil Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - materials relevant to the installation of mains pipe systems
 - hand and power tools, plant and equipment appropriate to the installation of mains pipe systems
 - specifications and work instructions

BCF2009A**Carry out load slinging of off-site materials****Unit Descriptor**

This unit applies to the slinging and moving of materials under supervision.

Prerequisite Unit(s)

BCG1002A Plan And Organise Work
 BCG1005A Use Hand And Power Tools
 BCG1011A Handle Construction Materials And Safely Dispose Of Waste

Unit Sector

Off-Site Construction

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------|--|
| 1. Plan and prepare work | 1.1 Quality Assurance requirements of company's manufacturing/construction operations recognised and adhered to.
1.2 OH&S requirements in accordance with application tasks in handling of materials and workplace operations, identified and adhered to.
1.3 Personal protective equipment selected, correctly fitted and used.
1.4 Safety barricades and signage located and erected where required, to isolate work area.
1.5 Slings, tackles, associated lifting gear and tools selected consistent with needs of task.
1.6 Lifting equipment and tools inspected, and damaged work items reported to supervisor. |
| 2. Move, locate and secure load | 2.1 Lifting/anchorage points located/identified.
2.2 Strongbacks/stiffeners positioned and securely attached as required.
2.3 Load safely slung, connected to lifting gear and packing secured to protect load.
2.4 Destination location prepared to receive load.
2.5 Load stood vertically if necessary, safely moved to required location and secured in position. |
| 3. Clean up | 3.1 Slings, associated lifting equipment and packing safely removed.
3.2 Loose debris and waste material removed and disposed of safely.
3.3 Slings, lifting equipment and tools cleaned, maintained and safely stored.
3.4 Necessary documentation completed. |

KEY COMPETENCIES

Key Competency	Performance Level
Communicating ideas and information	2
Collecting analysing and organising information	2
Planning and organising activities	2
Working with others and in teams	2
Using mathematical ideas and techniques	1
Solving problems	1
Using technology	1

RANGE STATEMENT

Quality Assurance requirements may include

- workplace operations and procedures
- quality of materials
- control of handling procedures
- use and maintenance of equipment

OH&S requirements to be in accordance with State/Territory legislation and regulations may include

- workplace environment and safety
- protective clothing and equipment
- use of tools and equipment
- handling of materials
- use of lifting plant and equipment

Personal protective equipment may include

- boots
- safety glasses/goggles
- ear plugs/muffs
- dust masks/respirators
- gloves
- hard hat

Off-site materials may include but are not limited to

- packs of timber
- packs of sheet material
- packs of pipe lengths
- packs of metal sections
- pre-cast concrete
- stone sections
- crates of fittings
- pallets of bagged material
- steel sections

Tools and equipment may include but are not limited to

- spanners
- chain slings and hooks
- lifting clutches
- lifting beams
- strongbacks
- shackles and eye bolts
- ropes
- nylon ropes
- packing
- mobile pendant operated cranes

The load slinging and lifting equipment specified in the range of variables refer to equipment excluding those requiring a certificate of competency for operation as specified by the State/Territory requirements.

Work is undertaken as part of a team under supervision.

Reporting of faults may be verbal or written.

EVIDENCE GUIDE

Competency is to be demonstrated by carrying out the required slinging and moving of general materials used in off-site work orientation under supervision and in accordance with Worksafe Australia standards for users and operators of industrial equipment.

Critical Aspects and Evidence

It is essential that competence is observed in the following aspects:

- demonstrate compliance with workplace and equipment safety requirements to State/Territory regulatory authority
- indicate compliance with organisation policies and procedures within the context of handling materials and using valuable equipment
- selection and use of appropriate lifting equipment to suit load for movement process
- demonstrate safe and effective connection of lifting equipment
- application of safe and effective techniques to carry out movement and placement of materials
- adoption and use of appropriate communication techniques to assist with moving a load
- effective communication with others to ensure safe and effective work site operations

Pre-requisite Relationship of Units

Pre-requisites for this unit are:

- BCG1002A Plan and organise work
- BCG1005A Use hand and power tools
- BCG1011A Handle construction materials and safely dispose of waste

Underpinning Knowledge and Skills**Knowledge**

A knowledge of:

- workplace and equipment safety requirements including relevant regulations, codes and standards
- types and characteristics of materials
- materials handling eg. pre-cast concrete sections
- stacking/storing materials safely allowing egress to others and easy access to materials for retrieval
- hazards eg. identification and prevention methods adopted
- plant and equipment related to materials handling
- tools and equipment related to materials handling
- basic hand signals
- measurement relative to slinging and placement of materials

Skills

The ability to:

- work safely
- organise work
- use tools and equipment
- stack material
- fix fastenings and secure lifting equipment
- effectively communicate both verbally and with basic hand signals with others in team situation

Resource Implications

The following resources should be made available:

- workplace operation
- plant and equipment relative to activity tasks
- tools and equipment appropriate to materials and activities
- materials appropriate to proposed activities

Method of Assessment

Competency shall be assessed while work is undertaken under direct supervision with regular checks, but may take the form of some autonomy when working as part of a team.

Competency may be determined concurrently based upon integrated project work.

Assessment may be by intermittent checking at various stages of each task application or at the completion of the overall task in accordance with the performance criteria.

Context of Assessment

Competency shall be assessed in the normal or simulated workplace environment in accordance with work practices and safety procedures.

Assessment shall be while tasks are undertaken either individually or as part of a team under indirect supervision.

BCGBC4002A**Manage Occupational Health and Safety in the building and construction workplace****Unit Descriptor**

This unit specifies the outcomes required to conduct an occupational health and safety (OHS) risk analysis, including the inspection of workplaces for hazards. The development and implementation of appropriate responses to reduce risks are also addressed, including responses required by state or territory legislation and regulation. The unit requires that candidates have a comprehensive and appropriate understanding of the complex range of legislative and workplace requirements for managing risk in building and construction workplaces.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, site managers and forepersons in the building and construction industry.

Unit Sector

Building and Construction

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Determine areas of potential risk in the building and construction workplace. | 1.1 Specific risks for the range of occupations in the workplace are identified and prioritised.
1.2 Construction site safety is evaluated and construction hazards and potential risk areas are identified in accordance with legislative requirements for OHS and company policies.
1.3 Hazards are identified and prioritised and required approaches to remediation are documented. |
| 2. Inspect and report on areas of specific risk. | 2.1 Inspection of the workplace is conducted to identify specific risks for the range of identified occupations.
2.2 Expert advice and advice from workplace personnel is sought as appropriate.
2.3 An inspection report is completed in accordance with best practice and statutory obligations. |
| 3. Advise on implementation of control measures at the building and construction workplace. | 3.1 Recommendations are made from findings of inspection report.
3.2 Relevant parties are consulted regarding compliance issues relating to statutory requirements.
3.3 Agreed control measures are implemented in conjunction with relevant workplace personnel .
3.4 The effectiveness of control measures is monitored and reviewed. |

- 4. Establish and review communications and educational programs.
 - 4.1 Effective strategies for communicating occupational health and safety policy and practice are determined in consultation with appropriate personnel.
 - 4.2 **Communication strategies** and **educational programs** specific to the building and construction industry and in accordance with statutory requirements and best practice are established.
 - 4.3 The effectiveness of the communication and educational programs are reviewed.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- application of regulatory requirements, including safe work method statements and plans such as site safety plans
- appropriate literacy and numeracy skills
- communication skills
- initiative and investigation skills to be able to inspect the workplace and identify risks and hazards not immediately obvious
- inspection skills
- interpretation and application skills
- interviewing skills
- maintaining of records and documents
- negotiation/conflict resolution skills
- OHS auditing skills
- report writing skills
- research skills
- self-management skills to be able to monitor and evaluate the effectiveness of educational programs developed
- teamwork skills to ensure effective collaboration with relevant stakeholders
- technical skills in building and construction processes relevant to the workplace
- technological skills to be able to effectively use office software and equipment.

Required knowledge:

- current workplace/OHS legislation and advisory standards as applicable to each State or Territory, such as:
 - Plant Advisory Standard
 - Concrete Pumping Supplement
 - Work on Roofs Advisory Standard
 - Falling Objects Advisory Standard
 - Falls from Heights Advisory Standard
 - Steel Construction Advisory Standard
 - Excavation Advisory Standard
 - Scaffolding Advisory Standard
 - Demolition Advisory Standard
 - Formwork Advisory Standard
 - Construction Workplace Advisory Standard
 - Manual Handling in the Building Industry Advisory Standard
 - Asbestos Advisory Standards
 - Noise Advisory Standard
- building and construction industry contracts
- other relevant state or territory building and construction codes, standards and government regulations.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

Specific risks for various occupations within the building and construction industry relate, but are not limited, to:

- falls from height
- falling objects
- scaffolding
- fall protection and access equipment
- formwork
- cranes, hoists and lifting gear
- pressure equipment
- welding, cutting and gouging processes in the construction industry in particular, oxy-acetylene
- commonly used high risk construction equipment, including:
 - lasers
 - explosive powered tools
 - compressed air nailing tools
 - ladders
 - high pressure jetting systems
 - material conveyors
- other commonly used construction equipment, including:
 - concrete mixers
 - manually operated power tools
 - hand held tools
 - wheelbarrows
 - mechanical trowels
- demolition, including asbestos removal
- spray painting
- working on roofs
- abrasive blasting
- working at heights
- pre-stressing and post-tensioning operations
- civil construction work, including excavation and trenching work
- masonry and concrete cutting
- steel fixing
- precast concrete manufacture installation
- concrete pumping
- steel construction
- protruding objects
- stacking and storing materials
- exposure to ultra violet light (UVL)
- environmental conditions
- Class 1 electrical work.

Legislative requirements for OHS must be adhered to in all planning and implementation stages, noting that:

- OHS requirements are to be in accordance with state or territory legislation and regulations and may include:
 - protective clothing and equipment
 - use of tools and equipment
 - workplace environment and safety
 - handling of materials
 - use of fire fighting equipment
 - use of first aid equipment
 - hazard control and hazardous materials and substances.
- personal protective equipment may include that prescribed under legislation, regulation and workplace policies and practices
- safe operating procedures may include but are not limited to:
 - recognising and preventing hazards associated with the use of tools and equipment
 - trip hazards
 - underground services
 - surrounding structure and facilities
 - hazardous materials
 - other machines
 - working at heights
 - working in proximity to others
 - worksite visitors/the public
 - working in confined spaces
- environmental requirements to cover water quality management must address waste management, stormwater protection and clean-up protection
- legislative requirements may require the development and use of site safety plans and safe work methods statements.

An inspection report may include:

- prescribed self assessment tools identified by a relevant state or territory authority (relevant legislation must be applied)
- check lists
- hazard sheet
- company safety procedure forms.

Relevant parties include but are not limited to:

- designers
- manufacturers and importers
- suppliers of plant
- principal contractors
- employers
- self employed persons/subcontractors
- workers
- persons in control of workplaces
- members of site safety committees.

Workplace personnel

include but are not limited to:

- principal contractors
- employers
- self employed persons/subcontractors
- workers
- persons in control of workplaces
- members of site safety committees.

Communication

strategies and methods may include but are not limited to:

- verbal communications
- issued site specific instructions and signage
- written communications including memos and emails.

Educational programs

may include but are not limited to:

- general and site-specific induction training -noting that occupational health and safety induction training provided must meet the requirements of the jurisdiction in which the construction work is undertaken
- other forms of specialist and targeted training.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the effective application of mechanical principles and concepts in accordance with the range statement and application to only one sector of the building and construction industry.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - sourcing and analysing legislative and planning requirements for OHS on the building and construction workplace
 - producing effective inspection reports requiring:
 - identification of building and construction site specific workplace hazards
 - inspection of specific occupational interest and identification of potential risk
 - the capacity to advise on implementation of control measures at the construction workplace
 - establishing and reviewing educational programs with relevant parties.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - current copy of relevant state or territory OHS legislation, Act/regulation and advisory standards for first aid
 - samples of workplace incident data and incident reports
 - other relevant codes, standards, government regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

BCGBC4008A**Conduct on-site supervision of the building and construction project****Unit Descriptor**

This unit specifies the outcomes required to supervise the implementation of administration processes relating to residential and commercial construction projects. The ability to administer payments, supervise onsite communications, ensure compliance with quality control and record keeping processes are essential.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of site managers and forepersons, builders and managers with a responsibility for the administration of construction work.

Unit Sector

Building and Construction

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Supervise the administration of claims and payment processes. | <ul style="list-style-type: none"> 1.1 Contract payments are made in accordance with the contract allowance or orders. 1.2 Drawings against allowances are carried out in accordance with organisation policy or procedures. 1.3 Variations to contracts are authorised and corrective action taken where necessary. 1.4 Back-charges are applied in accordance with policy guidelines. 1.5 Payment of invoices for material supply is authorised. 1.6 Insurance claims for site loss or damage are completed and processed. 1.7 Administrative processes are conducted and supervised with reference to relevant regulatory and organisational requirements. |
| 2. Supervise and maintain onsite communications. | <ul style="list-style-type: none"> 2.1 A diary of on-site communication and events is maintained, including communications with clients, contractors, inspections, union matters and suppliers. 2.2 File notes detailing specific instructions are prepared and issued. 2.3 Site reports detailing specific supervisory inspections are prepared and kept. 2.4 Variation requests or requirements are communicated to the appropriate person. 2.5 Requests for extensions of time are communicated to the appropriate person. 2.6 Notice of unsatisfactory work is communicated in writing to the appropriate individual(s). 2.7 Administrative processes are conducted and supervised with reference to relevant regulatory and organisational requirements. |

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| 3. | Ensure management of and compliance with quality control procedures. | 3.1 | The relevant quality control procedures are identified. |
| | | 3.2 | Site checklists detailing specific items to be inspected at appropriate stages are utilised and completed. |
| | | 3.3 | Industry and organisational quality manuals or procedures are used in managing the quality process. |
| | | 3.4 | Local Authority inspections are arranged. |
| | | 3.5 | Quality requirements are communicated to on-site personnel and building work is assessed against construction standards. |
| | | 3.6 | Processes are put in place to supervise on-site work to ensure the performance of work to industry, regulatory and contractual standards. |
| | | 3.7 | Contractual quality standards are met. |
| 4. | Complete project administration processes. | 4.1 | The project administration processes and preparation for practical completion are carried out in accordance with the contract requirements and company policy. |
| | | 4.2 | The practical completion inspection procedure is identified, communicated to the client and applied on-site. |
| | | 4.3 | Hand-over procedures are identified and carried out in accordance with organisational policy. |
| | | 4.4 | Certificates and appropriate client information are provided at handover, including termite protection and appliance warranties. |
| | | 4.5 | Defects liability items are obtained from clients. |
| | | 4.6 | Defects are rectified and client sign-off is obtained. |
| | | 4.7 | Administrative processes are conducted and supervised with reference to relevant regulatory and organisational requirements. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- application of contract terms and conditions
- application of quality processes
- communications skills to facilitate on-site meetings and dispute resolution
- interpersonal skills relevant to the supervision and monitoring of work processes
- written communication skills to facilitate the development and maintenance of accurate site records and the accurate completion of site reports.

Required knowledge:

- building and construction industry contracts payment system and obligations
- building and construction industry standards
- contract variation procedures and associated documentation requirements
- contracts employed in the building and construction industry
- certification requirements arising from work performed under regulations or local authority requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

Regulatory and organisational requirements include:

- building approval conditions
- plans and specifications
- engineer reports
- safety management plans
- planning and scheduling
- wage and taxation requirements
- contract documents
- site consultations.

On-site communication includes:

- communicating with regulatory authorities and ensuring conformity with the relevant requirements
- maintaining environmental controls and obligations
- allocating and managing human resources
- applying communication and interpersonal skills to facilitate dispute prevention and resolution
- dispersal and scheduling of plant and equipment
- placing orders for supplies or equipment
- participating in on-site meetings
- managing expenditures.

Quality control procedures include:

- quality checklists
- reviews of plans and specifications with clients
- checking materials supplied to the site
- comparing materials against specifications
- regular on-site progress and quality checks.

Project administration processes include:

- progress payments
- contract variations
- determining project progress
- inspections
- obtaining required certification
- defect identification and rectification.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the supervision of administration processes relating to a residential or commercial construction project, including the administration of payments, the supervision of on-site communications, compliance with quality control and record keeping processes.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - administering claims, variations, and drawings for work done and materials supplied in accordance with relevant regulatory and organisational requirements
 - establishing functional on-site communication systems which include the systematic gathering of information on site events
 - implementing a site safety policy
 - maintaining and monitoring on-site quality processes
 - assessing work against construction quality standards and ensuring that rework is carried out
 - administering on-site project completion procedures and informing the client as required.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that should normally be available in either a building or construction office
 - relevant codes, standards, regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
 - a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
 - a suitable work area appropriate to the construction process.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4009A

Apply legal requirements to building and construction projects

Unit Descriptor

This unit of competency specifies the outcomes required to apply legal requirements to building and construction projects of residential and lowrise commercial buildings ('low-rise' licensing classification with reference to Class 1 and 10 construction and Classes 2 to 9 with a gross floor area not exceeding 2000 metres square, not including Type A or Type B construction). Application of legal requirements includes the capacity to ensure compliance with all contractual requirements. A thorough knowledge of the application of current legal and regulatory requirements is essential.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, site managers, forepersons, estimators and other construction industry personnel who have the responsibility to apply legal requirements to residential and low-rise commercial building and construction projects.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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| 1. Apply the laws relating to builder licensing or registration. | 1.1 The licensing or registration legislation relevant to the region is researched and identified.
1.2 The classifications for builders, supervisors and managers are applied. |
| 2. Apply OHS legislation and provisions on site. | 2.1 The main provisions of OHS legislation and regulations are researched and identified and local legislative requirements are met.
2.2 The regulations and codes applicable to on-site construction are identified, applied and monitored.
2.3 Site safety signage requirements are identified and applied. |
| 3. Apply the codes, Acts and regulations, and standards relevant to construction. | 3.1 The current codes, Acts and regulations, and standards applicable to a particular building and construction project are researched.
3.2 The construction process is carried out in accordance with codes, Acts and regulations, and standards concerning construction, insurance, sustainability and environmental matters and appropriate bylaws. |
| 4. Comply with insurance or regulatory requirements for housing construction. | 4.1 Insurance cover is arranged in accordance with legal requirements.
4.2 Contract law is applied in accordance with common law principles, relevant state or territory laws and regulations, and fair trading legislation. |

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| 5. Apply legislation to financial transactions. | 5.1 Payroll systems are set up and administered in compliance with current legislative requirements.
5.2 Goods and Services Tax systems are set up and administered in compliance with current legislation. |
| 6. Meet building contract obligations. | 6.1 The correct form of contract is selected for the project.
6.2 The contracted work is carried out in accordance with the contractual obligations applicable to both parties.
6.3 The conditions of the contract, including approvals and financial matters, are met. |
| 7. Apply industrial relations policies and obligations relevant to housing construction. | 7.1 The relevant <i>industrial relations policies and obligations</i> are researched, identified and applied.
7.2 Company policy and obligations under subcontract agreements are complied with in regard to the employment of subcontract companies.
7.3 Relevant awards are applied to contracts.
7.4 Workplace agreements are used in accordance with company policy.
7.5 Proactive measures are taken to ensure discrimination and harassment are not practised in the workplace.
7.6 Provisions of training agreements are identified and applied.
7.7 Reference material on industrial relations or legal information is made available to employees. |
| 8. Apply dispute resolution processes. | 8.1 Organisational dispute resolution processes are applied.
8.2 Customer complaints are dealt with according to company policy.
8.3 Disputes are documented and outcomes recorded and maintained. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- ability to research, access and interpret complex documents
- oral communication skills to communicate with local or regulatory authorities on matters relating to site conditions or approvals and to negotiate on matters concerning industrial relations by telephone, or face to face
- written communication skills for communicating by memo, letter, facsimile or email with subcontractors, staff, clients and regulatory authorities.

Required knowledge:

- building and construction industry contracts
- occupational health, safety and rehabilitation (OHS&R) frameworks and obligations under federal and state or territory legislation and regulations
- risk management processes and practices and the planning required to develop those plans
- state or territory building and construction codes, standards and government regulations
- workplace safety requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

Licensing or registration legislation includes:

- state laws such as:
 - Builders Registration Act 1939 and the Home Building Contracts Act 1991 in Western Australia
 - Home Building Act and Regulations 1989 in New South Wales.

OHS legislation includes:

- state laws such as:
 - Occupational Health and Safety Act 1984 in Western Australia
 - Occupational Health and Safety Act 1983 in New South Wales
 - Occupational Health and Safety Act 1985 in Victoria
 - Occupational Health and Safety Act 1986 in South Australia
 - WorkCover Queensland Act 1996.

Codes, Acts, regulations and standards include:

- Building Code of Australia
- Timber Framing Code
- relevant Australian building and construction standards
- the latest editions of:
 - AS1720 Timber Structures
 - AS3600 Concrete Structures
 - AS4100 Steel Structures
- relevant state or territory Fair Trading Acts and regulations
- relevant state or territory and local authority planning and other approval requirements.

Insurance cover includes:

- home owners' warranty
- workers' compensation
- superannuation.

Industrial relations policies and obligations include:

- federal, and state or territory industrial legislation
- federal, and state or territory industrial awards.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the preparation of a portfolio of the legislative requirements for one residential and one low-rise commercial building and construction project case study. ('Low rise' licensing classification with reference to Class 1 and 10 construction and Classes 2 to 9 with a gross floor area not exceeding 2000m², not including Type A or Type B construction).

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - an understanding of the appropriate registration, licensing or compliance requirements of state or territory registration authorities
 - the capacity to demonstrate the meeting of appropriate business registration requirements
 - identification and specification of the appropriate insurance documentation citing protection which meets local industry requirements
 - identification and specification of requirements for compliance with:
 - OHS legislation
 - legislation pertaining to financial transactions, including payment of wages and subcontractor and supplier invoices
 - relevant building and construction codes, Acts, standards and regulations
 - sustainability and environmental legislation
 - industrial relations laws
 - the legal obligations of contractual agreements.

Specific resources for assessment

- The following resources should be made available as appropriate:
 - documentation that should normally be available in either a building, or construction office
 - relevant codes, standards, government regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - a technical reference library with current publications on measurement, design, building construction and manufacturer product literature
 - a suitable work area appropriate to the construction process.

Context of assessment

- Assessment of this competency must focus on a holistic evaluation of the extent to which the individual demonstrates their performance against the performance criteria and the criteria established in the range statement and the evidence guide. Individual performance of competence must result in a realistic expression of underpinning knowledge through problem solving, prediction of outcomes, cause and effect, or similar dynamic process specific to the unit.
- Assessment of this competency must take account of the endorsed Assessment Guidelines in the Building and Construction Training Package.
- Assessment should be undertaken in the context of the level of performance expected within the relevant key competencies prescribed for the unit.
- Assessment must take place in the workplace or under industry agreed simulated workplace conditions or a combination of workplace and simulated conditions.

Method of assessment

- Evidence should be collected over the full cycle of the on-site supervisory process and may involve observation, verbal or written questioning of related underpinning knowledge, submission of completed projects, anecdotal evidence or 360 degree assessment.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4012A**Unit Descriptor****Read and interpret plans and specifications**

This unit specifies the outcomes required to read and interpret plans and specifications in order to inform estimation, planning and supervisory activities.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of site managers, forepersons, estimators, builders, managers and other building and construction industry personnel who have a responsibility for ensuring the currency of plans and specifications and for reading and interpreting these for application to estimation, planning and related supervisory activities.

Unit Sector

Building and Construction

ELEMENT**PERFORMANCE CRITERIA**

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|--|---|
| 1. Identify types of drawings and their purposes. | 1.1 The purpose and advantage of different types of drawing are identified.
1.2 Different aspects of drawings are identified. |
| 2. Apply commonly used symbols and abbreviations. | 2.1 Commonly used symbols and abbreviations on drawings are identified, understood and applied.
2.2 Common building and construction terms used on drawings are identified, understood and applied. |
| 3. Locate and identify key features on a site plan. | 3.1 The building site is identified from location drawings.
3.2 True north and building orientation are identified from details provided on the site plan.
3.3 The key features of the site plan are identified. |
| 4. Identify and locate key features on drawings. | 4.1 The key features of plans, elevations and sections are identified.
4.2 Client requested variations to standard plans are identified on drawings. |
| 5. Correctly read and interpret specifications. | 5.1 PS and PC sums are identified and correctly applied.
5.2 Customer variations to standard specifications are identified.
5.3 Correct interpretations of essential elements are applied to estimation, planning and supervisory tasks and communicated.
5.4 Building codes or standards affecting the work to be undertaken are identified, including references to Australian standards and the Building Code of Australia. |
| 6. Identify non-structural aspects to the specification. | 6.1 The key features of products included in the specification are identified, including the design, purpose, aesthetics and cost relationships. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- communication skills to interact effectively by telephone, facsimile, email and in writing with clients, organisational personnel and appropriate local authorities
- translation of documented requirements into on-site activities and site and structural features from two dimensional to three dimensional formats.

Required knowledge:

- building and construction practices
- internal documentation systems
- regulatory approvals processes and timeframes
- relevant state or territory building and construction codes, standards and regulations
- types of building and construction drawings and drawing perspectives
- types of building and construction industry contracts.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

Types of drawings

include:

- sketch plans
- working drawings
- presentation drawings
- CAD drawings
- initial sketches
- preliminary and final drawings and plans however produced
- detailed amendment drawings
- construction information
- service details such as wiring, piping, ducts and waste disposal
- details of roads, pathways, parking areas, boundaries and landscaping.

Aspects of drawings

include:

- plans
- elevations
- sections
- views in isometric projection and perspective.

Key features of the site plan include

- location and situation
- access and egress
- contours and slopes
- major geological and topographical features
- existing dwellings, buildings or other structures
- retaining walls
- drainage lines
- paving
- set backs
- service connection points
- easements
- stormwater disposal
- trees and vegetation.

The **specification** may include:

- materials lists
- schedules of quantities
- performance data and material technical data
- levels and survey information
- stress, load and bearing calculations.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by reading and correctly interpreting a range of plans and specifications for activities relating to medium-rise residential and commercial construction projects.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - the ability to read and interpret plans and specifications, including identification of key features, levels, contours, sections, service entry points, site features to be removed or retained and other details pertinent to the construction process
 - the ability to identify the characteristics and features of sites and structures pertinent to a construction project, including:
 - the correct orientation of structures on site
 - establishing the location of key on-site features in relation to building or other structures
 - identifying and incorporating customer variations to agreed plans and specifications
 - correctly interpreting essential elements and applying these to estimation, planning and supervisory tasks
 - effectively communicating changes to specifications to organisational personnel and confirming variations with the client.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that should normally be available in either a building or construction office
 - relevant codes, standards, government regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
 - a technical reference library with current publications on measurement, design, building construction and manufacturer's product literature
 - a suitable work area appropriate to the construction process.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4014A Prepare simple building sketches and drawings

Unit Descriptor

This unit of competency specifies the outcomes required to produce sketches and drawings. The sketches may be used to clarify or communicate ideas to clients or other parties. They also may be simplified versions taken from architectural drawings and designed to capture design concepts or options. The sketches may be used for estimating purposes and to show measurements and other requirements for building and construction works. This unit does not describe more complex drafting skills.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, experienced tradespeople, project managers and estimators with a responsibility for preparing sketches and drawings.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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|---|--|
| 1. Prepare to make sketches and drawings. | 1.1 The types of drawings required and key features to be recorded are identified in conformity with the scope and standard of the job being undertaken.
1.2 The OHS requirements on-site are identified and followed.
1.3 The tools and equipment required for inspection and/or measurement and for producing the drawings are gathered and checked for safety and serviceability. |
| 2. Create simple sketches and drawings. | 2.1 An inspection of the relevant area is carried out as required and measurements are taken and recorded.
2.2 Simple two and three dimensional sketches and drawings are created using standard drawing conventions and incorporating relevant codes and standards.
2.3 Sectional drawings of simple structural elements are created using standard drawing conventions. |
| 3. Notate and process drawings. | 3.1 Essential information is recorded on the drawing with symbols and abbreviations according to standard drawing conventions.
3.2 Drawing are labelled, dated and processed according to organisational administration and quality procedures. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- calculating and measuring techniques and their application
- drawing techniques
- interpretation and application of the relevant standards and codes.

Required knowledge:

- drawing conventions and features including direction, scale, key, contours, symbols and abbreviations
- requirements of the relevant codes, standards, statutory and authority requirements
- safe work methods.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

The types of drawings required include:

- land boundaries and footprint of building
- floor plan
- sectional views
- orthographic drawings
- schematic drawings of wiring and pipework.

The ***key features to be recorded*** may include:

- walls
- wall penetrations
- ceiling heights and variations
- doors
- services
- light fittings/power supplies.

The OHS requirements may include:

- use of personal protective equipment
- installation of scaffolding
- detailing power supplies
- details of all services
- understanding of any hazards located in the area.

Tools and equipment may include:

- recording devices, i.e. pen/paper
- computer
- digital camera.

Standard drawing conventions include:

- standard design symbols common to the building and construction industries.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by creating a set of sketches and drawings for a small work project in the relevant field of expertise.
- Measurements of components, sub-assemblies, products, models, equipment, layouts or facilities needed for the preparation of the required drawings are made and recorded.
- Calculations of required dimensions and other drafting details based on measurements and other relevant information are made.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - the production of clear and effective drawings and sketches with appropriate notations and labelling
 - the application of appropriate techniques for making inspections and taking measurements
 - the ability to make good any incursions into the fabric of a building
 - compliance with OHS regulations applicable to workplace operations
 - application of organisational quality procedures and processes
 - selection and use of appropriate processes, tools and equipment
 - interactive communication with others to ensure safe and effective worksite operations.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - access to an appropriate work-site
 - appropriate documentation and data related to tasks
 - scaffolding and/or fall protection equipment
 - tools and equipment relevant to activity process.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be current and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4015A

Prepare specifications for all construction works

Unit Descriptor

This unit of competency specifies the outcomes required to prepare specifications, using standard forms of specification as a basis. The preparation of a clearly understood specification for construction works requires establishing the level of detail required and identifying all the inherent contractual obligations. The capacity to develop specifications that may range from outline to detailed specifications and which conform to NATSPEC or other industry standards is required. The specifications may stipulate materials, quality of work and project timelines. In order to achieve the outcomes for this unit, knowledge of relevant industry legislation and standards, and the ability to research information and communicate well with clients are required.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports needs of builders, site managers, estimators, forepersons and other construction industry personnel who have a responsibility for preparing specifications for residential and commercial construction projects.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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| 1. Determine the specification requirements. | <p>1.1 The project brief, working drawings, development approval and other relevant documents are examined to identify the essential information to be included in the specification.</p> <p>1.2 Standard specifications are examined to determine suitability for adaptation to the current project.</p> <p>1.3 Non-standard requirements are developed and where technical aspects require clarification, advice is sought from specialists.</p> |
| 2. Assess the nature and scope of the work. | <p>2.1 A site inspection is conducted to establish site layout and preliminary site-work requirements and site details and features are recorded.</p> <p>2.2 The specification includes all relevant details at a level necessary to describe clearly the nature and scope of the work, including prescriptive and performance requirements.</p> <p>2.3 Research is undertaken to establish appropriate schedules, using relevant data sources.</p> <p>2.4 Details are tabulated and cross-referenced to ensure consistency between the design brief, the working drawings and the specifications.</p> <p>2.5 The details in the specification conform to industry codes of practice, Australian standards and relevant statutory requirements.</p> <p>2.6 Information requested from specialists, colleagues and clients is coordinated and added to the specifications where required.</p> |

3. Prepare the specification document.
 - 3.1 The specification clearly identifies the ***contractual obligations*** and rights of the parties involved.
 - 3.2 The specification document is complete, checked thoroughly for compliance with requirements and edited.
 - 3.3 The specification is presented to the client in the required format and timeframe.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- attention to detail
- client service
- communication, including liaison with specialists
- document management
- identification of specification requirements
- identifying documentation requirements
- product/service analysis
- read, interpret and understand a range of documents including design briefs, drawings, plans, regulations and codes of practice
- research and investigation
- teamwork.

Required knowledge:

- client requirements
- document control
- documentation requirements for specifications
- enterprise policy relating to specifications
- industry codes of practice
- NATSPEC
- relevant Australian standards
- relevant legislation including contract law and trade practices legislation
- research sources to determine schedules
- schedule of rates
- standard specification documents
- types of specification and their use.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

Standard specifications

may include:

- developed specifications
- detailed specifications, which address specific components such as mechanical, structural, electrical or other requirements
- documentation requirements arising from building information modelling (BIM)
- NATSPEC or other industry Standard specifications
- preliminary or outline specifications.

Scope of the work

includes:

- type of product or service
- quantities
- characteristics
- sizes
- patterns
- dimensions
- location
- surfaces
- compatibility
- allowance for the provision of services
- lining systems
- fitout.

Prescriptive and performance requirements

include:

- prescriptive requirements: detail relating to materials and quality of work, quality assurance, nominated subcontractors, provision of site access/facilities and costs
- performance requirements: standards of work, work schedules and milestones.

Data sources include:

- publications and journals
- computer data files
- statutes
- statistical summaries
- policy statements
- media reports
- local, state or territory, and federal government documents and registers.

Contractual obligations

include:

- type of tender
- insurance requirements
- expected performance levels
- prescriptive requirements
- occupational health and safety issues.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the effective preparation of a specification applicable to one area of construction project work.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - compliance with OHS and organisational quality procedures and process within the context of this unit of competency
 - application and interpretation of relevant documentation and codes
 - application of design principles relating to performance of structural members
 - identification of typical faults and problems and necessary action taken to rectify
 - an ability to conduct a site inspection and identify and record relevant site details and features
 - an understanding of different types of specification and their use
 - appropriate selection of standard specification documents
 - an ability research data sources to determine schedules
 - an ability to communicate with clients in order to determine client requirements.

Context of and Specific resources for assessment

- Resource implications for assessment include:
 - documentation including a design brief, working drawings and other supporting documentation where available
 - research data sources, including manufacturers'/ product information, current industry practice and samples
 - relevant industry codes of practice
 - relevant regulations/legislation
 - a client file for information and review.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4017A

Arrange resources and prepare for the building or construction project

Unit Descriptor

This unit specifies the outcomes required to procure the physical and human resources necessary to ensure the development of on-site facilities and the availability of personnel, plant and equipment, materials and other site essential items for low-rise ('low-rise' licensing classification with reference to Class 1 and 10 construction and Classes 2 to 9 with a gross floor area not exceeding 2000 metres square, not including Type A or Type B construction) construction projects. Knowledge of physical resource acquisition and supply processes, identification and procurement of suitable labour through the organisation's own employees and/or subcontractors is essential.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, site managers and forepersons, estimators and other building and construction industry professionals who have a responsibility to acquire the physical and human resources required for residential and commercial construction projects.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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| 1. Notify the client and relevant authorities and agencies of the schedule of works. | 1.1 All the fees due are paid and the site hand-over date is confirmed with the client.
1.2 Insurance and security requirements are established and provided.
1.3 Parking restrictions are determined and advised to relevant personnel.
1.4 All the authorities requiring formal notification of the commencement of work are contacted. |
| 2. Organise the delivery of on-site accommodation and facilities. | 2.1 Identify the requirements for on-site accommodation and facilities .
2.2 The site office, storage sheds and on-site toilet facilities are arranged, received and positioned.
2.3 Site signage is erected to comply with regulations.
2.4 Processes are developed and implemented to identify and protect existing services at the site.
2.5 Council requirements are identified and met. |
| 3. Organise the delivery of plant. | 3.1 On-site plant delivery dates are confirmed.
3.2 Hoardings are erected and rubbish removal facilities are arranged. |
| 4. Arrange the connection of temporary services. | 4.1 Temporary power and water connections are arranged with service providers.
4.2 Temporary site access and egress is arranged and authorisations obtained from the local authority. |

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|----|-----------------------------------|-----|---|
| 5. | Organise on-site human resources. | 5.1 | <i>On-site human resource requirements</i> are identified. |
| | | 5.2 | The construction work supervisor is engaged or appointed. |
| | | 5.3 | Industrial relations and safety matters are addressed as required. |
| | | 5.4 | Appropriate personnel are engaged according to project needs. |
| 6. | Order materials. | 6.1 | Orders for prefabricated materials are placed using approved company documentation and site delivery dates are confirmed. |
| | | 6.2 | The construction arrangements required by the contract are finalised to satisfy the project schedule. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- coordinating a range of team members and activities
- effective management of a site
- interpretation of plans
- oral and written communication skills to communicate effectively with on-site and off-site personnel by telephone, facsimile, email and in writing
- planning and scheduling
- supervising site(s)
- technological skills to facilitate use of the organisation's software and office technology.

Required knowledge:

- contract documentation, quantities, rates and costs related to payments and claims
- differences in and uses of various building and construction industry contracts
- resource procurement processes
- safe working policy and procedures
- scope, operations and structures of the building and construction industry subcontractor system
- state or territory building and construction codes, standards and government regulations relevant to the form of building or construction being undertaken.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

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|---|--|
| Low-rise is described as falling within the BCA classes of: | <ul style="list-style-type: none"> • Class 1 and 10 • Classes 2 to 9 with a gross floor area not exceeding 2000m², not including Type A or Type B construction. |
|---|--|

- Authorities** include:
- local government agencies
 - environmental protection agencies
 - water authorities
 - electricity authorities
 - road traffic authorities.

- On-site accommodation and facilities** include:
- sheds
 - office facilities
 - lunch rooms
 - toilet facilities
 - dormitories
 - caravans.

- Council requirements** include:
- tree conservation
 - consent matters
 - heritage protection.

- Plant** includes:
- portable generators and lighting equipment
 - pumps
 - air compressors
 - wheeled or tracked earthmoving equipment
 - pile driving equipment.

- On-site human resource requirements** include:
- administrative personnel
 - supervisors and forepersons
 - tradespersons
 - construction workers
 - drivers and machine operators
 - cooks and kitchen hands.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

- Overview of assessment**
- This unit of competency could be assessed by identifying, planning and putting in place the essential infrastructure, including human, physical, plans and processes, required to commence and support a construction project.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - procuring resources effectively
 - communicating effectively, both verbally and in writing with suppliers and subcontractors
 - completing documentation to organisational standards
 - advising appropriate authorities and gaining the necessary approvals or responses.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that should normally be available in either a building or construction office
 - relevant codes, standards, government regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
 - a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
 - a suitable work area appropriate to the construction process.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4019A**Apply sustainable building design principles to water management systems****Unit Descriptor**

This unit specifies the outcomes required to apply sound water management principles as part of the implementation of sustainable building and construction processes. The range of legislative and council planning requirements are addressed in addition to the need to respond to growing consumer demand for sustainable buildings and environmentally friendly developments.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, site managers and forepersons, estimators and builders and managers in the building and construction industry.

Unit Sector

Building and Construction

ELEMENT**PERFORMANCE CRITERIA**

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| 1. Apply legislative and planning requirements for effective water management systems to the building process. | 1.1 The current, relevant state or territory and council requirements for the management of water systems are identified as part of the building and construction design process.
1.2 Client needs and expectations for the design and use of water management systems are identified and negotiated.
1.3 Expert plumbing and other advice is gathered as part of the planning process.
1.4 Relevant Australian standards are consulted to identify the implications for the conduct of the building project.
1.5 Environmental and resource efficiency issues are identified and addressed. |
| 2. Identify and apply opportunities for improved water management. | 2.1 The impact of client/resident behaviour on effective water management and use is identified.
2.2 The opportunities for the selection of efficient water management fixtures and appliances as part of the building design are identified, evaluated and applied.
2.3 The relative installation and ongoing usage costs of efficient water management fixtures and appliances are quantified and communicated to the client.
2.4 Efficient water management fixtures and appliances are used as negotiated within the building project. |
| 3. Apply sound water management principles to the site and its landscaping. | 3.1 Soil and sediments are contained to the construction site as part of the site preparation and management.
3.2 Sound waste management practices are used on site.
3.3 Effective sediment control barriers are in place and used.
3.4 Topsoil and/or local rocks are stockpiled and retained for later use in landscaping.
3.5 Appropriate input is made to the landscape design process to optimise water use, re-use and recycling. |

4. Promote best practice in water management.
- 4.1 The selection, location and installation of tanks to optimise the re-use of roof water are evaluated and implemented.
 - 4.2 The costs, planning implications and construction techniques for the re-use of grey water are identified and implemented as negotiated with the client.
 - 4.3 The costs and performance characteristics of various materials used in the installation of water management systems are identified and negotiated with the client.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- application of Australian standards and codes, and manufacturer specifications
- evaluation of alternate water management systems
- technological skills to facilitate use of the organisation's software and office technology
- work safely to OHS regulations and site requirements.

Required knowledge:

- building and construction industry contracts
- relevant state or territory building and construction codes, standards and government regulations
- underlying mathematics related to evaluation of alternate water management systems
- workplace safety requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

Management of water systems includes:

- roof water re-use
- grey water recycling.

Fixtures and appliances include:

- taps
- showerheads (low flow and maxi flow)
- toilet
- spas
- washing machines
- dishwashers.

Waste management practices used on the site include:

- ensuring the run-off from the cleaning up of equipment, e.g. after painting, is handled appropriately
- waste bins are used and emptied appropriately.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the effective application of mechanical principles and concepts in accordance with the range statement and application to only one sector of the building and construction industry.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - sourcing and analysing legislative and planning requirements for water management on the building process
 - calculating costs and savings of implementing alternate water management systems
 - applying the principles of effective water use, recycling and re-use to the planning of a building project
 - producing work plans that reflect effective water management.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that should normally be available in either a building or construction office
 - relevant codes, standards, government regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
 - a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
 - a suitable work area appropriate to the construction process.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4020A

Build thermally efficient and sustainable structures

Unit Descriptor

This unit specifies the outcomes required to apply sound principles of thermal efficiency as part of the implementation of sustainable building and construction processes. The range of legislative and council planning requirements are addressed in addition to the need to respond to growing consumer demand for sustainable buildings and environmentally friendly developments.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, site managers and forepersons, estimators and builders and managers in the building and construction industry.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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|--|---|
| 1. Apply legislative and planning requirements for thermal efficiency to the building process. | <p>1.1 Current, relevant state or territory and council requirements for <i>the building of thermally efficient structures</i> are identified.</p> <p>1.2 Factors that contribute to the construction of a 5-star rated dwelling identified within the Building Code of Australia are identified and the impact of <i>regional climate differences</i> is assessed.</p> <p>1.3 Client needs and expectations for the design and construction of thermally efficient structures are identified and negotiated.</p> <p>1.4 Expert design and other advice is gathered as part of the planning and construction process.</p> <p>1.5 Relevant Australian standards are consulted to identify the implications for the conduct of the building project.</p> |
| 2. Review design solutions for effectiveness and compliance. | <p>2.1 Impact of radiation, convection, conduction and evaporation on the thermal comfort of residents is identified.</p> <p>2.2 Orientation of the building, location and size of glazing, and use of thermal mass as design features are evaluated for effectiveness and compliance with planning and other regulatory requirements.</p> <p>2.3 Effective strategy for insulating the structure is evaluated, costed and communicated to the client.</p> <p>2.4 Building designs are assessed for their compliance with the energy efficiency requirements of the Building Code of Australia's 5-star rating system.</p> <p>2.5 Consultations with designers and clients are conducted to ensure final construction plans are effective, efficient and compliant.</p> |

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| 3. Manage the building process to ensure an effective outcome. | 3.1 Effective communications are established between designers, architects and clients to ensure effective thermal performance is embedded from the design to construction phase. |
| | 3.2 Ensure effective quality assurance processes are in place to evaluate and implement the building of a 5-star dwelling. |
| | 3.3 Assess and communicate to the client cost effective strategies to achieve the desired level of thermal performance. |
| | 3.4 Life cycle costs of various construction approaches are assessed and negotiated with the client. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- application of Australian standards and manufacturer specifications
- application of the Building Code of Australia Part 3.12
- evaluation of the thermal efficiency of building design solutions
- technological skills to facilitate use of the organisation's software and office technology.

Required knowledge:

- building and construction industry processes for building sustainability
- relevant state or territory building and construction codes, standards and government regulations
- underlying mathematics related to the calculation of thermal efficiency
- workplace safety requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

Requirements for the ***building of thermally efficient structures*** include:

- use of relevant construction methods
- orientation of building
- appropriate use of thermal mass (noting impact of climatic conditions)
- glazing size and orientation
- insulation.

Regional climate differences and the impact on effective design solutions include areas with:

- hot humid climates
- hot arid climates
- mixed climates
- cooling climate.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the effective application of mechanical principles and concepts in accordance with the range of variables and application to only one sector of the building and construction industry.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - sourcing and analysing legislative and planning requirements for thermal efficiency on the building process
 - calculating costs and savings of implementing alternate thermally efficient systems
 - applying the principles of thermal efficiency to the planning of a building project
 - producing work plans that reflect effective thermal efficiency.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that should normally be available in either a building or construction office
 - relevant codes, standards, government regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
 - a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
 - a suitable work area appropriate to the construction process.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4021A

Minimise waste on the building and construction site

Unit Descriptor

This unit specifies the outcomes required to support sustainable building practices by minimising waste on the building and construction site. The range of legislative and council planning requirements are addressed in addition to industry best-practice in relation to the management of by-products generated and removed from demolition, renovation and construction sites.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, site managers and forepersons, estimators and builders and managers in the building and construction industry.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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|--|---|
| 1. Plan a waste management strategy. | <ul style="list-style-type: none"> 1.1 Current, relevant state or territory and council requirements for the management and minimisation of building waste are identified. 1.2 Relative costs and savings associated with strategies to minimise waste are calculated and negotiated with the client. 1.3 Effective communications are established with the architect, designer, engineer and other relevant professionals to ensure project plans incorporate waste minimisation strategies. 1.4 Relevant Australian standards are consulted to identify the implications of waste minimisation strategies for the conduct of the building project. 1.5 A waste management strategy to support the building and construction project is developed. |
| 2. Manage materials procurement to minimise waste. | <ul style="list-style-type: none"> 2.1 Building and construction materials are evaluated to identify high quality and more durable materials which will extend the life of the structure and simplify its future extension and refurbishment. 2.2 Recycled materials are used where appropriate and with regard to regulatory and standards restrictions. 2.3 Procurement specifications are developed which seek to minimise packaging waste. |
| 3. Manage the building process to reduce waste. | <ul style="list-style-type: none"> 3.1 Demolition practises are determined and used to increase the recovery of materials for recycling and re-use. 3.2 Strategies are adopted to minimise the volume of site excavation and other materials that are disposed of in landfill. 3.3 Litter abatement strategies are adopted on site. 3.4 The safe and environmentally effective disposal of unavoidable waste is planned and implemented. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- application of Australian standards and manufacturer specifications
- application of the Building Code of Australia
- problem solving to determine optimum waste minimisation practices
- technological skills to facilitate use of the organisation's software and office technology.

Required knowledge:

- building and construction industry processes for building sustainability
- relevant state or territory building and construction codes, standards and government regulations
- underlying mathematics related to the calculation of costs and savings associated with waste minimisation strategies
- workplace safety requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

Strategies to minimise waste include:

- procurement policies that encourage use of recyclable/recycled material
- building to standard sizes
- contracts with subcontractors that require implementation of waste minimisation
- materials salvage and recycling
- litter abatement
- use of reusable delivery and storage containers.

Methods of reducing ***packaging waste*** include the use of:

- metal strapping in place of shrink wrapping
- paper packaging in place of plastic
- shredded paper packing in place of foam
- recyclable or reusable containers.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the effective application of principles and concepts in accordance with the range of variables and application to only one sector of the building and construction industry.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - sourcing and analysing legislative and planning requirements for waste minimisation on the building process
 - calculating costs and savings of implementing alternate waste minimisation systems
 - producing a strategy/plan for effective waste minimisation.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that should normally be available in either a building or construction office
 - relevant codes, standards, government regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
 - a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
 - a suitable work area appropriate to the construction process.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4024A**Unit Descriptor****Resolve business disputes**

This unit specifies the outcomes required to advise on or resolve business disputes which may arise in the course of activities in residential and commercial contracting projects. Dispute resolution procedures may be applied as one of the disputing parties, or as an independent party.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, site managers and forepersons, estimators, managers and other construction industry personnel who have the responsibility to ensure that business disputes are resolved in a positive manner.

Unit Sector

Building and Construction

ELEMENT**PERFORMANCE CRITERIA**

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| 1. Develop and implement dispute resolution procedures. | 1.1 Established business dispute resolution procedures are consulted and implemented as appropriate.
1.2 In the absence of established business dispute resolution procedures, these are developed and documented and agreement to the procedures is secured from all parties.
1.3 Recording procedures are established and provision for record keeping made.
1.4 External arbitrators or conciliators are identified for consultation when disputes cannot be resolved internally. |
| 2. Conduct an initial investigation into business disputes and possible resolution strategies. | 2.1 The nature and cause of business disputes is identified and documented.
2.2 Parties to the dispute are identified, approached individually and the issues are clarified and documented.
2.3 Solutions based on an examination of the information collected and with reference to contractual arrangements are suggested. |
| 3. Identify opportunities for dispute resolution. | 3.1 Efforts are made to bring the disputing parties together.
3.2 Where necessary, external arbiters or conciliators are consulted.
3.3 Relevant statutory laws are identified, applied and followed.
3.4 Disputes are resolved in accordance with common law. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- negotiation
- oral communication skills to research and evaluate information and circumstances surrounding a business dispute
- problem solving
- written communication skills to write memos and reports, complete checklists, send emails and faxes and communicate by telephone.

Required knowledge:

- contractual and business frameworks underpinning the building and construction industry
- mores, values and attitudes of various groups in the community
- psychological and emotive behaviour of persons under pressure.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

Dispute resolution procedures include:

- on-site negotiations
- arbitrated decisions
- litigated decisions
- mutual resolution
- common law outcomes
- reference to contractual obligations.

Causes of business disputes include:

- contract payment issues
- different opinions about design, structural layout, dimensions
- structural finish, quality, materials or construction methodology
- dissatisfaction with project progress.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by developing a set of dispute resolution procedures and demonstrating how these would apply to a selection of case study disputes.

Critical Aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - the ability to identify the nature of the dispute and the identity of the parties to the dispute
 - the capacity to document the details of the dispute in sufficient terms for an unambiguous evaluation of the issues to occur
 - the ability to identify and follow established dispute resolution procedures
 - the ability to develop and implement dispute resolution procedures, where there are none established
 - an understanding of the need to remain completely impartial in any involvement in a dispute.

Context of and specific resources for assessment

- Resources implications for assessment include:
 - documentation that should normally be available in either a Building, Construction or Civil Contracting office
 - relevant codes, standards, government regulations
 - a suitable work area appropriate to the construction process.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4025A**Manage personal work priorities and professional development****Unit Descriptor**

This unit specifies the outcomes required to present confidently, prepare for personal responsibilities in the workplace and provide opportunities for personal professional development.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, site managers and forepersons, estimators, managers and other residential and commercial construction industry personnel.

Unit Sector

Building and Construction

ELEMENT**PERFORMANCE CRITERIA**

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| 1. Manage self. | <ul style="list-style-type: none"> 1.1 Personal qualities recognised as best practice are demonstrated. 1.2 Organisational strategies and priorities and personal responsibilities and accountability are reflected in personal performance plans. 1.3 Stable work performance is maintained under pressure. 1.4 Difficult situations are addressed and concluded positively. 1.5 Mental and physical fitness are maintained to enable work performance requirements to be met. 1.6 Personal grooming, appearance and hygiene standards are maintained at a high level. |
| 2. Set and meet own work priorities. | <ul style="list-style-type: none"> 2.1 Competing demands are assessed and organised to achieve individual, team and organisational work priorities. 2.2 Events are managed effectively to accomplish individual, team and organisational goals and objectives, and personal job requirements. 2.3 Technology is used to improve efficiency and effectiveness in managing work priorities and commitments. |
| 3. Develop and maintain professional competence. | <ul style="list-style-type: none"> 3.1 Personal strengths and weaknesses are assessed against the requirements of the job to determine personal development priorities. 3.2 Feedback on performance is used to improve professional development. 3.3 Management skills are identified and developed to enhance personal performance. 3.4 Participation in professional networks and associations is used to enhance knowledge, skills and relationships. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- managing change
- managing conflict
- managing improvement processes
- oral communication skills to participate in workplace conversations and meetings and to communicate by telephone
- reading skills to facilitate the comprehension and interpretation of a range of workplace documents
- written communications skills to produce memos and reports, complete checklists, send emails and faxes.

Required knowledge:

- mores and values of the workplace
- professional network and associations within the industry
- relevant local codes, standards and regulations applicable to the building and construction industry
- the technologies applicable to and found within the workplace
- workplace safety requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

Personal qualities

include:

- timeliness and punctuality
- perseverance
- neatness of personal presentation
- integrity
- probity
- fairness
- confidence
- patience.

Work priorities include:

- work in progress
- planning new work
- individual and team goals and targets
- dealing with conflicting goals
- prioritising and scheduling
- reassessing performance
- determining work and personal needs.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the preparation of a personal work and personal development plan.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - an understanding of personal motivation and commitment
 - the ability to manage day to day responsibilities and conflicting demands in an efficient and cooperative manner
 - the ability to relate positively to fellow workers and the management team
 - the ability to assess personal strengths and weaknesses and plan and implement appropriate personal development.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that should normally be available in a building or construction office
 - relevant codes, standards, government regulations
 - a suitable work area appropriate to the construction process.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4026A

Unit Descriptor

Arrange building applications and approvals

This unit specifies the outcomes required to prepare documentation and submit a building approval application or submission to appropriate authorities and the management of the submission through to its final approval.

To successfully manage building approvals requires a detailed understanding of the technical documentation that must be prepared, including building plans and specifications together with knowledge of the current regulatory and planning processes. The unit requires the ability to communicate effectively with related building professionals, planning officers and clients.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports builders, project managers and related construction industry professionals who have responsibility for coordinating and managing the building approval process. The unit has application to residential and commercial building projects. Although the building approval process is highly structured, there is a significant degree of variability between building approval submissions which requires problem solving and effective communications to achieve the required outcomes.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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| 1. Plan the process for lodging approval applications. | <p>1.1 The approvals required for each project stage are identified.</p> <p>1.2 The level and type of information and documentation needed for the application is determined and confirmed, where appropriate, in consultation with external specialists.</p> <p>1.3 A plan is determined to develop and submit the plan for approval, recognising scheduling requirements and the needs of the client.</p> <p>1.4 External specialists are consulted, as required, to facilitate certification of documents.</p> |
| 2. Prepare and lodge applications for approval. | <p>2.1 All necessary documentation and supporting information is prepared and checked for conformance with the requirements of the building approval authority.</p> <p>2.2 The impact of the planning application on the range of stakeholders is analysed and strategies adopted to maximise the likelihood of their support for the application.</p> <p>2.3 All necessary documentation and supporting information is lodged with the approval authority.</p> <p>2.4 Confirmation of the status of the application is sought at appropriate intervals to ensure continuing progress.</p> |

3. Evaluate and review outcome of application.
- 3.1 The outcome of the building approval application is assessed to determine the impact on the project.
 - 3.2 Where required, minor changes and/or amendments are negotiated in accordance with client, enterprise and approval authority requirements.
 - 3.3 Rejected submissions are analysed to determine the likely success of an appeal or a resubmission and the course of action is determined with the client.
 - 3.4 Confirmation of the status of the application is determined at regular intervals and conveyed to the client in a timely manner.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- oral communication skills to facilitate liaison with clients, consultants, specialists and approval authorities
- reading skills, including the interpretation of a range of documents such as working drawings, plans, specifications, codes of practice and regulations
- written communication skills to facilitate preparation of planning submission and reports.

Required knowledge:

- building approval processes
- documentation requirements of building approval submissions
- enterprise document control processes
- enterprise policy relevant to building approval submissions
- industry code of practice
- range of planning approval types
- relevant Australian standards
- specialists available for certification of documentation.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

Approvals include:

- development applications
- building approval applications for:
 - staged approval
 - full approval
- sustainability requirements
- fees and levies.

Information and**documentation** include:

- design briefs
- working drawings
- plans
- specifications
- specialists reports.

External specialists

include:

- structural, mechanical and electrical engineers
- building surveyors, quantity surveyors and site surveyors
- geo-technical and/or environmental specialists.

Stakeholders include:

- client
- neighbours
- existing tenants
- local community
- interest groups
- finance providers
- employee/staff.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the preparation, submission and management of a building approval. Assessment may be carried out in the workplace or a simulated environment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - logical, accurate and complete documentation of planning submissions
 - sound document control processes
 - application of relevant Australian standards
 - ability to manage a range of approval types, e.g. fire safety compliance, sustainability or other approvals which may be required by the local authority
 - ability to interpret building approval requirements and processes.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation, including client briefs, designing concepts, construction schedules and necessary supporting documentation
 - client file and information for review.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC4034A

Apply codes and standards to building trade and services contracting

Unit Descriptor

This unit specifies the outcomes required to access, interpret and apply relevant codes and standards applicable to the performance of building trade contracting and plumbing services. To successfully comply with the range of relevant codes and standards requires a thorough and relevant knowledge of the purpose of the Building Code of Australia (BCA) and/or the Plumbing Code of Australia (PCA) coupled with the ability to interpret and apply specific and relevant standards across the range of trades and service sectors.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the trade contractors and building service sector practitioners who have responsibility for ensuring compliance with the building or plumbing codes and standards which are relevant to their industry sector. The unit can be applied to different trades within the building, construction and plumbing and services industry.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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| 1. Access and interpret relevant code and standard requirements. | 1.1 Clauses from the national industry code (BCA or PCA) that apply to relevant trade areas are identified.
1.2 Prescriptive requirements of relevant BCA or PCA clauses are determined.
1.3 Requirements of relevant Australian standards are accessed and interpreted appropriately.
1.4 Application of relevant state or territory variations (Schedule of Referenced Documents) within the BCA or PCA are accessed and their application evaluated. |
| 2. Apply relevant codes and standards. | 2.1 Relevant codes and standards are applied to the selection of work methods.
2.2 Relevant codes and standards are applied to the selection of materials and equipment.
2.3 Assessment methods are put in place to ensure compliance with relevant codes and standards. |
| 3. Manage ongoing compliance with codes and standards. | 3.1 Strategies are identified to ensure current standards and codes are accessed and used.
3.2 Mechanisms are identified and used to inform workers of the required application of relevant codes and standards
3.3 Impact of new materials, equipment or work processes on compliance with relevant codes and standards is evaluated before implementation.
3.4 Relevant documentation and reporting processes are identified and completed in accordance with the relevant codes and standards. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- analysis and interpretation skills relating to documentation from a wide range of sources, including BCA, PCA and Australian standards
- application of design concepts and principles in accordance with BCA and standards
- attention to detail in applying building codes and standards
- numerical skills, including the ability to perform and apply measurements and calculations
- reading skills, including the interpretation of drawings and specifications
- technological skills to facilitate use of the organisation's software and office technology
- written and verbal communication skills.

Required knowledge:

- definitions and common technical terms or usage specified under general provisions of BCA, the PCA and other standards
- nature of materials and the effects of performance
- relevant legislative and OHS requirements, codes and practices
- work drawings and specifications.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

It is recognised that an individual candidate will apply this unit to his/her specific trade skill area.

The ***relevant trade areas*** that this unit can be applied to include:

- painting
- plastering
- tiling
- roof tiling
- plumbing and services
- stonemasonry
- bricklaying
- carpentry
- cabinet making and joinery.

Australian standards

include but are not limited to:

- Australian standards:
 - AS/NZS2908 Cellulose cement products
 - AS3660 Termite management
 - AS3740 Waterproofing of wet areas in residential buildings
 - AS3786 Smoke alarms
 - AS4256 Plastic roof and wall cladding material
 - AS3553-1988 Adhesives for floor and wall applications - resilient vinyl, linoleum and rubber sheet and tiles
 - AS3958.1-1991 Ceramic tiles - guide to the installation of ceramic tiles
 - AS/NZS2311:2000 Guide to the painting of buildings.

Assessment methods

include:

- evidence of suitability
- verification method
- comparison with the DTS provisions
- expert judgement.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed on the application of design principles and solutions specified in the 'deem to satisfy' and 'performance' based concept of BCA criteria applied to building projects or the PCA applied to plumbing and services projects. Assessment may be carried out in the workplace or a simulated environment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - compliance with organisational quality procedures and processes
 - application and interpretation of relevant documentation and codes
 - accurate application of relevant BCA or PCA codes and standards relating to performance and compliance of building project work
 - demonstrated understanding of the Assessment Methods available to determine whether a Building Solution complies with Performance Requirements or Deemed to satisfy (DTS) Provisions of BCA
 - identification of typical faults and problems and necessary action taken to rectify.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - BCA and relevant Australian/New Zealand standards
 - PCA and relevant Australian/New Zealand standards
 - documentation, including design brief drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents
 - research resources, including product information and data
 - relevant computer software package and suitable hardware.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be current and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC5002A**Monitor building or construction costing systems on medium-rise building and construction projects****Unit Descriptor**

This unit specifies the outcomes required to monitor building or construction costing systems. The processes and practices involved in supervising and monitoring costing systems result in the ongoing maintenance of cost control, the production of expenditure schedules and other arrangements which ensure contracts or projects to remain on budget. In order to achieve the outcomes for this unit, knowledge of relevant legislation, codes and standards, industry estimating and costing systems and financial principles are required.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the needs of builders, senior managers in building and construction firms and other construction industry personnel who have responsibility for monitoring building or construction costing systems for medium-rise building and construction projects.

Unit Sector

Building and Construction

ELEMENT**PERFORMANCE CRITERIA**

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| 1. Supervise the identification and classification of project costs. | 1.1 Staff members are supervised in their identification of building or construction costs and accurate estimates are made from project schedules.
1.2 Definitive cost estimates are accurately translated into the correct cost centres appropriate to contract requirements.
1.3 Cost centres are correctly identified and incorporated into a planned project cost network.
1.4 Risk assessment is undertaken and estimated cost is compared with estimated risk.
1.5 All planning ensures there is compliance with relevant codes of practice, standards and legislative requirements. |
| 2. Manage the preparation of a schedule of project expenditure. | 2.1 Draft schedules of project expenditure are prepared with critical points identified.
2.2 Expenditure schedules are prepared using organisational processes and hardcopies are produced.
2.3 Critical financial phases of the project are identified and cash flows are matched to expenditure. |
| 3. Prepare curves showing projected cash flow and payments. | 3.1 Interim payment claims and rise and fall calculations are prepared for the contractor and subcontractors.
3.2 The projected 'S' curve is prepared to show cash flow and resource control.
3.3 Cash flows using 'time risk' and 'cost risk' are prepared and compared.
3.4 Cash flows using 'early start' and 'late finish' for pessimistic or optimistic outcomes are compared.
3.5 Pessimistic overdraft requirements are calculated. |

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| 4. Maintain continuous checks on expenditure and evaluate outcomes. | 4.1 Cash flow and creditor payments are monitored daily.
4.2 The budget cost on the network is compared to actual costs in the tender calculations.
4.3 Rise and fall clause calculations are undertaken and variations are advised to the financial controller.
4.4 Reasons for any cost variations are analysed and identified.
4.5 Remedial action is taken and recorded as necessary to retain contract financial compliance. |
| 5. Prepare final cost report. | 5.1 Actual costs are compared with estimates at the completion of the job and a report is compiled detailing future actions.
5.2 The organisational rates are adjusted as required, based on the final cost report and current movements in prices and rates. |

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- account keeping skills to identify cost centres and monitor cash flows
- analysis and interpretation skills to undertake financial risk assessments
- management skills, including the ability to supervise staff
- numerical skills, including the ability to perform complex financial calculations
- preparation of schedules of expenditure and expenditure projections.

Required knowledge:

- estimating and costing systems used in the Building and Construction industry
- expenditure evaluation methods
- financial principles and cash flows
- project financial processes and timelines
- relevant licensing arrangements applicable
- relevant standards, codes of practice and legislation
- variations in rates occurring through 'rise and fall' clauses and their effects.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any 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.

Identification and classification of project costs include:

- all human resource costs, including direct employees' and subcontractors' rates
- overhead costs, including administration support, power, lighting, accommodation and rent
- plant and equipment purchase/lease and operating costs
- materials such as sand, aggregate, bitumen, concrete, bricks, roofing and reinforcing
- temporary accommodation and shelter, including sheds, site offices and toilets
- site services such as temporary power, lighting and water
- specialist services such as surveying, architectural, testing and legal
- relevant codes, standards and legislation.

Schedules of project expenditure include:

- labour hours consumed against estimates
- labour costs against estimated costs
- materials purchases
- consumables such as fuel and lubricants, electric power and water
- supplies such as timber and building materials
- costs of precast and on-site production of concrete components.

Projected cash flow and payments include:

- progress payments in for work completed
- progress payments out for work undertaken
- progress payments for supplies and materials
- penalties
- wages and salaries
- insurances, including workers' compensation premiums.

The ***final cost report*** includes:

- detailed summaries of actual costs against estimates
- details of cost over-runs and savings on labour and contracting out
- cost/benefit analyses of overtime payments
- details of savings or under-expenditure on materials or supplies
- equipment performance information and efficiencies.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the effective monitoring of a building or construction costing system.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - monitoring and supervision of staff who develop and consolidate costing data for class 2-9 Type A building and construction projects
 - the extent and effectiveness of the comparison of actual versus estimated costs and the production of schedules of expenditure
 - efficient and punctual production of financial data in the form required by the organisation
 - planning and continuous revision of the schedules of payments and cash flows to match contract performance and efficiency.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that would support building or construction costing systems for a building or construction office
 - relevant codes, standards, regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
 - a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
 - a suitable work area appropriate to the monitoring process
 - copies of appropriate awards and workplace agreements.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGBC5010A

Unit Descriptor

Manage construction work/projects

This unit specifies the outcomes required to manage construction work and/or projects. Work or projects may involve fulfilling single- or multi-site commercial contractual obligations. To successfully manage construction projects requires knowledge of relevant industry legislation, codes, standards, methods, procedures and practices as well as the ability to communicate effectively with others.

Employability Skills

This unit contains employability skills.

Application of the Unit

This unit of competency supports the builders, related construction industry professionals and senior managers within building and construction firms who have responsibility for managing medium-rise construction work and/or projects for commercial building projects.

Unit Sector

Building and Construction

ELEMENT

PERFORMANCE CRITERIA

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|--|--|
| 1. Establish site communication processes. | <p>1.1 Site communication processes are established and managed to comply with organisational quality management requirements.</p> <p>1.2 Dates and times of site meetings are organised and relevant personnel are notified.</p> |
| 2. Establish and review OHS, welfare and risk management procedures. | <p>2.1 Organisational requirements for on-site first aid facilities are identified, established and reviewed in accordance with relevant OHS, welfare and risk management legislation and regulations.</p> <p>2.2 Plant and equipment usage policy and practices which require certificated operators are established and managed to comply with risk management procedures.</p> <p>2.3 Hazard management procedures are established and implemented and precautionary measures instigated.</p> <p>2.4 The responsibilities for safe handling of materials are addressed through organisational policy procedures.</p> <p>2.5 Construction safety procedures are established and managed in accordance with OHS, welfare and risk management requirements and key personnel are identified.</p> <p>2.6 Safety induction procedures are established and managed in the event of dangerous incidents, injuries and accidents.</p> <p>2.7 Safety reporting processes and documentation are developed and implemented in accordance with organisational and legislative requirements.</p> |
| 3. Manage the supply of materials and installation of equipment. | <p>3.1 The process for placing orders for materials is established and managed to ensure the timely and cost effective supply of materials and installation of equipment.</p> <p>3.2 Procedures are established, managed and monitored for equipment hire and maintenance.</p> |

- 4. Manage on-site operations.
 - 4.1 **On-site operations** are managed to implement and maintain a safe and cost effective work environment in accordance with appropriate schedules and the contract.
 - 4.2 Subcontractor operations are managed and coordinated to ensure compliance with company obligations.
 - 4.3 A system to deal with problems and delays affecting performance is established and managed.
 - 4.4 Processes to manage industrial relations are established in accordance with company policy and regulatory guidelines.
 - 4.5 Revisions are made to project schedule(s) when required and variations are documented to comply with quality management procedures.
 - 4.6 Project quality management is effectively implemented to provide for a continuous improvement environment in which safety procedures are monitored continuously, reports analysed and procedures reviewed as required.
 - 4.7 Contact with statutory authorities and parties to the contract is facilitated when variations are made to approved contract drawings and specifications.
 - 4.8 Multi-site management plans are implemented in accordance with organisational policy and site conditions.

- 5. Manage the processing of progress claims/payments.
 - 5.1 Progress claims are managed and approved in accordance with the requirements of the contract.
 - 5.2 Project expenditures are managed and claims against scheduled projected costs are checked for accuracy.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- communication skills to enable effective communication with subcontractors, staff, and clients as well as and local or regulatory authorities on matters relating to site conditions or approvals
- establishing, implementing and maintaining a safe working environment
- financial management skills relevant to the extent that progress payments are made on time and on the basis of work successfully completed
- managerial skills in order to manage personnel and resources to effectively achieve contract or project objectives
- negotiation skills to enable effective negotiation industrial relations issues
- problem solving skills to effectively resolve problems relating to construction methodologies or practices.

Required knowledge:

- hazard management processes
- nature and style of building and construction industry contracts
- OHS frameworks and obligations under federal and state or territory legislation and regulations
- quality management processes and procedures as they apply to the building and construction industry
- relevant licensing arrangements applicable
- relevant state or territory building and construction codes, standards and regulations
- risk management processes and practices and the planning required to develop those plans
- workplace safety requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.

Site communication

includes:

- written reports and memoranda
- emails and faxes
- face-to-face verbal communications
- mobile and fixed telephone contact
- site diaries.

OHS, welfare and risk management include:

- conformance with federal and state or territory legislation and regulatory requirements
- adherence to organisational policies and procedures for:
 - hazard identification and rectification
 - safe working practices
 - duty of care
- safe handling of materials and equipment
- rehabilitation of injured workers.

Supply of materials and installation of equipment

includes:

- raw construction materials such as sand, aggregate, timber and cement
- concrete and preformed concrete
- sarking, insulation, air-condition ducting and roofing
- fire suppression systems, plumbing and gas piping and waste water disposal systems
- electrical cabling
- temporary lighting and power outlets
- lifting equipment.

On-site operations

include:

- communication with regulatory authorities and conformance with their requirements
- maintenance of environmental controls and obligations
- allocation and management of human resources
- dispute resolution
- dispersal and programming of heavy equipment, including wheeled and tracked earthmoving vehicles
- placing orders for supplies or equipment
- managing expenditures.

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed by the effective management of construction work or projects.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - an ability to effectively and efficiently procure resources
 - the extent of effective verbal and written communications with suppliers and subcontractors
 - the completion of documentation to organisational standards
 - effective processes for maintaining site safety and management of risks
 - an ability to deal with variations to contracts.

Context of and specific resources for assessment

- Resource implications for assessment include:
 - documentation that should normally be available in either a building or construction office
 - relevant codes, standards and regulations
 - office equipment, including calculators, photocopiers and telephone systems
 - computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
 - a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
 - a suitable work area appropriate to the construction process.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.
- Validity and sufficiency of evidence requires that:
 - competency must be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
 - where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence taken only at the point when the assessor has complete confidence in the person's competence
 - all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
 - where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
 - assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the oracy, language and literacy levels of the operator, and to any cultural issues that may affect responses to the questions, and reflect the requirements of the competency and the work being performed.

BCGCM2003B**Unit Descriptor****Install trench support**

This unit specifies the competency required to shore a trench to prevent the collapse of trench walls and provide safety to personnel working in the trench.

Prerequisite Unit(s)

This unit includes the set out, installation and removal of shoring.

Unit Sector

BCGCM1001B Follow OH&S policies and procedures

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------|---|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied 1.2 Safety requirements are followed in accordance with safety plans and policies 1.3 Signage/barricade requirements are identified and implemented 1.4 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use 1.7 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied |
| 2. Install trench shoring | <ul style="list-style-type: none"> 2.1 Plant operator is communicated with to ensure excavation of trenches comply with site plan, line and depth 2.2 Shoring method is determined and prepared 2.3 Positioning of shoring is set out to specifications 2.4 Shoring is positioned or erected within the trench 2.5 Shoring is secured in position and checked to ensure structural conformity with regulations 2.6 Excavation is cleaned out by hand to job requirements 2.7 Ladders provided for access and egress to site safety plan requirements |
| 3. Remove trench shoring | <ul style="list-style-type: none"> 3.1 Jacking mechanisms are released and ladders removed 3.2 Shoring is checked and prepared for lifting from the trench 3.3 Shoring is removed from trench and stored on site in accordance with organisational requirements |
| 4. Clean up | <ul style="list-style-type: none"> 4.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification 4.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices |

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 -relates to working effectively within set conditions and processes;

Level 2 -relates to the management or facilitation of conditions or processes; and

Level 3 -relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate ideas and information in simple English to enable confirmation of work requirements, passage of information and requests to other workers during operations and the reporting and recording of work outcomes	1
Collecting analysing and organising information	Collect, organise, interpret and understand the information required for the preparation and application of installing trench support, including work instructions, quality assurance procedures, manufacturers' instructions, material safety data sheets and equipment instructions	1
Planning and organising activities	Plan and organise activities associated with the preparation and application of installing trench support, including the scheduling and use of equipment, materials and tools to avoid backtracking and rework	1
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity	1
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time to complete tasks, complete measurements, calculate material requirements and establish quality checks	1
Solving problems	Establish safe and effective work processes which anticipate likely problems and blockages and systematically work around these to avoid or minimise reworking and avoid wastage	1
Using technology	Use workplace technology related to determining requirements, the planning and application of installing trench support, including the use of calculators, computers and the reporting/recording of results	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Trench support is to include trenches of at least 1.5 metres in depth and may include trenches less than 1.5 metres deep
- Trench shoring is to include one of the following:
 - - Fixed and/or adjustable trench boxes
 - - Drag boxes
 - - Hydraulic vertical shoring
 - - Closed timber shoring
 - - Aluminium shoring shields
 - - Powerbrace
 - - Lite box aluminium panels
 - - Slide rails
- Trench shoring mechanisms may include but not be limited to closed timber sheeting, soldier sets, segmental sections and trench shields
- Shoring securing mechanisms may include but not be limited to footings, needles, anchors, sole plates, struts and brackets
- Excavations to be shored are to include but not be limited to trenches and may include wells and pits
- Traffic control signage may include but not be limited to site safety signage, temporary signage for the benefit of motorists and pedestrians, barricades, and traffic conditions signage
- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements

Safety (OH&S)

- OH&S requirements are to be in accordance with State or Territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, organisational first aid, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices
- Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables (including overhead service trays, cables and conduits), lighting, earth leakage boxes, trip hazards, working with dangerous materials, working in confined spaces, surrounding structures, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public
- Emergency procedures related to this unit are to include but may not be limited to extinguishing fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but are not limited to waste management, noise, dust, vibration and clean-up management

Quality Requirements

- Quality requirements are to include but not be limited to relevant regulations including Australian Standards, internal company quality policy and standards, workplace operations and procedures and manufacturers specifications where specified

Statutory/Regulatory Authorities

- Statutory/regulatory authorities may include Federal, State and Local Authorities administering the applicable acts, regulations and codes of practice

Tools and equipment

- Tools and equipment are to include but not be limited to shoring systems, levelling equipment, hand and power tools, measuring equipment, shovels, picks and may include scaffolding, elevated work platforms, slings and chains

Communications

- Communications are to include but not limited to verbal and visual instructions and fault reporting and may include mobile phone, site specific instructions, written instructions, plans or instructions related to job/task, two way radio and hand signals
- On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, maps, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures or equivalent related to the installation of trench support
- Regulatory/legislative requirements pertaining to the installation of trench support
- Manufacturers' specifications and instructions
- Organisation work specifications and requirements.
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan, OH&S regulations and State/Territory legislation applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others
- Installation of trench support on two projects in trenches deeper than 1.5 metres requiring the trench support to be installed, moved along or within the trench and removed from the trench

Relationship to other units

- Pre-requisite units are:
 - BCGCM1001B Follow OH&S policies and procedures
 - Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Site and equipment safety requirements
 - Excavation techniques
 - Shoring methods and systems
 - Working in confined spaces
 - Construction techniques
 - Processes for interpreting engineering drawings
 - Equipment types, characteristics, technical capabilities and limitations
 - Operational, maintenance and basic diagnostic procedures
 - Site isolation and traffic control responsibilities and authorities
 - Materials Safety Data Sheets and materials handling methods
 - Project quality requirements
 - General Construction terminology
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated workplace.
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints.
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context.
- Assessment is to comply with relevant regulatory or Australian Standards requirements.

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's General Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - materials and equipment relevant to the installation of trench support
 - ladders and lifting equipment
 - hand and power tools, plant and equipment appropriate to the installation of trench support
 - project plans and specifications

BCGCM2008B**Erect and dismantle restricted height scaffolding****Unit Descriptor**

This unit specifies the competency required to erect and dismantle restricted height scaffolding to provide work platforms for various occupational applications.

The unit includes placement of safety barriers and only involves modular scaffolding restricted to a height of 4 metres.

Prerequisite Unit(s)

BCGCM1001B Follow OH&S policies and procedures

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|----------------------|---|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied 1.2 Safety requirements are followed in accordance with safety plans and policies 1.3 Signage/barricade requirements are identified and implemented 1.4 Plant, tools and equipment are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use 1.7 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied |
| 2. Erect scaffolding | <ul style="list-style-type: none"> 2.1 Purpose for scaffolding is confirmed and associated work tasks identified 2.2 Expected loading on scaffold and supporting structure is determined using load tables 2.3 Site access and egress routes are identified 2.4 Scaffolding and components are selected and inspected with damaged components labelled and rejected or repaired 2.5 Adequate footing is established in accordance with AS for scaffolding 2.6 Scaffolding is erected in accordance with regulations and planned hazard prevention and control measures, acceptable safe work practices and manufacturers' requirements |

- 3. Inspect, repair and alter scaffolding
 - 3.1 Critical structural and safety areas of scaffolding are inspected for damage, corrosion and wear
 - 3.2 Current use of scaffolding is checked for accordance with the type of scaffolding equipment
 - 3.3 Inspection log and handover is completed
 - 3.4 Scaffolding is reviewed to determine if changes or modifications were scheduled as per original planning
 - 3.5 Alteration or repair carried out where specified
- 4. Dismantle scaffolding
 - 4.1 Scaffolding is dismantled using reverse procedure as for erection
- 5. Clean up
 - 5.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification
 - 5.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 -relates to working effectively within set conditions and processes;

Level 2 -relates to the management or facilitation of conditions or processes; and

Level 3 -relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate ideas and information orally and in writing, in simple English to enable confirmation of work requirements, passage of information and requests to other workers during operations and the reporting and recording of work outcomes	1
Collecting analysing and organising information	Collect, organise, interpret and understand the information required for erection and dismantling of restricted height scaffolding, including work instructions, plans/sketches/diagrams, safety instructions, signage, labels, quality procedures, manufacturers' instructions, material safety data sheets and equipment instructions	1
Planning and organising activities	Conduct activities associated with erection and dismantling of restricted height scaffolding, including the coordination and use of equipment, materials and tools to avoid backtracking and rework	1
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity	1
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time to complete tasks, estimate measurements, distances and levels, calculate material requirements and establish quality checks	1
Solving problems	Establish safe and effective work processes which anticipate likely problems and blockages and systematically work around these to avoid or minimise reworking and avoid wastage	1
Using technology	Use workplace technology related to erection and dismantling of restricted height scaffolding, including the use of calculators, the use of communication devices and the reporting/recording of results	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Erection of scaffolding, to a maximum height of 4 metres is to include but not be limited to placement, sequencing, squaring, levelling, and the reverse for dismantling
- Purposes of scaffolding are to include but not be limited to provision of work platforms for various occupational applications
- Types of restricted height scaffolding may include but not be limited to systems scaffolding, modular, A frame, H frame, tube and coupler and aluminium
- Establishment of footings is to include review of JSA's to determine the bearing capacity of ground or working surfaces
- Alteration and repair may be required due to storm damage, accidents, misuse and process changes

Safety (OH&S)

- OH&S requirements are to be in accordance with legislation/regulations/codes of practice, organisational safety policies and procedures and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, organisational first aid, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
- Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables (including overhead service trays, cables and conduits), lighting, earth leakage boxes, trip hazards, working with dangerous materials, working in confined spaces, surrounding structures, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public
- Emergency procedures related to this unit are to include but may not be limited to extinguishing fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management

- Quality Requirements
- Quality requirements are to include but not be limited to relevant regulations including Australian Standards, internal company quality policy and standards, workplace operations and procedures and manufacturers specifications where specified
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include Federal, State and Local Authorities administering the applicable acts, regulations and codes of practice
- Tools and equipment
- Tools and equipment are to include but not be limited to aluminium modular scaffolding equipment, ladders, scaffolding planks, steel box spanners, hammers, spirit levels, tape measures and may include shovels and spanners
- Communications
- Communications are to include but not limited to verbal and visual instructions and fault reporting and may include mobile phone, site specific instructions, written instructions, plans or instructions related to job/task, two way radio and hand signals
 - On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
 - Safe work procedures related to erecting and dismantling restricted height scaffolding
 - Regulatory/legislative requirements pertaining to erecting and dismantling restricted height scaffolding
 - Engineers design specifications/manufacturers' specifications and instructions where specified
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan and OH&S legislation/regulations/codes of practice applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others
- Completion of planning, erection and dismantling of a modular scaffolding system, in accordance with JSA's/Safe work method statements and regulations, including a minimum of:
 - bays (one with a return)
 - lift with ladder
 - fall/edge protection

Relationship to other units

- Pre-requisite units are:
 - BCGCM1001B Follow OH&S policies and procedures
 - Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Workplace and equipment safety requirements
 - Quality requirements
 - General Construction terminology
 - Plant, tools and equipment types, characteristics, uses and limitations
 - Scaffolding techniques
 - Scaffolding equipment
 - Processes for the calculation of material requirements
 - Material Safety Data Sheets
 - Plans, drawings and specifications
 - Materials handling, storage and environmentally friendly waste management
 - JSA's/Safe work method statements
 - Relevant acts, regulations and codes of practice
 - Lifting devices

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory requirements including specified Australian Standards

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's General Construction Training Package and relevant NOHSC standards where they apply
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - materials relevant to erection and dismantling of restricted height scaffolding
 - hand and power tools, plant and equipment appropriate to erection and dismantling of restricted height scaffolding
 - realistic activities covering the mandatory task requirements
 - specifications and work instructions

BCGCM3001B**Unit Descriptor****Operate elevated work platforms**

This unit specifies the competency required to safely and effectively operate elevated work platforms (EWP's) in a variety of different terrains and situations to access isolated work areas.

The unit includes locating, setting up, operation and shut down.

Prerequisite Unit(s)

BCGCM1001B Follow OH&S policies and procedures

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|--|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied 1.2 Safety requirements are followed in accordance with safety plans and policies 1.3 Signage/barricade requirements are identified and implemented 1.4 Plant, tools and equipment are selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use 1.7 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied |
| 2. Conduct routine checks of platform | <ul style="list-style-type: none"> 2.1 Power source is determined and connected to platform equipment to manufacturers' specifications 2.2 Routine pre-operational equipment checks are carried out in accordance with checklist from operator's manual or manufacturers specifications 2.3 Equipment is switched on in accordance with start up procedures and controls checked for correct operation and ease of movement 2.4 Emergency safety devices are checked to comply with instructions from operator's manual and checked for manual operation 2.5 Work location is checked for level ground or floor surface to determine stabilising and safe working area requirements |
| 3. Locate equipment in place for work application | <ul style="list-style-type: none"> 3.1 Platform is positioned for work application and stabilisers engaged to set equipment base level into place 3.2 Tools, equipment and materials are placed into bucket/platform to job application requirements |

- | | |
|--------------------------------------|---|
| 4. Elevate platform to work location | 4.1 Harness is fitted securely and lanyard connected to attachment point |
| | 4.2 Controls are operated to manufacturers' recommendations and platform elevated to work position |
| | 4.3 Power is switched off where specified and locking devices engaged to operator's manual |
| | 4.4 Work is carried out to job specification and safety requirements of operator's manual |
| 5. Lower platform and shut down | 5.1 Controls are operated to manufacturers' recommendations and platform lowered to down position |
| | 5.2 Shut down procedures are carried out to operator's manual and equipment switched off |
| 6. Clean up | 6.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification |
| | 6.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices |
| | 6.3 Work completion procedures are applied and relevant personnel notified that work is finished |

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 -relates to working effectively within set conditions and processes;

Level 2 -relates to the management or facilitation of conditions or processes; and

Level 3 -relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate ideas and information orally and in writing, in simple English to enable confirmation of work requirements, passage of information and requests to other workers during operations and the reporting and recording of work outcomes	2
Collecting analysing and organising information	Collect, organise, interpret and understand the information required for operating EWP's, including work instructions, plans/sketches/diagrams, safety instructions, signage, labels, quality procedures, manufacturers' instructions, material safety data sheets and equipment instructions	1
Planning and organising activities	Conduct activities associated with operating EWP's, including the coordination and use of equipment, materials and tools to avoid backtracking and rework	2
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity	1
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time to complete tasks, estimate measurements, distances and levels, calculate material requirements and establish quality checks	1
Solving problems	Establish safe and effective work processes which anticipate likely problems and blockages and systematically work around these to avoid or minimise reworking and avoid wastage	1
Using technology	Use workplace technology related to operating EWP's, including the use of calculators, EWP equipment, the use of communication devices and the reporting/recording of results	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Types of EWP's are to include but not be limited to scissor lifts, boom lifts, knuckle booms and truck mounted work platforms
- Emergency safety devices are to include but not be limited to bleed valves, hydraulic accumulators, electronic override, ground controls and emergency descent devices
- Harness is to include a full body rescue harness
- Operations may include but not be limited to telescope in and out, slew left and right, operate outriggers, boom up and down, operate attachments, motion and four wheel drive
- EWP's may include but not be limited to electrical, hydraulic and mechanical

Safety (OH&S)

- OH&S requirements are to be in accordance with legislation/regulations/codes of practice, organisational safety policies and procedures and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, organisational first aid, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
- Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables (including overhead service trays, cables and conduits), lighting, earth leakage boxes, trip hazards, working with dangerous materials, working in confined spaces, surrounding structures, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public
- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

- Environmental Requirements
- Environmental requirements are to include but are not limited to waste management, noise, dust, vibration and clean-up management
- Quality Requirements
- Quality requirements are to include but not be limited to relevant regulations including Australian Standards, internal company quality policy and standards, workplace operations and procedures and manufacturers specifications where specified
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include Federal, State and Local Authorities administering the applicable acts, regulations and codes of practice
- Tools and Equipment
- Tools and equipment are to include but not be limited to EWP's, extension leads, log books, service manuals, operation manual, safety harnesses and lanyards
- Communications
- Communications are to include but not limited to verbal and visual instructions and fault reporting and may include mobile phone, site specific instructions, written instructions, plans or instructions related to job/task, two way radio and hand signals
 - On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
 - Safe work procedures related to operating EWP's
 - Regulatory/legislative requirements pertaining to EWP's
 - Manufacturers' specifications and instructions where specified
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan and OH&S legislation/regulations/codes of practice applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others
- Completion of set up and operation of all EWP's stated in the Range Statement including all functions to their maximum extension

Relationship to other units

- Pre-requisite units are:
- BCGCM1001B Follow OH&S policies and procedures
- Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Workplace and equipment safety requirements
 - Quality requirements
 - General Construction terminology
 - Plant, tools and equipment types, characteristics, uses and limitations
 - EWP techniques
 - EWP equipment
 - Processes for the calculation of load mass requirements
 - Material Safety Data Sheets
 - Plans, drawings and specifications
 - Materials handling, storage and environmentally friendly waste management
 - Relevant acts, regulations and codes of practice
 - Designs and functions of EWP equipment
 - Signalling methods and communications
 - Fault finding and identification
 - Working at heights
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory requirements including specified Australian Standards

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's General Construction Training Package and relevant NOHSC standards where they apply
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - hand and power tools, plant and equipment appropriate to operating EWP's
 - realistic activities covering the mandatory task requirements
 - specifications and work instructions

BCGCM3002B**Unit Descriptor****Operate a truck mounted loading crane**

This unit specifies the competency required to safely and effectively operate a truck mounted loading crane to load and unload building products, delivered from supplier to the construction site.

The unit includes setting up, operation, control and shut down of the crane.

Prerequisite Unit(s)

BCGCM1001B Follow OH&S policies and procedures

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied 1.2 Safety requirements are followed in accordance with safety plans and policies 1.3 Signage/barricade requirements are identified and implemented 1.4 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use 1.7 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied |
| 2. Truck mounted crane is set up and operated | <ul style="list-style-type: none"> 2.1 Truck is positioned at the designated drop off point 2.2 Truck is positioned to ensure a level surface to operate the crane from 2.3 Crane is activated and manoeuvred to its operating position from its lock down position 2.4 Crane movements are checked for safe operation 2.5 Load is prepared for lifting in accordance with crane, truck and dogging requirements 2.6 Site is confirmed as clear and safe to receive/dispatch the load 2.7 Load is manoeuvred to position using the control levers to manufacturers specifications 2.8 Load is continually monitored throughout its travel 2.9 Crane is shut down and returned to its lock down position |
| 3. Clean up | <ul style="list-style-type: none"> 3.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification 3.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices |

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 -relates to working effectively within set conditions and processes;

Level 2 -relates to the management or facilitation of conditions or processes; and

Level 3 -relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate ideas and information orally and in writing, in simple English to enable confirmation of work requirements, passage of information and requests to other workers during operations and the reporting and recording of work outcomes	1
Collecting analysing and organising information	Collect, organise, interpret and understand the information required for operating truck mounted cranes, including work instructions, plans/sketches/diagrams, safety instructions, signage, labels, quality procedures, manufacturers' instructions, material safety data sheets and equipment instructions	1
Planning and organising activities	Conduct activities associated with operating truck mounted cranes, including the coordination and use of equipment, materials and tools to avoid backtracking and rework	2
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity	1
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time to complete tasks, estimate measurements, distances and levels, calculate material requirements and establish quality checks	1
Solving problems	Establish safe and effective work processes which anticipate likely problems and blockages and systematically work around these to avoid or minimise reworking and avoid wastage	1
Using technology	Use workplace technology related to operating truck mounted cranes, including the use of calculators, cranes, the use of communication devices and the reporting/recording of results	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Types of cranes are to include truck mounted (e.g. a crane mounted on a semi-trailer or delivery truck) and may include cranes mounted on other vehicles
- Truck mounted cranes are generally used for loading and unloading building and construction products, however, larger versions are used for loading and unloading containers
- Operations may include but not be limited to telescope in and out, slew left and right, operate outriggers, boom up and down and operate attachments
- Truck mounted cranes may include but not be limited to electrical, hydraulic and mechanical operating systems
- Load masses should not exceed the working capacity of the crane and recommended manufacturer limits

Safety (OH&S)

- OH&S requirements are to be in accordance with legislation/regulations/codes of practice, organisational safety policies and procedures and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, organisational first aid, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
- Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables (including overhead service trays, cables and conduits), lighting, earth leakage boxes, trip hazards, working with dangerous materials, working in confined spaces, surrounding structures, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public
- Emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation

- Environmental Requirements
- Environmental requirements are to include but are not limited to waste management, noise, dust, vibration and clean-up management
- Quality Requirements
- Quality requirements are to include but not be limited to relevant regulations including Australian Standards, internal company quality policy and standards, workplace operations and procedures and manufacturers specifications where specified
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include Federal, State and Local Authorities administering the applicable acts, regulations and codes of practice
- Tools and Equipment
- Tools and equipment are to include but not be limited to truck mounted cranes and allocated slinging equipment
- Communications
- Communications are to include but not limited to verbal and visual instructions and fault reporting and may include mobile phone, site specific instructions, written instructions, plans or instructions related to job/task, two way radio and hand signals
 - On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
 - Safe work procedures related to operating truck mounted cranes
 - Regulatory/legislative requirements pertaining to truck mounted cranes
 - Manufacturers' specifications and instructions where specified
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan and OH&S legislation/regulations/codes of practice applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others
- Completion of set up and operation of a truck mounted crane including all functions to their maximum extension in the loading and unloading of at least two full loads of building and construction materials and products

Relationship to other units

- Pre-requisite units are:
- BCGCM1001B Follow OH&S policies and procedures
- Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Workplace and equipment safety requirements
 - Quality requirements
 - General Construction terminology
 - Plant, tools and equipment types, characteristics, uses and limitations
 - Truck mounted crane techniques
 - slinging equipment
 - Processes for the calculation of load mass requirements
 - Material Safety Data Sheets
 - Plans, drawings and specifications
 - Materials handling, storage and environmentally friendly waste management
 - Relevant acts, regulations and codes of practice
 - Designs and functions of truck mounted cranes
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory requirements including specified Australian Standards

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's General Construction Training Package and relevant NOHSC standards where they apply
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - hand and power tools, plant and equipment appropriate to operating truck mounted cranes
 - realistic activities covering the mandatory task requirements
 - specifications and work instructions

BCGCM3003B**Work safely around power sources, services and assets****Unit Descriptor**

This unit specifies the competency required to work with or operate plant in or around close proximity of power sources, services and assets for the general safety of personnel and equipment.

The unit includes all occupational areas which may require working near electricity.

Prerequisite Unit(s)

BCGCM1001B Follow OH&S policies and procedures

Unit Sector

Common Units

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---------------------------------|--|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied 1.2 Safety requirements are followed in accordance with safety plans and policies 1.3 Signage/barricade requirements are identified and implemented 1.4 Plant, tools and equipment are selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use 1.7 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied |
| 2. Apply safe working practices | <ul style="list-style-type: none"> 2.1 Relevant authorities are contacted to identify electrical source and type 2.2 Plant is positioned according to work method statement and JSA's 2.3 Plant procedures are followed to comply with work method statement and JSA's 2.4 Work is conducted in or around the power source/service/asset 2.5 Personnel, plant and equipment are retracted from powered area following safe work method statement and JSA's |

- 3. Clean up
 - 3.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification
 - 3.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices
 - 3.3 Work completion procedures are applied and relevant personnel notified that work is finished

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 -relates to working effectively within set conditions and processes;

Level 2 -relates to the management or facilitation of conditions or processes; and

Level 3 -relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate ideas and information orally and in writing, in simple English to enable confirmation of work requirements, passage of information and requests to other workers during operations and the reporting and recording of work outcomes	2
Collecting analysing and organising information	Collect, organise, interpret and understand the information required for working around power, including work instructions, plans/sketches/diagrams, safety instructions, signage, labels, quality procedures, manufacturers' instructions, material safety data sheets and equipment instructions	2
Planning and organising activities	Conduct activities associated with working around power, including the coordination and use of equipment, materials and tools to avoid backtracking and rework	2
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity	1
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time to complete tasks, estimate measurements, distances and levels, calculate material requirements and establish quality checks	1
Solving problems	Establish safe and effective work processes which anticipate likely problems and blockages and systematically work around these to avoid or minimise reworking and avoid wastage	2
Using technology	Use workplace technology related to working around power, including the use of calculators, EWP equipment, the use of communication devices and the reporting/recording of results	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Relevant authorities are to include but not be limited to Federal, State, Territory and local electrical authorities
- Electrical sources may include but not be limited to distribution towers, poles, underground conductors, underground and overhead wires, temporary services, train and tram assets, transmission towers, sub stations, generators, all other services, sources and assets
- Plant may include but not be limited to EWP's, scaffold, back hoes, excavators, booms and cranes
- Barriers are to include but not be limited to isolation, barricades, other physical barriers and site safety signage

Safety (OH&S)

- OH&S requirements are to be in accordance with legislation/regulations/codes of practice, organisational safety policies and procedures and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, organisational first aid, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
- Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables (including overhead service trays, cables and conduits), lighting, earth leakage boxes, trip hazards, working with dangerous materials, working in confined spaces, surrounding structures, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public
- Emergency procedures related to this unit are to include but may not be limited to extinguishing fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but are not limited to waste management, noise, dust, vibration and clean-up management

- Quality Requirements
- Quality requirements are to include but not be limited to relevant regulations including Australian Standards, internal company quality policy and standards, workplace operations and procedures and manufacturers specifications where specified
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include Federal, State and Local Authorities administering the applicable acts, regulations and codes of practice
- Tools and Equipment
- Tools and equipment are to include but not be limited to those associated with the task at hand
- Communications
- Communications are to include but not limited to verbal and visual instructions and fault reporting and may include mobile phone, site specific instructions, written instructions, plans or instructions related to job/task, two way radio and hand signals
 - On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
 - Safe work procedures related to working safely around power
 - Regulatory/legislative requirements pertaining to working safely around power
 - Manufacturers' specifications and instructions where specified
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan and OH&S legislation/regulations/codes of practice applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others
- Contact with relevant authorities, application of work method statement and JSA's to oversee plant positioning and operation for one project including erection and/or placement of barriers and safeguards

Relationship to other units

- Pre-requisite units are:
 - BCGCM1001B Follow OH&S policies and procedures
 - Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Workplace and equipment safety requirements
 - Quality requirements
 - General Construction terminology
 - Plant, tools and equipment types, characteristics, uses and limitations
 - Working with power techniques
 - Material Safety Data Sheets
 - Plans, drawings and specifications
 - Materials handling, storage and environmentally friendly waste management
 - Relevant acts, regulations and codes of practice
 - Safe work method statements and JSA's
 - First aid including CPR
 - Electrical safety and legislation
 - Emergency procedures (site specific)
 - Working at heights

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory requirements including specified Australian Standards

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's General Construction Training Package and relevant NOHSC standards where they apply
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - hand and power tools, plant and equipment appropriate to working around power
 - realistic activities covering the mandatory task requirements
 - specifications and work instructions

BCGCO2003B**Unit Descriptor****Carry out concreting to simple forms**

This unit specifies the competency required to safely install formwork, reinforcement, place and finish concrete for the construction of minor slabs, pathways and other minor works to a specified design finish.

The unit includes positioning the truck, placement of concrete from truck to work area, spreading of concrete and site clean up.

Prerequisite Unit(s)

BCGCM1001B Follow OH&S policies and procedures

Unit Sector

Concreting

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|------------------------------------|--|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions and operational details are obtained, confirmed and applied 1.2 Safety requirements are followed in accordance with safety plans and policies 1.3 Signage/barricade requirements are identified and implemented 1.4 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use 1.7 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied |
| 2. Erect and strip simple formwork | <ul style="list-style-type: none"> 2.1 Subgrade is prepared 2.2 Formwork design is identified from drawings 2.3 Formwork is erected safely on commencement 2.4 Form release agent is applied to erected formwork where specified 2.5 Timber components are de-nailed following stripping of formwork 2.6 Components are cleaned, stacked and stored for reuse or bundled for removal 2.7 Formwork components are removed from site |
| 3. Place and tie reinforcement | <ul style="list-style-type: none"> 3.1 Reinforcing components are handled and positioned safely 3.2 Reinforcing bars and mesh are positioned 3.3 Bar chairs and spacers are positioned, with minimum edge cover |

- 4. Place concrete
 - 4.1 Formwork or excavation is cleaned of excess material and debris prior to concrete placement
 - 4.2 Concrete is safely transported by wheelbarrow
 - 4.3 Pump line/chute is controlled and concrete placed
 - 4.4 Concrete is placed in formwork to specified depth
 - 4.5 Concrete is screeded to the alignment of formwork and project specified datums
 - 4.6 Surface of concrete is finished in accordance with specifications

- 5. Clean up
 - 5.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification
 - 5.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 relates to working effectively within set conditions and processes;

Level 2 relates to the management or facilitation of conditions or processes; and

Level 3 relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate ideas and information orally and in writing, in simple English to enable confirmation of work requirements, passage of information and requests to other workers during operations and the reporting and recording of work outcomes	1
Collecting analysing and organising information	Collect, organise, interpret and understand the information required for concreting of simple forms, including work instructions, plans/sketches/diagrams, safety instructions, signage, labels, quality procedures, manufacturers' instructions, material safety data sheets and equipment instructions	1
Planning and organising activities	Conduct activities associated with concreting of simple forms, including the coordination and use of equipment, materials and tools to avoid backtracking and rework	1
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity	1
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time to complete tasks, estimate measurements, levels, calculate material requirements and establish quality checks	1
Solving problems	Establish safe and effective work processes which anticipate likely problems and blockages and systematically work around these to avoid or minimise reworking and avoid wastage	1
Using technology	Use workplace technology related to concreting to simple forms, including the use of calculators, the use of communication devices and the reporting/recording of results	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Simple forms of concrete are to include but not be limited to slabs (not requiring internal beams and piers) and may include post holes, beam thickeners, pathways, simple concrete aprons, channels and garden edges
- Simple formwork is to include timber or steel edge form to a maximum of 100mm in depth
- Simple reinforcing is to include but not be limited to the use of fabric sheet mesh, bar chairs, spacers and may include reinforcing bars and trench mesh
- Form release agent may include but not be limited to oil or other non bonding agents
- Placing of concrete includes movement of concrete from the truck to the work and is to include but not be limited to wheel barrows, chutes and may include pump lines and kibbles
- Screeding is limited to include a hand screed
- Finishing of concrete may include but not be limited to broomed, trowelled, trowelling machine finish, stipple device finish, wood floated, sponged or other project specified finish
- Floating of the concrete may include but not be limited to hand or power floating

Safety (OH&S)

- OH&S requirements are to be in accordance with legislation/regulations/codes of practice, organisational safety policies and procedures and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, organisational first aid, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
- Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables (including overhead service trays, cables and conduits), lighting, earth leakage boxes, trip hazards, working with dangerous materials, working in confined spaces, surrounding structures, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public
- Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but are not limited to waste management, noise, dust, vibration, stormwater management and clean-up management

Quality Requirements

- Quality requirements are to include but not be limited to relevant regulations including Australian Standards, internal company quality policy and standards, workplace operations and procedures and manufacturers' specifications where specified

Statutory/Regulatory Authorities

- Statutory/regulatory authorities may include Federal, State and Local Authorities administering the applicable acts, regulations and codes of practice

Tools and equipment

- Tools and equipment are to include but not be limited to shovels, wheel barrows, chutes, brooms, trowels, edging tools and may include trowelling machines, hand floats, bull floats, stipple devices, line pumps and kibbles

Materials

- Materials are to include but not be limited to edge form/boards, pegs, bracing, fabric sheet mesh, bar chairs, spacers and may include reinforcing bars

Communications

- Communications are to include but not limited to verbal and visual instructions and fault reporting and may include mobile phone, site specific instructions, written instructions, plans or instructions related to job/task, two way radio and hand signals
- On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues

Information

- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
- Safe work procedures related to concreting
- Regulatory/legislative requirements pertaining to concreting
- Manufacturers' specifications and instructions where specified
- Organisation work specifications and requirements
- Instructions issued by authorised organisational or external personnel
- Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan and OH&S legislation/regulations/codes of practice applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others
- Preparation of subgrade, erection of formwork, cut, place and tie reinforcement, place and hand screed concrete for a slab of at least 4sqm and a minimum depth of 100mm to the required finished level and job specification

Relationship to other units 0

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Workplace and equipment safety requirements
 - Quality requirements
 - General Construction terminology
 - Plant, tools and equipment types, characteristics, uses and limitations
 - Concreting techniques
 - Concrete materials
 - Processes for the calculation of material requirements
 - Material Safety Data Sheets
 - Plans, drawings and specifications
 - Materials handling, storage and environmentally friendly waste management
 - Levelling techniques
 - Simple formwork and reinforcing componentry
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory requirements including specified Australian Standards

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's General Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - materials relevant to concreting
 - hand and power tools, plant and equipment appropriate to concreting
 - realistic activities covering the mandatory task requirements
 - specifications and work instructions

BCGRI3001B

Unit Descriptor

Operate personnel and materials hoists

This unit specifies the competency required to operate personnel and materials hoists for moving people and equipment to various heights in a multi-storey structure.

The unit includes pre-operational checks, operation, shut down and post operational checks.

Prerequisite Unit(s)

BCGCM1001B Follow OH&S policies and procedures

Unit Sector

Rigging

ELEMENT

PERFORMANCE CRITERIA

- | | |
|-------------------------------|---|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied 1.2 Safety requirements are followed in accordance with safety plans and policies 1.3 Signage/barricade requirements are identified and implemented 1.4 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use 1.7 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied |
| 2. Conduct daily safety check | <ul style="list-style-type: none"> 2.1 Hoisting details for the day are identified from proposed work schedule and hoist work program developed 2.2 Signalling system is confirmed with associated site personnel 2.3 Weather conditions for safe hoist operation are assessed 2.4 Equipment and site are checked for damage, structural weakness or interference 2.5 Mechanical, electrical and safety functions are checked in accordance with operators manual and checklist 2.6 Test run is conducted through full height of travel without a load checking operation and security of mast and wall bolting 2.7 Braking system checked and tested 2.8 Safety systems are checked and challenged |
| 3. Record results | <ul style="list-style-type: none"> 3.1 Results of checks and tests are recorded in hoist book to requirement of regulatory authority 3.2 Faults are reported in accordance with company policy |

- 4. Operate hoist
 - 4.1 Loads are checked for conformity to safe load capacity of hoist
 - 4.2 Hoist is safely operated to requirements of operators manual and State/Territory regulatory authority
 - 4.3 Hoist is shut down, rendered safe and secured at end of work period in accordance with operators manual
 - 4.4 Post operational checks are conducted and recorded

- 5. Clean up
 - 5.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification
 - 5.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices
 - 5.3 Work completion procedures are applied and relevant personnel notified that work is finished

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 -relates to working effectively within set conditions and processes;

Level 2 -relates to the management or facilitation of conditions or processes; and

Level 3 -relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate ideas and information orally and in writing, in simple English to enable confirmation of work requirements, passage of information and requests to other workers during operations and the reporting and recording of work outcomes	2
Collecting analysing and organising information	Collect, organise, interpret and understand the information required for operating personnel and materials hoists, including work instructions, plans/sketches/diagrams, safety instructions, signage, labels, quality procedures, manufacturers' instructions, material safety data sheets and equipment instructions	2
Planning and organising activities	Conduct activities associated with operating personnel and materials hoists, including the coordination and use of equipment, materials and tools to avoid backtracking and rework	2
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity	2
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time to complete tasks, calculate material requirements and establish quality checks	2
Solving problems	Establish safe and effective work processes which anticipate likely problems and blockages and systematically work around these to avoid or minimise reworking and avoid wastage	2
Using technology	Use workplace technology related to operating personnel and materials hoists, including the use of calculators, hoisting equipment, the use of communication devices and the reporting/recording of results	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Planning and preparation is to include but not be limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- Personnel and materials hoists are to include but not be limited to rack and pinion and may include winch operated, self climbing and super hoist
- Safety systems are to include but not be limited to limit switches, manual lowering systems, emergency brakes and anemometer
- Types of hoist may include but not be limited to materials, bucket, cantilevered, car, platform, personnel and materials, multiple winch and tower
- Work completion details may include but not be limited to check sheets, equipment defect records, job cards, plant and maintenance records, safe work method statements and JSA's

Safety (OH&S)

- OH&S requirements are to be in accordance with legislation/regulations/codes of practice, organisational safety policies and procedures and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, organisational first aid, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
- Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables (including overhead service trays, cables and conduits), lighting, earth leakage boxes, trip hazards, working with dangerous materials, working in confined spaces, surrounding structures, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public
- Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but are not limited to waste management, noise, dust, vibration and clean-up management

- Quality Requirements
- Quality requirements are to include but not be limited to relevant regulations including Australian Standards, internal company quality policy and standards, workplace operations and procedures and manufacturers' specifications where specified
- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include Federal, State and Local Authorities administering the applicable acts, regulations and codes of practice
- Tools and Equipment
- Tools and equipment are to include but not be limited to personnel and materials hoists and all associated equipment
- Communications
- Communications are to include but not limited to verbal and visual instructions and fault reporting and may include mobile phone, site specific instructions, written instructions, plans or instructions related to job/task, two way radio and hand signals
 - On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
 - Safe work procedures related to operating personnel and materials hoists
 - Regulatory/legislative requirements pertaining to personnel and materials hoists
 - Engineers' design specifications/manufacturers' specifications and instructions where specified
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan and OH&S legislation/regulations/codes of practice applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Safe and effective operational use of tools, plant and equipment
- Communication and working effectively and safely with others
- Completion of pre-operational check, raise and lower to four limits including a top and bottom, conduct manual lowering between floors, shut down and carry out post operational checks, finalise log book, all to manufacturers specifications and complying with OH&S legislation

Relationship to other units

- Pre-requisite units are:
- BCGCM1001B Follow OH&S policies and procedures
- Competency in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Workplace and equipment safety requirements
 - Quality requirements
 - General Construction terminology
 - Plant, tools and equipment types, characteristics, uses and limitations
 - Hoist operation techniques
 - Personnel and materials hoist equipment
 - Processes for the calculation of load mass requirements
 - Material Safety Data Sheets
 - Plans, drawings and specifications
 - Materials handling, storage and environmentally friendly waste management
 - Relevant acts, regulations and codes of practice
 - Designs and functions of hoisting equipment
 - Signalling methods and communications
 - Fault finding and identification
 - Working at heights
 - Emergency procedures (hoist specific)
 - JSA's/Safe work method statements

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory requirements including specified Australian Standards

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's General Construction Training Package and relevant NOHSC standards where they apply
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - hand and power tools, plant and equipment appropriate to operating personnel and materials hoists
 - realistic activities covering the mandatory task requirements
 - specifications and work instructions

BCGSV6010A**Apply fire technology to buildings up to 3 storeys****Unit Descriptor**

This unit specifies the competency required to evaluate smoke detection, fire prevention, protection and control systems for buildings up to three storeys and not exceeding a maximum floor area of 2000 square metre.

It includes evaluation of fire fighting equipment in buildings, integration of active and passive fire protection systems, and the determination of sprinkler and drencher requirements according to the Building Code of Australia (BCA), relevant legislation and Australian Standards.

Unit Sector

Building Surveying

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Evaluate smoke control in buildings | 1.1 Psychological effects of smoke on people exposed to building fires are researched
1.2 Mechanisms of smoke movement in building are identified and recorded
1.3 Smoke control systems identified to meet the requirements for buildings are documented in accordance with legislative requirements
1.4 Application of computer packaged smoke control systems are analysed and reported |
| 2. Analyse passive fire protection systems for buildings | 2.1 Compartmentation purposes are reported
2.2 Separation requirements for buildings from other buildings and structures are identified and recorded
2.3 Requirements for escape from buildings are documented according to BCA requirements |
| 3. Determine suitability of fire detection systems for buildings | 3.1 A range of devices for active fire protection, such as alarms and detectors, are identified and selected for purpose use
3.2 Acts and building regulations that govern the installation of active fire protection systems are identified and recorded
3.3 Requirements for fire detection systems in buildings are identified and selected
3.4 Requirements for fire detection systems for buildings that present unusual fire hazards are identified and documented
3.5 Agencies responsible for maintenance of fire safety systems in buildings are identified and listed according to State/Territory legislation |
| 4. Determine the requirements for various fire fighting equipment in buildings | 4.1 Legislation that governs the installation of fire fighting equipment is identified and documented
4.2 Extinguishing mediums used by fire fighting agencies and their applications are identified and recorded
4.3 Properties of extinguishment for the various mediums are identified and documented |

- | | |
|--|--|
| 5. Check and identify fire alarms | 5.1 Various alarm systems and their operating conditions are identified and documented |
| | 5.2 Various forms of detection and suppression systems are identified in accordance with BCA and relevant AS standards and assessed for compliance |
| | 5.3 Components and their function in the operation of a sprinkler system are checked for pertinence in accordance with BCA and relevant AS standards |
| 6. Determine the requirements for sprinklers and drenchers in buildings | 6.1 Functions of sprinkler and drencher systems are recorded |
| | 6.2 Sources of water supply to a sprinkler system are identified and documented in accordance with BCA |
| | 6.3 Components and their function in the operation of a sprinkler system are interpreted |
| 7. Integrated active fire protection systems with passive fire protection are evaluated to ensure a safe and economical building | 7.1 Active and passive fire protection systems are identified and selected |
| | 7.2 Building examination is carried out to determine the effectiveness of the active and passive fire protection systems according to BCA. |

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The questions below highlight how these processes are applied in this competency unit. The number in brackets indicates the level to which the key competency needs to be demonstrated where (1) working within set conditions and processes, (2) management or facilitation of conditions or processes are exercised, and (3) design and/or development of conditions or process are required.

How will the candidate apply the following key competency in this unit?

The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate and negotiate ideas and information to enable application of fire technology to buildings and for translation of outcomes and solutions.	3
Collecting analysing and organising information	Research, analyse, organise and design the process of applying fire technology to buildings plus subsequent reporting procedure.	3
Planning and organising activities	Plan and organise activities including the planning of analytical processes, the design and implementation of fire technology systems to buildings.	3
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity.	2
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly complete measurements, calculate analytical requirements, establish realistic sample criteria, quantify, survey and present analytical results.	2
Solving problems	Establish analytical processes, including diagnostic processes, which anticipate and allow for risks, cater for both direct and indirect evidence, avoid or minimise reworking and avoid wastage.	3
Using technology	Use workplace technology related to information gathering and analysis, diagnosis, information research, report writing, administration and management procedures.	2

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Unit scope

- Application of fire technology is to include but not be limited to new and proposed buildings, for the purposes of highlighting fire technology requirements and solutions in compliance with the Building Code of Australia.
- Building projects requiring assessment of fire technology systems are to include but not be limited to provision of site access/facilities, work schedules, project milestones and the calculation and processing of application or inspection fees.
- Buildings are limited to three (3) storeys and a maximum floor area not exceeding 2000 square metre, complying with the Building Code of Australia class 2 to 9 buildings.
- Fire technology may include but not be limited to:
 - Smoke detection systems
 - Fire prevention systems
 - Protection and control systems
 - Fire fighting equipment
 - Active and passive fire protection systems
 - Sprinkler systems
 - Drencher systems
- Standard specifications may include but not be limited to industry standard specifications and may be preliminary/outline specifications, developed specifications or detailed specifications (addressing specific components such as structural, mechanical and electrical requirements).
- Reporting systems in accordance with organisational, legislative and quality assurance procedures are to include desk based assessment and may include site-based assessment.

Unit context

- Competency requires the application of fire technology strategies to minimise building non-compliance and the possibility of risk to human life through research, analysis, evaluation and reporting skills in the determination of compliance within the context of relevant legislations, the Building Code of Australia and Australian Standards.

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria and Range Statement.

What critical aspects of evidence are required to demonstrate competency in this unit?

- Compliance with occupational health and safety regulations applicable to workplace operations.
- Application of organisational management policies and procedures including quality assurance requirements where appropriate.
- Evaluation, reporting of data, findings, and recommendations for the implementation of fire technology strategies for at least one (1) building development project up to three (3) storeys, including smoke detection systems, fire prevention systems, protection and control systems, fire fighting equipment, active and passive fire protection systems, sprinkler systems and drencher systems, with respect to compliance with the applicable local government authority, relevant legislation and the BCA.
- Provision of reports to appropriate body/individual as determined by the project brief.
- Application of strategic plans, workplace policies and procedures

Are there any other units which should be assessed with this unit or which relate directly to this unit?

- There are no specified relationships.
- Holistic assessment should be applied where appropriate to form a complete work function.

What specific knowledge is required to achieve the performance criteria?

- Processes for the interpretation of reports, working drawings and specifications.
- Authorities and powers of a building surveyor.
- Relevant national, State/Territory legislation and local government policy and procedures
- Problem identification, formulation and solutions.
- National Fire Protection Association (NFPA) specifications.
- Factory Mutual Performance Board specifications.
- Fire safety engineering guidelines.
- Fire technology principles in buildings.
- Terminology, definitions and hazard identification.
- Research methods.
- Processes for the administration and preparation of documentation.

In what context should assessment occur?

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide and within the scope defined by the Range Statement.
- Assessment must take account of the endorsed assessment guidelines in the Construction Training Package.

What methods of assessment should apply?

- Assessment of this competency is most likely to be project related under real or simulated conditions and require portfolios or other forms of indirect evidence of process. Direct evidence may include certification of compliance on the final outcome or authorisation for commencement by a competent authority.
- Assessment must confirm the inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Assessment should reinforce the integration of the key competencies.

What are the specific resource requirements for this unit?

- A situation, real or realistically simulated, requiring application of fire technology systems to buildings.
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace.

BCGWC3006B**Install acoustic and thermal environmental protection systems****Unit Descriptor**

This unit specifies the competency required to install wall and ceiling systems which satisfy environmental requirements in terms of acoustic ratings and energy efficiency ratings in accordance with sustainable building practices.

The unit includes the planning and preparation for work, the installation of insulation to wall cavities/ plenum, the installation of acoustic systems and the completion of post work clean up activities.

Prerequisite Unit(s)

BCGCM1001B Follow OH&S policies and procedures

Unit Sector

Wall and Ceiling

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Plan and prepare | <ul style="list-style-type: none"> 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied 1.2 Safety requirements are followed in accordance with safety plans and policies 1.3 Signage/barricade requirements are identified and implemented 1.4 Tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use 1.7 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied |
| 2. Install blanket insulation to walls | <ul style="list-style-type: none"> 2.1 Stud configuration is identified for installation processes 2.2 Safety wire mesh is installed to plans/specifications 2.3 Insulating blanket is installed in full length runs where practicable or, if joined, joints are made at centre of frame member, to plans/specifications 2.4 Adjacent runs of blanket insulation is abutted with closed joints |
| 3. Install acoustic systems | <ul style="list-style-type: none"> 3.1 Acoustic materials are selected to manufacturers' specifications for the walls and ceiling 3.2 Sheeting or ceiling tile material is selected for use in buildings requiring acoustic properties in accordance with manufacturers' RW ratings 3.3 Plaster sheeting and acoustic tile materials are fixed to walls and ceiling in accordance with specifications 3.4 Sealant is selected and used to manufacturers' specifications |

- 4. Clean up
 - 4.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification
 - 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices

KEY COMPETENCIES

These include a number of processes that are learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are to be applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 -relates to working effectively within set conditions and processes;

Level 2 -relates to the management or facilitation of conditions or processes; and

Level 3 -relates to the design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Communicate ideas and information orally and in writing, in simple English to enable confirmation of work requirements, passage of information and requests to other workers during operations and the reporting and recording of work outcomes	1
Collecting analysing and organising information	Collect, organise, interpret and understand the information required for the installation of acoustic and thermal protection systems, including work instructions, plans/sketches/diagrams, safety instructions, signage, labels, quality procedures, manufacturers' instructions, material safety data sheets and equipment instructions	2
Planning and organising activities	Conduct activities associated with the installation of acoustic and thermal protection systems, including the coordination and use of equipment, materials and tools to avoid backtracking and rework	2
Working with others and in teams	Work with others and in a team by recognising dependencies and using co-operative approaches to optimise satisfaction and productivity	1
Using mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time to complete tasks, complete measurements, interpret ratings, calculate material requirements and establish quality checks	1
Solving problems	Establish safe and effective work processes which anticipate likely problems and blockages and systematically work around these to avoid or minimise reworking and avoid wastage	1
Using technology	Use workplace technology related to the installation of acoustic and thermal protection systems, including the use of calculators, the use of communication devices and the reporting/recording of results	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables relate to this particular unit:

Unit scope

- Acoustic and thermal environment protection systems are those prescribed in EPA regulatory requirements and in codes which may support or explain these
- Support structures may include timber floors, walls, ceiling and roof framing
- Installation of materials for acoustic and thermal purposes may include the fixing of plasterboard, acoustic ceiling tiles/sheets, acoustic and energy insulation materials, fibre cement sheeting, plaster products and metal pan type ceiling cladding

Safety (OH&S)

- OH&S requirements are to be in accordance with legislation/regulations/codes of practice, organisational safety policies and procedures and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, organisational first aid, hazard control and hazardous materials and substances
- Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
- Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with manual handling, trip hazards, lighting, power sources and leads, the use of cutting tools, power tools, traffic control, working at heights, working in proximity to others, worksite visitors and the public
- Emergency procedures related to this unit are to include but may not be limited to extinguishing fires, organisational first aid requirements and evacuation

Environmental Requirements

- Environmental requirements are to include but are not limited to noise, energy efficiency, dust, vibration and clean up management

Quality Requirements

- Quality requirements are to include but not be limited to relevant regulations including Australian Standards, internal company quality policy and standards, workplace operations and procedures and manufacturers specifications where specified

- Statutory/Regulatory Authorities
- Statutory/regulatory authorities may include Federal, State and Local Authorities administering the applicable acts, regulations and codes of practice
- Tools and equipment
- Tools and equipment are to include measuring tape/rule, hammers, tin snips, power drills, squares, spirit levels, screwguns, power leads, broad knives, caulking guns, trowels, setting boxes, spanners, nail bags, power saws, electric screw guns, manual levelling devices, trestles and may include docking saw/drop saws, laser levelling devices, nail guns, pop riveters, air compressors and hoses, system scaffolding and planks, saw stools, 'C' clamps and masonry drills
- Materials
- Materials may include but not be limited to steel safety mesh, insulation blankets, loose fill insulation, rigid sheet insulation, polystyrene sheets, plasterboard, fibrous plaster, acoustic ceiling products, metal/aluminium type products, sealants, screws, nails, staples, adhesive and jointing tape
- Communications
- Communications are to include but not limited to verbal and visual instructions and fault reporting and may include mobile phone, site specific instructions, written instructions, plans or instructions related to job/task, two way radio and hand signals
 - On site meeting processes may include notification/scheduling (time, place, purpose), task discussions and local coordination of procedural and operational issues
- Information
- Information sources may include but not be limited to verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches
 - Safe work procedures related to both acoustic and thermal environmental protection systems
 - Regulatory/legislative requirements pertaining to both acoustic and thermal environmental protection systems
 - Manufacturers' specifications and instructions where specified
 - Organisation work specifications and requirements
 - Instructions issued by authorised organisational or external personnel
 - Relevant Australian Standards

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Performance Criteria, the Range Statement, and the Assessment Guidelines of the Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

- Location, interpretation and application of relevant information, standards and specifications
- Compliance with site safety plan and OH&S legislation/regulations/codes of practice applicable to workplace operations
- Compliance with organisational policies and procedures including quality requirements
- Safe and effective operational use of tools and equipment
- Communication and working effectively and safely with others
- Complete not less than three (3) installation tasks which cover acoustic and thermal protection systems in accordance with regulatory requirements and related specifications

Relationship to other units

- Pre-requisite units are:

BCGCM1001B Follow OH&S policies and procedures

Competency in this unit should be assessed in conjunction with other functional units which together form part of the holistic work role

Specific knowledge required to achieve the performance criteria

- A knowledge of
 - Workplace and equipment safety requirements
 - Quality requirements
 - Acoustic and thermal protection systems terminology
 - Regulation and building codes related to acoustic and thermal protection requirements and systems
 - Basic acoustic theory
 - Thermal theory related to heat loss
 - The types of thermal protection systems available for wall and ceiling application and their characteristics, strengths and limitations
 - The types of acoustic protection systems available for wall and ceiling application and their characteristics, strengths and limitations
 - Installation tools and equipment types, characteristics, uses and limitations
 - Acoustic systems installation techniques
 - Thermal systems installation techniques
 - Acoustic and thermal protection systems materials
 - Processes for the calculation of material requirements
 - Material Safety Data Sheets
 - Plans, drawings and specifications
 - Materials handling, storage and environmentally friendly waste management
 - JSA's/Safe work method statement

The context of assessment

- The application of competency is to be assessed in the workplace or realistically simulated construction site
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
- Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to comply with relevant regulatory requirements including specified Australian Standards
- Installation of materials for acoustic and thermal purposes may include the fixing of plasterboard, acoustic ceiling tiles/sheets, acoustic and energy insulation materials, fibre cement sheeting, plaster products and metal pan type ceiling cladding

Methods of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Building and Construction industry's General Construction Training Package
- Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge
- Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the essential underpinning knowledge
- Assessment may be applied under project related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency, including those listed above

Specific resource requirements for this unit

- The following resources should be made available:
 - workplace location or simulated workplace
 - materials relevant to the installation of acoustic and thermal protection systems
 - hand and power tools and equipment appropriate to the installation of acoustic and thermal protection systems
 - realistic activities covering the mandatory task requirements
 - specifications and work instructions

BSBADM305A**Unit Descriptor****Create and use databases**

This unit covers the creation of simple data tables, forms, reports and queries to create a simple database that is used for storage and retrieval of information.

This unit is related to BSBADM403A Develop and use complex databases.

Competency Field

Business Administration Services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-----------------------------------|--|
| 1. Use safe work practices | 1.1 Workspace, furniture and equipment are adjusted to suit the <i>ergonomic requirements</i> of the user
1.2 <i>Work organisation</i> meets organisational and occupational health and safety requirements for computer operation
1.3 Energy and resource <i>conservation techniques</i> are used to minimise wastage in accordance with organisational and statutory requirements |
| 2. Create simple databases | 2.1 Organisational requirements in relation to data entry, storage, output and presentation requirements are identified
2.2 Database use, output, reporting and presentation requirements are determined in accordance with organisational policy and procedures
2.3 Database utilises <i>software functions</i> and simple <i>formulae</i> to meet identified requirements
2.4 Data table and form layout enable efficient data input and display
2.5 Database reports are <i>formatted</i> in accordance with organisational style and presentation requirements |
| 3. Create simple database queries | 3.1 Information output, database tables to be used and report layout are determined to meet task requirements
3.2 Data groupings, search and sort criteria are determined to meet task requirements
3.3 Queries are run and the results checked to ensure they provide the required data |
| 4. Use simple databases | 4.1 <i>Data</i> is entered, <i>checked</i> and amended in accordance with organisational and task requirements
4.2 Data input meets <i>designated timelines</i> and organisational requirements for speed and accuracy
4.3 Queries and formulae are tested to confirm output meets task requirements
4.4 Manuals, user documentation and on-line help are used to overcome problems with database design and production
4.5 Database reports and/or forms are previewed, adjusted and <i>printed</i> in accordance with organisational and task requirements
4.6 Databases are <i>named and stored</i> , in accordance with organisational requirements and the application exited without data loss/damage |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	through the production of effective database reports	1
Collecting analysing and organising information	to determine the most appropriate database format	1
Planning and organising activities	to determine queries, formulae and input data	1
Working with others and in teams	to determine database outputs and printing requirements	1
Using mathematical ideas and techniques	while using queries and formulae in the database	1
Solving problems	using manuals and on-line help	1
Using technology	to create and use databases	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Organisational policy and procedures may include:

- log-on procedures
- password protection
- storage/location of data
- standard formats
- author's instructions
- use of templates

Ergonomic requirements may include:

- workstation height and layout
- chair height, seat and back adjustment
- footrest
- screen position
- keyboard and mouse position
- document holder
- posture
- avoiding radiation from computer screens
- lighting
- noise minimisation

Work organisation may include:

- mix of repetitive and other activities
- rest periods
- exercise breaks

Conservation techniques may include:

- double-sided paper use
- re-used paper for rough drafts (observing confidentiality requirements)
- recycling used and shredded paper
- utilising power-save options for equipment

Software functions may include:

- field definitions/attributes
- inserting/deleting blank lines and spaces
- altering field widths
- adding, deleting, moving, re-labelling fields
- repeating (if available)
- calculate/formula
- formatting fields
- formatting text
- data protection
- headers/footers
- table, form and report wizards

Simple formulae may include:

- count
- maximum
- minimum
- average
- sum
- subtraction
- multiplication
- division
- combinations of above

Report formatting may include:

- alignment on page
- tables
- columns
- enhancements to format - borders, patterns and colours
- enhancements to text
- headers/footers

Data may include:

- numbers
- text

Checking may include:

- proofreading
- accuracy of data
- spelling, electronically and manually
- accuracy of formulae with calculator
- outcome of sorting / filtering
- ensuring instructions with regard to content and format have been followed

Designated timelines may include:

- timeline agreed with supervisor/person requiring database
- timeline agreed with internal/external client

Printing may include:

- records
- tables
- forms
- queries
- reports

Storage of data may include:

- storage in electronic folders / sub-folders
- storage on hard/floppy disk drives, CD ROM, tape backup
- organisation policy for backing up files
- organisation policy for filing hard copies of databases
- filing locations
- security
- authorised access

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Integrated demonstration of all elements of competency and their performance criteria
- Databases are appropriate to task requirements and efficient input of data

Underpinning Knowledge

- Relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- Organisational policy and procedures on
- saving and backing up files
- format of workplace reports / documents
- energy and resource conservation
- databases, including entry
- database reports strategy
- simple formulae

At this level the learner must demonstrate some relevant theoretical knowledge.

Underpinning Skills

- Numeracy skills in relating to creating simple queries and using simple formulae
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace. These may include:

- workplace reference materials such as style guides
- computer equipment with database software
- English dictionary

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the business services common competencies for the particular AQF level. Refer to the Key Competency

BSBCMN213A**Unit Descriptor****Produce simple word-processed documents**

This unit covers preparation and production of short routine letters, notes, memos and records using word processing software.

This unit is related to BSBCMN107A Operate a personal computer, BSBCMN108A Develop keyboard skills and BSBCMN306A Produce business documents.

Competency Field

Common

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|----------------------------------|--|
| 1. Use safe work practices | 1.1 Workspace, furniture and equipment are adjusted to suit the <i>ergonomic requirements</i> of the user
1.2 <i>Work organisation</i> meets organisational and Occupational Health and Safety requirements for computer operation
1.3 Energy and resource <i>conservation techniques</i> are used to minimise wastage in accordance with organisational and statutory requirements |
| 2. Confirm document requirements | 2.1 Document purpose, audience and presentation requirements are clarified with relevant personnel in accordance with organisational policy and procedures
2.2 Organisational requirements in relation to <i>document</i> style, storage and security requirements are identified |
| 3. Produce documents | 3.1 Text is entered, checked and amended in accordance with organisational and task requirements
3.2 <i>Software functions</i> are utilised for consistency of design and layout and document is <i>formatted</i> in accordance with organisational style and presentation requirements
3.3 Manuals, user documentation and on-line help are used to overcome problems with document presentation and production
3.4 Mailable document is previewed, adjusted and printed in accordance with organisational and task requirements
3.5 Documents are prepared within designated timelines, organisational requirements and Australian standards for speed and accuracy
3.6 Document is named and stored, in accordance with organisational requirements and the application exited without information loss/damage |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	through well-designed business documents	2
Collecting analysing and organising information	to meet organisational requirements	2
Planning and organising activities	to meet designated timelines	2
Working with others and in teams	to determine document purpose and audience	2
Using mathematical ideas and techniques	to determine spatial design requirements	2
Solving problems	using manuals and on-line help	2
Using technology	to produce wordprocessing documents	2

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Organisational policy and procedures may include:

- log-on procedures
- password protection
- storage / location of data
- standard formats
- author's instructions
- use of templates

Ergonomic requirements may include:

- workstation height and layout
- chair height, seat and back adjustment
- footrest
- screen position
- keyboard and mouse position
- document holder
- posture
- avoiding radiation from computer screens
- lighting
- noise minimisation

Work organisation may include:

- mix of repetitive and other activities
- rest periods
- exercise breaks

Conservation techniques may include:

- double-sided paper use
- re-used paper for rough drafts (observing confidentiality requirements)
- disposing of non-confidential waste paper in recycling bins
- utilising power-save options for equipment

Documents may include:

- memos
- faxes
- letters
- standard form letters
- labels
- envelopes
- agendas
- minutes
- briefing papers
- short reports
- simple one-page flyers

Software functions may include:

- default settings
- page setup
- paragraph formatting
- text formatting
- tabs
- line spacing
- page numbers
- headers/footers
- spell check
- grammar check
- indent
- document protection

- Formatting may include:
- page orientation
 - margins
 - company logo/letterhead
 - columns
 - enhancements to text - colour, size, orientation
 - enhancements to format - borders, patterns and colours
 - alignment on page
 - headers/footers
- Designated timelines may include:
- timeline agreed with supervisor/person requiring document/s
 - timeline agreed with internal/external client
 - organisation timeline eg deadline requirements
- Printing may include:
- printer setup
 - whole document
 - specified pages
 - odd or even pages
 - multiple copies
- Naming and storage of documents may include:
- file names which are easily identifiable in relation to the content
 - file/directory names which identify the operator, author, section, date etc
 - file names according to organisational procedure eg numbers rather than names
 - storage in folders/sub-folders
 - storage on hard/floppy disk drives, CD ROM, tape backup
 - organisation policy for backing up files
 - organisation policy for filing hard copies of documents
 - filing locations
 - security
 - authorised access
- Checking may include:
- proofreading
 - accuracy of information
 - spelling, electronically and manually
 - grammar
 - consistency of layout
 - ensuring instructions with regard to content and format have been followed

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Integrated demonstration of all elements of competency and their performance criteria
- Knowledge of simple word processing functions
- Knowledge of standard document layout
- Knowledge of simple document design principles
- Knowledge of organisational requirements for simple wordprocessed documents

Underpinning Knowledge

- The relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- Knowledge of the purposes of and the uses and function of wordprocessing software.
- Organisational requirements for ergonomics, work periods and breaks, and conservation techniques.
- Formatting styles and rules of the organisation's style guide
- Effect of formatting on readability and appearance of documents

At this level the learner must demonstrate basic operational knowledge in a moderate range of areas.

Underpinning Skills

- Keyboarding and technology skills
- Literacy skills for reading and understanding the organisation's procedures; using basic models to produce a range of correspondence; using page layout to support text structure
- Proofreading and editing skills for checking own work and re-reading for accuracy against original
- Communication including questioning and clarifying
- Problem solving skills to solve routine problems
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace. These may include:

- workplace reference materials such as style guides
- computer equipment with wordprocessing software
- English dictionary

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the Business Services Common Competencies for the particular AQF Level. Refer to the Key Competency Levels

BSBCMN214A**Unit Descriptor****Create and use simple spreadsheets**

This unit covers creating and using simple spreadsheets and charts through the use of spreadsheet software.

This unit is related to BSBCMN107A Operate a personal computer and BSBCMN108A Develop keyboard skills.

Competency Field

Common

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------|---|
| 1. Use safe work practices | <p>1.1 Workspace, furniture and equipment are adjusted to suit the <i>ergonomic requirements</i> of the user</p> <p>1.2 <i>Work organisation</i> meets organisational and statutory requirements for computer operation</p> <p>1.3 Energy and resource <i>conservation techniques</i> are used to minimise wastage in accordance with organisational and statutory requirements</p> |
| 2. Create simple spreadsheets | <p>2.1 Organisational and task requirements in relation to data entry, storage, output and presentation requirements are identified</p> <p>2.2 Spreadsheet utilises <i>routine software functions</i> and <i>simple formulae</i> to meet identified requirements</p> <p>2.3 Spreadsheet layout enables efficient data input and presentation</p> <p>2.4 Spreadsheet is <i>formatted</i> in accordance with organisational style and presentation requirements</p> <p>2.5 Formulae are tested to confirm output meets task requirements</p> <p>2.6 Adjustments are made as required</p> <p>2.7 Supervisor is consulted to confirm final formulae</p> |
| 3. Produce spreadsheets | <p>3.1 <i>Data</i> is entered, <i>checked</i> and amended in accordance with organisational and task requirements</p> <p>3.2 Data input meets <i>designated timelines</i> and organisational requirements for speed and accuracy</p> <p>3.3 Manuals, user documentation and on-line help are used to overcome problems with spreadsheet design and production</p> <p>3.4 Spreadsheet is previewed, adjusted and <i>printed</i> in accordance with organisational and task requirements</p> <p>3.5 Spreadsheet is <i>named and stored</i>, in accordance with organisational requirements and the application exited without data loss/damage</p> |
| 4. Produce simple charts | <p>4.1 Organisational and task requirements are determined in relation to the <i>type of chart</i> and <i>chart features</i> to be included</p> <p>4.2 Choice and design of chart enables valid representation of numerical data and meets organisational and task requirements</p> <p>4.3 Chart is previewed, adjusted and printed in accordance with organisational and task requirements</p> |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	through the production of an effective spreadsheet	1
Collecting analysing and organising information	to determine the most appropriate spreadsheet format	1
Planning and organising activities	to determine formulae and input data	1
Working with others and in teams	to determine spreadsheet and printing requirements	1
Using mathematical ideas and techniques	while using formulae in the spreadsheet	2
Solving problems	using manuals and on-line help	2
Using technology	to create and use spreadsheets	2

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Organisational policy and procedures may include:

- log-on procedures
- password protection
- storage/location of data
- standard formats
- author's instructions
- use of templates

Ergonomic requirements may include:

- workstation height and layout
- chair height, seat and back adjustment
- footrest
- screen position
- keyboard and mouse position
- document holder
- posture
- avoiding radiation from computer screens
- lighting
- noise minimisation

Work organisation may include:

- mix of repetitive and other activities
- rest periods
- exercise breaks

Conservation techniques may include:

- double-sided paper use
- re-used paper for rough drafts (observing confidentiality requirements)
- recycling used and shredded paper
- utilising power-save options for equipment

Routine software functions may include:

- formatting text
- formatting cells
- adding/deleting columns/rows
- sizing columns/rows
- headers/footers

Simple formulae may include:

- maximum
- minimum
- average
- sum
- subtraction
- multiplication
- division
- combinations of above

Formatting may include:

- enhancements to text
- enhancements to format - borders, patterns and colours
- alignment on page
- headers/footers
- use of absolute and relative cell addresses
- efficiency of formulae
- use of cell addresses in formulae

Data may include:

- numbers
- text

- Checking may include:
- proofreading
 - accuracy of data
 - spelling, electronically and manually
 - accuracy of formulae with calculator
 - ensuring instructions with regard to content and format have been followed
- Designated timelines may include:
- timeline agreed with supervisor/person requiring spreadsheet
 - timeline agreed with internal/external client
 - organisation timeline eg financial requirements
- Printing may include:
- with values
 - with formulae
 - to fit specific number of pages
 - to fit on one page
- Storage of data may include:
- storage in electronic folders / sub-folders
 - storage on hard/floppy disk drives, CD ROM, tape backup
 - organisation policy for backing up files
 - organisation policy for filing hard copies of spreadsheets
 - filing locations
 - security
 - authorised access
- Chart types may include:
- column
 - stacked, 3-D column
 - bar
 - stacked / multiple bar
 - line
 - pie and 3-D pie
 - exploded pie
 - scatter / bubble
 - area
- Chart features may include:
- data labels
 - axis title
 - chart title
 - legend
 - gridlines
 - axes
 - data tables
 - colours
 - patterns
 - lines
 - fills
 - borders

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Integrated demonstration of all elements of competency and their performance criteria
- Design appropriate to type and use of spreadsheet
- Use of cell-based formulae

Underpinning Knowledge

- The relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- Knowledge of the purpose and ranges of uses of spreadsheet's functions
- Organisational requirements for ergonomic standards, work periods and breaks, and conservations techniques
- Organisational guidelines on spreadsheet manipulation and processing
- Format of workplace documents

At this level the learner must demonstrate basic operational knowledge in a moderate range of areas.

Underpinning Skills

- Computer literacy
- Keyboarding skills
- Literacy skills in relation to spelling correctly
- Numeracy skills in relation to creating and using spreadsheet formulae
- Communication skills to interpret instructions
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- These may include:
- workplace reference materials such as style guides
- computer equipment with spreadsheet software
- English dictionary

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations:

Eg dealing with different office requirements, different types of data, different types of spreadsheets and over a period of time to ensure that situational variables are consistently achieved

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the Business Services Common Competencies for the particular AQF Level. Refer to the Key Competency Levels

BSBCMN310A**Unit Descriptor****Deliver and monitor a service to customers**

This unit covers the skills and knowledge required to identify customers' needs and monitor a service provided to customers.

This unit is related to BSBCMN208A Deliver a service to customers and BSBCMN410A Coordinate implementation of customer service strategies.

Competency Field

Common

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Identify customers' needs | <p>1.1 Customers' <i>needs and expectations</i> are clarified and accurately identified using <i>appropriate interpersonal skills</i></p> <p>1.2 Customers' needs are assessed for urgency to determine priorities for service delivery in accordance with <i>organisational requirements</i></p> <p>1.3 Customers are provided with information about available choices for meeting their needs and assisted in the selection of preferred options</p> <p>1.4 Limitations in addressing customers' needs are identified and appropriate assistance is sought from <i>designated individuals</i></p> |
| 2. Deliver a service to customers | <p>2.1 Service is provided promptly to customers to meet identified needs in accordance with organisational requirements</p> <p>2.2 Appropriate rapport is established and maintained with customers to ensure completion of the delivery of a quality service.</p> <p>2.3 <i>Customers' complaints</i> are handled sensitively and courteously in accordance with organisational requirements</p> <p>2.4 Customers with <i>special needs</i> or assistance are responded to in accordance with organisational requirements</p> <p>2.5 Available <i>opportunities</i> are identified and used to promote and enhance services and products to customers</p> |
| 3. Monitor and report on service delivery | <p>3.1 Customer satisfaction with service delivery is regularly reviewed using <i>verifiable evidence</i> in accordance with organisational requirements</p> <p>3.2 Opportunities to enhance the quality of service and products are identified and pursued within organisational requirements</p> <p>3.3 Procedural aspects of service delivery are monitored for effectiveness and suitability to customer requirements</p> <p>3.4 Customer feedback is regularly sought and used to improve the provision of products and services</p> <p>3.5 Decisions to modify products or services incorporate evidence of customer satisfaction and are within organisational requirements</p> <p>3.6 Reports are clear, detailed and contain recommendations focused on critical aspects of service delivery</p> |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	with customers on products and services	2
Collecting analysing and organising information	to monitor and report on customer services	2
Planning and organising activities	to meet customer needs	2
Working with others and in teams	in completing scheduled tasks	1
Using mathematical ideas and techniques	to determine service or product costs	1
Solving problems	to respond to customer enquiries or complaints	2
Using technology	to complete allocated tasks	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Customer needs and expectations may relate to:

- advice or general information
- specific information
- further information
- making an appointment
- complaints
- purchasing organisation's products and services
- returning organisation's products and services
- accuracy of information
- fairness/politeness
- prices/value

Appropriate interpersonal skills may include:

- using appropriate body language
- summarising and paraphrasing to check understanding of customer's message
- providing an opportunity for the customer to confirm their request
- seeking feedback from the customer to confirm understanding of needs
- questioning to clarify and confirm the customer's needs
- listening actively to what the customer is communicating

Customers can be:

- internal or external
- other agencies
- individual members of the organisation
- corporate customers
- individual members of the public

Organisational requirements may include:

- quality assurances and/or procedures manuals
- goals, objectives, plans, systems and processes
- legal and organisational policy/guidelines and requirements
- Occupational Health and Safety policies, procedures and programs
- anti-discrimination and related policy
- access and equity principles and practice
- quality and continuous improvement processes and standards
- defined resource parameters
- who is responsible for products or services
- pricing and discount policies
- replacement and refund policy and procedures
- payment and delivery options

Designated individuals may include:

- supervisor
- customers
- colleagues
- line management

Customers' complaints may include:

- damaged goods or goods not delivered
- administrative errors such as incorrect invoices or prices
- warehouse or store room errors such as incorrect product delivered
- service errors
- delivery errors
- product not delivered on time
- customer satisfaction with service quality

Customers with special needs may include:

- disabilities
- language
- beliefs/values
- religious/spiritual observances
- gender, age
- culture
- age

Opportunities for enhancing quality of service or product may include:

- procedures for delivery of goods
- returns policy
- system for recording complaints
- extending timelines
- packaging procedures
- update of customer service charter

Verifiable evidence may include:

- customer satisfaction questionnaires
- audit documentation and reports
- quality assurance data
- returned goods
- lapsed customers
- service calls
- complaints

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, underpinning knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Identifying needs and priorities of customers
- Distinguishing between different levels of customer satisfaction
- Treating customers with courtesy and respect
- Identifying and complying with organisational requirements
- Responding to and reporting on customer feedback

Underpinning Knowledge

- The relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- Knowledge of the principles of excellent customer service
- Understanding the organisation's business structure, products and services
- Understanding the organisation's policy and procedures for customer service including handling customer complaints
- Knowledge of product and service standards and best practice models
- Understanding the principles of quality assurance
- Understanding public relations and product promotion
- Consultation methods, techniques and protocols
- Techniques for dealing with customers, including customers with special needs

At this level the learner must demonstrate some relevant theoretical knowledge.

Underpinning Skills

- Literacy skills to read and understand a variety of texts; prepare general information and papers according to target audience; spell with accuracy; use grammar and punctuation effectively as an aid to understanding
- Proofreading and editing skills to ensure clarity of meaning and conformity to organisational requirements, check for accuracy and consistency of information
- Report writing skills to identify and elaborate on customer service strategies; assess information for relevance and accuracy; source additional information as required
- Technology skills including the ability to select and use technology appropriate to a task
- Problem solving skills to deal with customer enquiries or complaints
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the Business Services Common Competencies for the particular AQF Level. Refer to the Key Competency Levels

BSBCMN404A**Unit Descriptor****Develop teams and individuals**

This unit covers the skills and knowledge required to determine individual and team development needs and facilitate the development of the workgroup.

This unit is related to BSBCMN304A Contribute to personal skill development and learning.

Competency Field

Common

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|---|
| 1. Determine development needs | <p>1.1 <i>Learning and development needs</i> are systematically identified and implemented in line with <i>organisational requirements</i></p> <p>1.2 A learning plan to meet individual and group training and development needs is collaboratively developed, agreed to and implemented</p> <p>1.3 Individuals are encouraged to self evaluate performance and identify areas for improvement</p> <p>1.4 <i>Feedback on performance</i> of team members is collected from relevant sources and compared with established team learning needs</p> |
| 2. Develop individuals and teams | <p>2.1 Learning and development program goals and objectives are identified to match specific knowledge and skill requirements of <i>competency standards</i></p> <p>2.2 <i>Learning delivery methods</i> are appropriate to the learning goals, the learning style of participants, and availability of <i>equipment and resources</i></p> <p>2.3 Workplace learning opportunities and <i>coaching and mentoring assistance</i> are provided to facilitate individual and team achievement of competencies</p> <p>2.4 Development opportunities incorporate a range of activities and support materials appropriate to the achievement of identified competencies</p> <p>2.5 Resources and timelines required for learning activities are identified and approved in accordance with organisational requirements</p> |
| 3. Monitor and evaluate workplace learning | <p>3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements</p> <p>3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional development support</p> <p>3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning</p> <p>3.4 Records and reports of competency are documented and maintained within organisational requirements</p> |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	with members of the work team	2
Collecting analysing and organising information	to measure team performance	2
Planning and organising activities	for learning opportunities	2
Working with others and in teams	in completing scheduled tasks	2
Using mathematical ideas and techniques	as an aid to measure learning outcomes	2
Solving problems	as an aid to team-development	2
Using technology	to manage scheduling of tasks	2

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

They may use legislation, codes and national standards relevant to the workplace including:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Learning and development needs may include:

- coaching, mentoring and/or supervision
- formal/informal learning programs
- internal/external training provision
- work experience/exchange/opportunities
- personal study
- career planning/development
- performance appraisals
- workplace skills assessment
- Recognition of Prior Learning

Organisational requirements may be included in:

- quality assurances and/or procedures manuals
- goals, objectives, plans, systems and processes
- legal and organisational policy/guidelines and requirements
- Occupational Health and Safety policies, procedures and programs
- confidentiality and security requirements
- business and performance plans
- anti-discrimination and related policy
- access and equity principles and practice
- ethical standards
- quality and continuous improvement processes and standards
- defined resource parameters

Feedback on performance may include:

- formal/informal performance appraisals
- obtaining feedback from supervisors and colleagues
- obtaining feedback from clients
- personal, reflective behaviour strategies
- routine organisational methods for monitoring service delivery

Competency standards are standards which measure:

- all those personal and technical knowledge, skills and attitudinal aspects (competencies) required to effectively and efficiently undertake the day to day tasks and duties of the practitioner's work function

Learning delivery methods may include:

- on-the-job coaching or mentoring
- problem solving
- presentations/demonstrations
- formal course participation
- work experience
- involvement in professional networks
- conference and seminar attendance
- induction

Equipment and resources may include:

- funding
- facilities
- guest speakers
- training equipment such as whiteboards and audio-visual equipment
- technological tools and equipment
- time

Coaching and mentoring assistance may include:

- providing feedback to another team member
- fair and ethical practice
- non-discriminatory processes and activities
- respecting the contribution of all participants and giving credit for achievements
- presenting and promoting a positive image of the collective group
- problem solving
- providing encouragement

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, underpinning knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Identifying and implementing learning opportunities for others
- Giving and receiving feedback constructively
- Facilitating participation of individuals in the work of the team
- Negotiating learning plans to improve the effectiveness of learning
- Preparing learning plans to match skill needs
- Accessing and designing learning opportunities

Underpinning Knowledge

- The relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- Knowledge of the principles of coaching and mentoring for development of competence
- Understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspectives
- Understanding how to facilitate team development and improvement
- Knowledge of the organisation's policies, plans and procedures
- Understanding methods and techniques for eliciting and interpreting feedback
- Understanding methods for identifying and prioritising personal development opportunities and options
- Knowledge of career paths and competency standards in the industry

At this level the learner must demonstrate understanding of a broad knowledge base incorporating some theoretical concepts.

Underpinning Skills

- Literacy skills to read and understand a variety of texts; prepare general information and papers according to target audience; spell with accuracy; use grammar and punctuation effectively as an aid to understanding; maintain records of learning
- Communication skills including receiving feedback and reporting, maintaining effective relationships and conflict management
- Planning skills to organise required resources and equipment to meet learning needs
- Coaching and mentoring skills to provide support to colleagues
- Report writing skills to organise information; assess information for relevance and accuracy; identify and elaborate on learning outcomes
- Facilitation skills to conduct small group training sessions
- Time management skills for scheduling learning programs within work activities
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the Business Services Common Competencies for the particular AQF Level. Refer to the Key Competency Levels

BSBCMN412A**Unit Descriptor****Promote innovation and change**

This unit covers the skills and knowledge required to promote the use and implementation of innovative work practices to effect change.

This unit is related to BSBCMN312A Support innovation and change.

Competency Field

Common

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|--|
| 1. Identify and develop opportunities for improved work practices | 1.1 Options for change incorporate identified improvements to work practices and procedures
1.2 <i>Risk factors</i> affecting change are analysed to identify potential constraints
1.3 Change is planned and resourced to promote the introduction and management of new processes
1.4 Benefits of <i>change</i> are clear and consistent with <i>organisational requirements</i>
1.5 Timelines and targets for implementation are realistic and support the achievement of change |
| 2. Lead team to foster innovative work practices | 2.1 Team members are selected to maximise innovative opportunities
2.2 Work assignments are organised to facilitate <i>innovative work skills</i>
2.3 Team members are provided with guidance and coaching on innovation in the workplace
2.4 Models of innovative work practice are provided and discussed |
| 3. Facilitate commitment to workplace change | 3.1 Opinions and suggestions on improving work practices are encouraged to facilitate participation in change processes
3.2 Goals and objectives of change are communicated clearly and promptly to individuals and teams
3.3 <i>Business technology</i> is used to manage and provide access to information on progress towards objectives of change
3.4 <i>Mentoring and coaching</i> is provided to support individuals and groups in introduction of change
3.5 Decisions to overcome problems in the implementation of change are made in consultation with designated individuals and groups
3.6 Effective relations and communications are maintained with clients and stakeholders during the process of change |

4. Monitor and evaluate change
- 4.1 Organisation's systems and technology are used to *monitor progress* towards objectives
 - 4.2 Team members are actively encouraged to reflect on team activities and opportunities for improvement and innovation
 - 4.3 Team activities are evaluated based on feedback from team members, management, clients and other interested people
 - 4.4 Suggestions for work improvements made by team members are positively received and acted on where appropriate
 - 4.5 *Evidence and information* on the impact of change is accurate, relevant and reported within organisational requirements
 - 4.6 Recommendations for improving methods or techniques to manage change are negotiated with designated individuals and groups using appropriate *negotiation skills*
 - 4.7 Systems, records and reporting procedures are maintained according to organisational requirements
 - 4.8 Feedback on individual and group work practices is prompt and constructive

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	with members of the work team	2
Collecting analysing and organising information	to set goals and objectives	2
Planning and organising activities	to promote change	2
Working with others and in teams	in completing scheduled tasks	2
Using mathematical ideas and techniques	as an aid to measure impact of change	2
Solving problems	to diagnose problems of implementation	2
Using technology	to manage scheduling of tasks	2

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

They may use legislation, codes and national standards relevant to the workplace including:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Change may include:

- implementation of new work practices and/or services
- organisational restructures
- introduction of new technology
- change in work location
- new client base
- staffing changes
- job role changes
- work priorities

Innovative work skills are:

- the skills required to come up with and develop new ideas or the new use of an old idea. They include:
 - interpretation
 - conceptualisation
 - representation
 - reflection
 - evaluation

Organisational requirements may be included in:

- quality assurances and/or procedures manuals
- goals, objectives, plans, systems and processes
- legal and organisational policy/guidelines and requirements
- Occupational Health and Safety policies, procedures and programs
- business and performance plans
- anti-discrimination and related policy
- access and equity principles and practice
- ethical standards
- quality and continuous improvement processes and standards
- defined resource parameters
- consultation and communication processes

Risk factors may include:

- disturbances to workflow
- confusion/loss of confidence
- cost blow out
- supplier problems
- product/service delivery problems
- time delays

Business technology may include:

- computer
- internet/extranet/intranet
- email
- software
- answering machine
- fax machine
- telephone

Mentoring and coaching may include:

- providing feedback to another team member
- fair and ethical practice
- non-discriminatory processes and activities
- respecting the contribution of all participants and giving credit for achievements
- presenting and promoting a positive image of the collective group
- problem solving
- providing encouragement

Monitoring progress may include:

- weekly report
- monthly report
- consultative groups
- Occupational Health and Safety
- union delegates
- financial departments
- public profiles

Evidence and information may include:

- customer surveys
- employee satisfaction
- industrial disputes
- supplier feedback
- productivity measures
- cost savings
- marketshare data

Negotiation skills may include:

- assertiveness
- collaboration
- solution designing
- confidence building
- conflict reduction
- stress management
- empathising

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, underpinning knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Analysing and evaluating problems associated with change
- Developing processes to introduce change
- Establishing plans and schedules to achieve the objectives of change
- Presenting information on the causes and introduction of the change
- Communicating priorities, goals and objectives
- Gathering evidence on the effect of change

Underpinning Knowledge

- The relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- Understanding of common effects of change and innovation in the workplace
- Understanding of industrial and organisational context of change
- Understanding of organisation's policies, plans, procedures and structure
- Knowledge of resources required by the organisation's operations
- Understanding processes to interpret and apply feedback
- Knowledge of principles and techniques of goal setting and recording priorities
- Knowledge of the principles of negotiation

At this level the learner must demonstrate understanding of a broad knowledge base incorporating some theoretical concepts.

Underpinning Skills

- Literacy skills to read and understand a variety of texts; prepare general information and papers according to target audience; spell with accuracy; use grammar and punctuation effectively as an aid to understanding
- Planning skills to schedule work activities for the implementation of change
- Team work skills for working as a member of a team during period of changes
- Consultation skills for including stakeholders in the change process
- Analytical skills for monitoring outcomes of change
- Negotiation skills for dealing with competing objectives
- Estimation skills for identifying resources necessary to support introduction of change
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the Business Services Common Competencies for the particular AQF Level. Refer to the Key Competency Levels

BSBCKM419A

Unit Descriptor

Manage projects

This unit covers the management of a straightforward project or a section of a larger project. It focuses on the application of project management skills and the requirement to meet timelines, quality standards, budgetary limits and other requirements set for the project.

Application of the Unit

This unit addresses the management of projects including the development of a project plan, administering and monitoring the project, finalising the project and reviewing the project to identify lessons learnt for application to future projects.

The unit does not apply to specialist project managers. For specialist project managers, the units of competency in the Project Management domain will be applicable.

Competency Field

Common : Domain - Project management

ELEMENT

PERFORMANCE CRITERIA

- | | |
|-------------------------|--|
| 1. Define project | <ul style="list-style-type: none"> 1.1 <i>Project scope and other relevant documentation is accessed</i> 1.2 <i>Project stakeholders are defined</i> 1.3 <i>Clarification is sought from delegating authority of any issues related to project and project parameters</i> 1.4 <i>Limits of own responsibility and reporting requirements are identified</i> 1.5 <i>Relationship of project to other projects and to the organisation's objectives is clarified</i> 1.6 <i>Available resources to undertake project are determined and accessed</i> |
| 2. Develop project plan | <ul style="list-style-type: none"> 2.1 <i>Project plan including timelines, task breakdown, roles and responsibilities is developed</i> 2.2 <i>Appropriate project management tools are identified and accessed</i> 2.3 <i>Risk management plan, which includes OHS, is formulated for project</i> 2.4 <i>Project budget is developed and approved</i> 2.5 <i>Team members are consulted and their views taken account of in planning the project</i> 2.6 <i>Project plan is finalised and any necessary approvals gained to commence project according to documented plan</i> |

- 3. Administer and monitor project
 - 3.1 Action is taken to ensure that project team members are clear about their responsibilities and the requirements of the project
 - 3.2 *Support* is provided to project team members, especially with regard to special needs, to ensure that the quality of the expected outcomes of the project and documented timelines are met
 - 3.3 *Required record keeping systems* are established and maintained throughout the project
 - 3.4 Plans for managing project finances, human, physical and technical resources and quality are implemented and monitored
 - 3.5 Project reports are completed and forwarded as required to stakeholders
 - 3.6 *Risk management* is undertaken as required to ensure project outcomes are met
 - 3.7 Project deliverables are achieved
- 4. Finalise project
 - 4.1 Financial record keeping associated with project is completed and checked for accuracy
 - 4.2 Staff involved in project are assigned to new roles or reassigned to previous roles
 - 4.3 Project documentation is completed and any necessary sign offs obtained for concluding project
- 5. Review project
 - 5.1 Project outcomes and processes are reviewed against the project scope and plan
 - 5.2 Team members are involved in the review of the project
 - 5.3 Lessons learnt from project are documented and reported within the organisation

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	written and verbal communication skills for report writing, documenting project, working with team members and stakeholders negotiating and consulting with team members, stakeholders	2
Collecting analysing and organising information	gathering information associated with planning, monitoring and evaluating project	2
Planning and organising activities	scheduling required for project supervising project team	2
Working with others and in teams	leading project team liaising with other enterprise personnel including management, funding bodies, customers/clients, stakeholders involved in project	3
Using mathematical ideas and techniques	applying basic numerical skills for managing finances associated with project and procurement activity using basic numerical skills to develop schedules for project	1
Solving problems	identifying potential problems that may arise in project addressing problems arising in project	2
Using technology	using word processing packages to complete necessary documentation using spreadsheets or other relevant project management software and tools	1

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Project scope and other relevant documentation refers to:

- project brief
- contract or other agreement
- project plan or summary
- other documents outlining the expected outcomes of the project, inclusions and exclusions from project, timeframes for project, quality standards for project, project resources

Stakeholders might include:

- project sponsor
- management, employees and relevant key personnel (internal and external) with special responsibilities
- clients or customers (internal and external)
- funding bodies

Delegating authority might include:

- project sponsor
- manager or management representative
- funding body
- customer or client

Project parameters will include:

- scope of project
- legislative and quality standards
- timelines
- finances for project
- integration of project within organisation
- risks associated with project, including OHS
- reporting requirements
- procurement requirements associated with project
- physical, human and technical resources available or required for project

Project plan will include:

- details of how the project will be executed including management of project in relation to the project parameters identified above

Project management tools might include:

- project management software
- technical resources required for the project e.g. OHS management system tools
- Gantt and bar charts
- PERT charts
- Critical Path Method
- cost schedule control system
- logistics support analysis
- life cycle cost analysis
- spreadsheets

Support for team members might include:

- supervision, mentoring and coaching
- feedback
- encouragement
- additional physical, human and technical resources (within allocated budget) if and as required
- regular meetings of project team
- learning and development

Required record keeping systems might include systems for:

- financial data including costs, expenditure, income generated, purchases
- quality data including any test results
- recording of time spent on project and progress in completing project
- correspondence
- samples, prototypes, models
- outcomes of project

Risk management might include:

- seeking further resources to meet deadline
- negotiating an extension of deadline or redefining completion or quantities or quality of outcomes
- reducing costs
- researching and applying more efficient methods of completing project tasks
- sharing of ideas to gain improvements to work undertaken within the project
- outsourcing some aspects of the project
- changing roles and responsibilities within project team

Necessary sign-offs might be required by:

- project sponsor
- management
- funding body
- clients customers

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competency in this standard must be able to provide evidence that they have successfully managed projects - either a straightforward project or a section of a larger project.

This evidence will cover the application of project management skills and the meeting of timelines, quality standards, budgetary limits and other requirements set for the project.

Required knowledge and understanding include:

- organisational policies and procedures that may impact on the project and management of the project, for example:
 - OHS
 - procurement
 - human resources
 - quality standards
 - risk assessment
- organisational structure and lines of authority and communication within the organisation
- how the project relates to organisation's overall mission, goals, objectives and operations
- available learning and development options external and internal to organisation

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- communication and negotiation skills
- written and verbal communication skills
- ability to relate to team members and delegating authority, clients and customers as appropriate
- personal time management skills
- budget review and monitoring skills
- leadership and management skills
- use of project management tools
- attributes:
 - attention to detail
 - thoroughness
 - communicative
 - accuracy

Products that could be used as evidence include:

- project plans
- emails, letters, financial statements, other documentation relating to project management and execution
- project reports
- samples, prototypes, other physical products produced in project
- reports of lessons learnt from review process

Processes that could be used as evidence include:

- how project scope and other relevant documentation was accessed
- how project stakeholders were defined
- how risk management plan was developed and implemented
- how resources were determined and accessed
- how project plan was formulated
- how project team members were led in managing project
- how project was monitored and managed
- how project was finalised and closure effected
- how project was reviewed

Resource implications for assessment include:

- access to workplace project documentation
- reports from third parties consulted in managing projects

Validity and sufficiency of evidence requires:

- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- at least three examples of projects managed by the assessee
- assessment may be through simulated project based activity or actual development and implementation of contracting arrangements

Integrated competency assessment:

- this unit can be assessed alone or as part of an integrated assessment activity involving other relevant common business and frontline management units associated with customer service delivery, teamwork, documentation and organising own work.

BSBCMN420A

Unit Descriptor

Write complex documents

This unit specifies the outcomes required to plan documents, draft text, prepare final text and produce documents of some complexity.

Application of the Unit

This unit covers reports, information and general promotion documents that are more complex than basic correspondence, memos or forms and that require review and analysis of a range of information sources.

The unit does not cover structured research but does include technical and non-technical reporting based on information and data gathered through research processes.

Documents are wholly or primarily text, but may include simple illustrative material. Production of documents is for single-copy documents, documents for simple reproduction, or documents that will be further designed.

This unit does not cover the roles of copywriter, journalist, editor or subeditor, but applies to people who assemble, analyse and output information as part of a broader role.

Competency Field

Common : Domain - Business communication

ELEMENT

PERFORMANCE CRITERIA

- | | |
|-------------------|---|
| 1. Plan documents | <ul style="list-style-type: none"> 1.1 The <i>purposes</i> of documents are determined 1.2 <i>Appropriate formats</i> for documents are chosen 1.3 <i>Means of communication</i> is established 1.4 <i>Requirements of documents</i> are determined 1.5 <i>Categories and logical sequences of data, information and knowledge</i> to achieve document objectives are determined 1.6 Develop overview of structure and content of documents |
| 2. Draft text | <ul style="list-style-type: none"> 2.1 Available data, information and knowledge are reviewed and organised according to proposed structure and content 2.2 Data, information and knowledge is aggregated, interpreted and summarised to prepare text that satisfies document purposes and objectives 2.3 Graphics are included as appropriate 2.4 Gaps in required data and information are identified and additional material collected from <i>relevant enterprise personnel</i> 2.5 Text is drafted according to document requirements and genre 2.6 Language used is appropriate to the audience |

- 3. Prepare final text
 - 3.1 Draft texts are reviewed to ensure document objectives are achieved and requirements are met
 - 3.2 Grammar, spelling and style are checked for accuracy and punctuation
 - 3.3 Draft texts are approved by *relevant enterprise personnel*
 - 3.4 Text amendments are processed as required
- 4. Produce document
 - 4.1 Basic *design elements* are chosen for documents appropriate to audience and purpose
 - 4.2 Word processing software is used to apply basic design elements to texts
 - 4.3 Documents are checked to ensure all requirements are met

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks

Key Competency	Example of Application	Performance Level
Communicating ideas and information	applying written communication skills to achieve required document outcomes producing complex documentation	3
Collecting analysing and organising information	defining categories and logical sequences of data, information and knowledge aggregating, interpreting and summarising data, information and knowledge	3
Planning and organising activities	planning and organising all aspects of document writing	2
Working with others and in teams	working with relevant enterprise personnel to clarify or add to data, information and knowledge	2
Using mathematical ideas and techniques	presenting mathematical ideas as graphs, charts and other visual representations	1
Solving problems	identifying and resolving gaps in data, information or knowledge	2
Using technology	using word processing software use of assistive technologies, if appropriate	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Purposes of documents may include:

- conveying research findings
- influencing attitudes, opinions, beliefs
- proposing recommendations, options and actions
- meeting legal requirements
- documenting policies, procedures and processes
- meeting other data, information or knowledge needs of an audience

Appropriate formats for documents may include:

- detailed business letters
- instructions and procedures
- manuals
- reports
- speeches and presentations
- publications, leaflets, brochures
- tender documentation and public notices
- website text
- emails
- submissions

Means of communication may include:

- software packages such as Word, Excel, PageMaker, PowerPoint, and templates

Requirements of documents may include:

- legal or traditional requirements for the particular document format
- compliance with proformas, standardised reporting requirements or undertakings made by the organisation about reporting
- organisational policy, procedures and guidelines applying to writing documents, including house style
- timelines, including deadlines
- word length
- compliance with genre
- requirements for illustrations, photographs, graphs, charts, maps and other illustrative material to explain texts
- standards for references, footnotes, citations, acknowledgements
- file types and sizes for online documents
- point numbering systems
- writing styles, including simplicity of English and use of technical language
- languages other than English requirements

Categories and logical sequences of data, information and knowledge may include:

- chronological, alphabetical or operating sequences
- facts, observations, conclusions and recommendations
- arguments and rebuttals
- recommendations and supporting arguments
- linking and summary statements
- illustrative case studies and other examples
- categories and sequences traditionally used for the particular type of document being prepared

Relevant enterprise personnel may include:

- consultative committees
- internal providers of specialist expertise
- owners
- managers/leaders/coordinators/supervisors
- staff in own work section/team members/colleagues
- staff in relevant work sections

Design elements may include:

- page size
- page shape
- margins and paragraph indentation
- illustrations, photographs and other illustrative material for design purposes
- use and amount of colour
- use and amount of white space
- fonts
- justification and alignment
- capitals and underlining
- headings
- lists and tables
- logos, branding, organisational identity requirements
- templates

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence that they have planned documents, drafted texts, prepared final texts and produced documents that meet specified purposes, objectives and requirements. They must include a range of documents covering a broad number of purposes, objectives and requirements.

Required knowledge and understanding include:

- legislation, codes of practice and standards, for example:
 - privacy law
 - copyright law
 - Commonwealth Government *Style Manual for Authors, Editors and Printers*
- enterprise policies and procedures related to drafting, reviewing and producing documents
- enterprise style guide/house style
- rules and conventions for written English, as defined by general and specialist dictionaries and books about grammar

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds, and physical and mental abilities
- ability to arrange data, information and knowledge into categories and logical sequences
- ability to write grammatically-correct English in a variety of styles
- ability to proofread a document for correct grammar and spelling and punctuation
- ability to identify audience characteristics and needs
- ability to write in a range of styles (formal/informal)
- ability to select and use language appropriate to context (style, tone, word choice)
- ability to use appropriate style and tone to convey empathy and understanding of cultures (including a range of cultures such as socio-economic, ethnic, gender, workplace, age, special needs/interests)
- basic research skills
- ability to use the basic functions of word processing software to produce a document, including, where appropriate, through use of assistive technologies

Products that could be used as evidence include:

- contents lists
- completed text
- completed documents

Processes that could be used as evidence include:

- how final content, structure and format of written documents was decided
- how data, information and knowledge were organised into categories and logical sequences
- how grammar and spelling were checked
- how design elements were chosen

Resource implications for assessment include:

- access to workplace documents

Validity and sufficiency of evidence requires:

- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- that assessment may either be through simulations or actual case studies of individual's work in this area
- at least ten examples of documents written and produced by the candidate

Integrated competency assessment means:

- that this unit can be assessed alone or as part of an integrated assessment involving other related communication units. Examples might include:
 - BSBMGT501A Market services and concepts to internal customers
 - BSBFLM502A Provide leadership in the workplace

BSBFLM403B

Unit Descriptor

Implement effective workplace relationships

This unit specifies the outcomes required to collect, analyse and communicate information and to use that information to develop and maintain effective working relationships and networks, with particular regard to communication and representation.

Application of the Unit

This unit replaces BSBFLM403A Manage effective workplace relationships.

Frontline managers play an important role in developing and maintaining positive relationships in internal and external environments so that customers, suppliers and the organisation achieve planned outputs and outcomes. They play a prominent part in motivating, mentoring, coaching and developing team cohesion through providing leadership for the team and forming the bridge between the management of the organisation and the team members.

At this level, work will normally be carried out within routine and non-routine methods and procedures, which require planning and evaluation and leadership and guidance of others.

This unit builds on BSBFLM303B Contribute to effective workplace relationships. Consider co-assessment with BSBFLM412A Promote team effectiveness. This unit is related to BSBFLM503B Manage effective workplace relationships.

Competency Field

Business Management Services : Domain - Frontline Management

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---|---|
| 1. Collect, analyse and communicate information and ideas | <p>1.1 Relevant <i>information</i> is collected from appropriate sources, analysed and shared with the work team to improve work performance</p> <p>1.2 Ideas and information are communicated in a manner which is appropriate and sensitive to the cultural and social diversity of the audience and any special needs</p> <p>1.3 <i>Consultation processes</i> are implemented to encourage employees to contribute to issues related to their work, and feedback in regard to outcomes is promptly relayed to the work team</p> <p>1.4 Contributions from internal and external sources are sought and valued in developing and refining new ideas and approaches</p> <p>1.5 <i>Processes</i> are implemented to ensure that issues raised are resolved promptly or referred to <i>relevant personnel</i> as required</p> |
|---|---|

- 2. Develop trust and confidence
 - 2.1 All internal and external contacts are treated with integrity, respect and empathy
 - 2.2 *The organisation's social, ethical and business standards* are used to develop and maintain effective relationships
 - 2.3 Trust and confidence of *colleagues, customers and suppliers* is gained and maintained through competent performance
 - 2.4 Interpersonal styles and methods are adjusted to meet the organisation's social and cultural environment
 - 2.5 Other members of the work team are encouraged to follow examples set, according to *organisation's policies and procedures*

- 3. Develop and maintain networks and relationships
 - 3.1 *Networks* are used to identify and build relationships
 - 3.2 Networks and other work relationships are used to provide identifiable benefits for the team and organisation

- 4. Manage difficulties into positive outcomes
 - 4.1 Difficulties are identified and analysed, and action is taken to rectify the situation within the requirements of the organisation and relevant legislation
 - 4.2 Colleagues are guided and supported to resolve work difficulties
 - 4.3 *Workplace outcomes* are regularly reviewed and improved in consultation with relevant personnel
 - 4.4 *Poor work performance* is managed within the organisation's processes
 - 4.5 Conflict is managed constructively within the organisation's processes

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

The bulleted points provide examples of how the key competencies can be applied for this unit.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	selecting and applying different communication methods to suit different groups and individuals	2
Collecting analysing and organising information	collecting and analysing contributions from internal and external sources	2
Planning and organising activities	organising information and feedback collected from various sources	2
Working with others and in teams	implementing a range of strategies to facilitate effective workplace relationships	2
Using mathematical ideas and techniques	using appropriate calculations to aid effective planning	1
Solving problems	using skills and information to assist in the area of conflict resolution and as an aid to decision making	2
Using technology	assisting in the management, distribution and communication of information	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

OHS considerations may include:

- provision of information about OHS legislative requirements, guidelines and the organisation's OHS policies, procedures and programs
- OHS practice as an ethical standard and legislative requirement
- training of all employees in health and safety procedures and updating of records
- changes to work, work practices and the working environment that have an OHS impact
- organisation's responsibilities to employees, customers and suppliers
- consultations with employees on OHS issues, with consideration given to social and cultural diversity and any special needs

Information may be:

- data appropriate to work roles and organisational policies that is shared and retrieved in writing or verbally, electronically or manually such as:
 - policies and procedures
 - planning and organisational documents including the outcomes of continuous improvement and quality assurance
 - marketing and customer-related data
 - archived, filed and historical background data
 - individual and team performance data

Consultation processes may include:

- opportunities for all employees to contribute to ideas and information to organisational issues
- feedback to the work team and relevant personnel in relation to outcomes of the consultation process

Processes may refer to:

- participating in planned organisational activities
- coordinating surveys or questionnaires
- distributing newsletters or reports
- conducting informal meetings
- informal dialogue with relevant personnel

Relevant personnel may include:

- managers
- supervisors
- union representatives/groups
- OHS committee and other people with specialist responsibilities
- other employees

The organisation's social, ethical and business standards may refer to:

- written standards such as those expressed in:
 - vision and mission statements
 - policies
 - code of workplace conduct/behaviour
 - dress code
 - statement of workplace values
- implied standards such as honesty and respect relative to the organisation culture and generally accepted within the wider community
- standards expressed in legislation and regulations such as anti-discrimination legislation
- rewards and recognition for high performing staff

Colleagues, customers and suppliers may include:

- team members
- employees at the same level and more senior managers
- people from a wide variety of social, cultural and ethnic backgrounds
- both internal and external contacts

Organisation's policies and procedures may refer to:

- sets of accepted actions approved by the organisation
- organisational tasks and activities undertaken to meet performance outcomes
- Standard Operating Procedures
- Materials Safety Data Sheets

Networks may be:

- internal and/or external
- informal or formal and with individuals or groups
- established structures or unstructured arrangements and may include business or professional associations

Workplace outcomes may include:

- performance of the work team
- OHS processes and procedures

Poor work performance may refer to:

- self
- individual team members
- whole work team
- organisation as a whole

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence that they are able to access, analyse and communicate information and ideas to develop and maintain positive internal and external work relationships; develop trust and confidence within the work team; develop and maintain networks; and resolve problems and conflicts effectively and efficiently.

Required knowledge and understanding include:

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- the principles and techniques associated with managing work relationships to achieve planning responsibilities:
 - developing trust and confidence
 - maintaining consistent behaviour in work relationships
 - identifying the cultural and social environment
 - identifying and assessing interpersonal styles
 - establishing, building and maintaining networks
 - identifying and resolving problems
 - resolving conflict
 - managing poor work performance
 - monitoring, analysing and introducing ways to improve work relationships
 - contributing to the elimination of discrimination/bias

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- functional literacy skills to access and use workplace information
- skills to research, analyse, interpret and report information
- relationship management and communication skills:
 - responding to unexpected demands from a range of people
 - using supportive and consultative processes effectively
 - forging effective relationships with internal and/or external people and developing and maintaining these networks
 - gaining the trust and confidence of colleagues
 - dealing with people openly and fairly
- coaching and mentoring skills to provide support to colleagues

Products that could be used as evidence include:

- documentation produced in managing people within the work team, such as:
 - contribution to organisational policies and procedures
 - contribution to procedures and policies for dealing with workplace relationships and communications, and related codes of conduct
 - actions taken to address social and ethical standards in the workplace
 - actions taken to address issues and problems within work team
 - actions taken to address methods of maintaining networks and developing contacts within and outside the organisation
 - learning and development plans for team members
 - materials developed or available for coaching, mentoring and training
 - induction programs developed and/or delivered
 - actions taken to address internal and external communication processes
 - reviews/reports of people management
 - advice and input into decisions related to the work team
 - records of people management lessons learned
 - records of OHS consultation

Processes that could be used as evidence include:

- how strategies were implemented to ensure that information was collected and accessed
- how ideas and information were communicated
- how communication process was implemented and feedback received and dealt with
- how policies were implemented, and contributions sought and used to develop new ideas and approaches
- how processes were implemented to facilitate new ideas and approaches
- examples of how issues have been resolved
- how the organisation's social and ethical standards have been used within workplace relationships
- how trust and confidence has been developed and maintained
- how interpersonal styles and methods were adjusted to suit the organisation's social and cultural environment
- examples of how networks were developed and maintained
- how strategic networks were used to build relationships
- how ongoing planning and implementation has been conducted
- how strategies were implemented to ensure that difficulties were addressed and solutions were planned
- how colleagues were guided and supported to resolve work difficulties
- examples of how poor work performance and conflict was managed

Resource implications for assessment include:

- access by the learner and trainer to appropriate documentation and resources normally used in the workplace

Validity and sufficiency of evidence requires:

- that this unit can be assessed in the workplace or in a closely simulated work environment
- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- that examples of actions taken by candidate to implement effective workplace relationships are provided

Integrated competency assessment means:

- that this unit should be assessed with other frontline management units taken as part of this qualification, as applicable to the candidate's leadership role in a work team and as part of an integrated assessment activity

BSBFLM404A

Unit Descriptor

Lead work teams

This unit is equivalent to the original unit BSXFMI404A Participate in, lead and facilitate work teams.

This unit covers the skills and knowledge required to lead a team or work group in a business environment. It includes developing plans, providing leadership and supervising the performance of a group.

This unit is related to BSBCM301A Exercise initiative in a business environment. Consider co-assessment with BSBFLM402A Show leadership in the workplace, BSBFLM403A Manage effective workplace relationships, BSBFLM406A Implement workplace information system, and BSBFLM411A Contribute to the development of a workplace learning environment.

Unit Sector

Business Management Services

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--|---|
| 1. Participate in team planning | <ul style="list-style-type: none"> 1.1 The <i>manager</i> assists the <i>team</i> establish its purpose, roles, responsibilities and accountabilities in accordance with the <i>organisation's goals, plans and objectives</i> 1.2 The manager assists the team monitor and adjust its performance within the organisation's continuous improvement policies and processes 1.3 The manager encourages the team to use the <i>competencies</i> of each member for team and individual benefit |
| 2. Develop team commitment and co-operation | <ul style="list-style-type: none"> 2.1 The manager assists the team to use open communication processes to obtain and share information 2.2 The team makes decisions in accordance with its agreed roles and responsibilities 2.3 The manager supports the team to develop mutual concern and camaraderie |
| 3. Manage and develop team performance | <ul style="list-style-type: none"> 3.1 The results achieved by the team contribute positively to the organisation's business plans 3.2 The manager encourages the team to exploit innovation and initiative 3.3 Team and individual competencies are monitored regularly to confirm that the team is able to achieve its goals 3.4 Team members share and enhance their <i>knowledge and skills</i> |
| 4. Participate in and facilitate the work team | <ul style="list-style-type: none"> 4.1 Team members participate actively in team activities and communication processes 4.2 Individuals and teams take individual and joint responsibility for their actions 4.3 The team receives support to identify and resolve problems which impede its performance |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	to assist team planning	2
Collecting analysing and organising information	with members of work team	2
Planning and organising activities	in association with team	3
Working with others and in teams	to achieve team goals	2
Using mathematical ideas and techniques	to assist the development of team plans	1
Solving problems	to assist team performance	3
Using technology	to assist the management of information	1

Three levels of performance denote level of competency required to perform a task.

1. Perform
2. Administer
3. Design

Please refer to the Assessment Guidelines for advice on how to use the Key Competencies

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

At AQF level 4, frontline management will normally be engaged in a workplace context where they:

- engage in short to medium term planning within the organisation's business plans. For example, prepares six monthly plan of the department's productivity targets within the organisation's business plans
- take responsibility for own outputs in relation to specific quality standards. For example, assesses own management performance against the organisation's standards of management
- take limited responsibility for the quality and quantity of the output of others. For example, using the organisation's performance improvement processes, assists individuals to assess the quality and quantity of their output and to devise appropriate improvement plans
- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts. For example, understands the principles and techniques underpinning the development of Key Performance indicators
- perform varied activities in a wide range of routine and/or non-routine contexts, with knowledge and skill depth in some areas. For example, negotiates the services to be provided to an external customer who has needs which are not able to be met within the organisation's standard range of services
- apply solutions to a defined range of unpredictable problems. For example, given the failure of a supplier to provide urgently required computer software, analyses the options and takes appropriate action for a prompt and cost-effective rectification of the problem
- identify, analyse and evaluate information from a variety of sources. For example, given feedback from several employees as to ways to up-grade the department's operating procedures and given the organisation's standard documentation, considers the information provided and prepares a recommendation for consultation

Frontline management at this level normally operate in a relatively simple and routine workplace environment in which they use the organisation's:

- goals, objectives, plans, systems and processes
- quality and continuous improvement processes and standards
- access and equity principles and practice
- business and performance plans
- defined resource parameters
- ethical standards

The manager may:

- adopt a variety of roles in teams including leader, facilitator, participant, coach, mentor

Teams may be:

- one or a mixture of on-going, work-based, project-based, task specific, or cross-functional. Teams may include full time employees, contractors, part time employees

The organisation's goals, plans and objectives refers to:

- those relevant to frontline management's work activities and to the teams in which frontline management is involved

Competencies refer to:

- the abilities of the team members and may be formally recognised or not formally recognised. They may be industry-wide, enterprise specific or individual specific

Knowledge and skill development may:

- take place through a variety of methods including for example, coaching, mentoring, exchange/rotation, shadowing, action learning, structured training programs

OHS considerations may include:

- implement and monitor participative arrangements
- information to team about OHS and the organisation's OHS policies, procedures and practices

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, underpinning knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Provides leadership to team
- Contributes positively to team performance
- Provides coaching and mentoring support

Underpinning Knowledge

- Underpinning knowledge relates to the essential knowledge and understanding a person needs to perform work to the required standard
- Relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- The principles and techniques associated with:
 - the organisation of teams
 - team goal setting
 - devolving responsibility/accountability to teams
 - team dynamics
 - conflict resolution
 - gaining team commitment
 - monitoring and assessing team performance
- Gain team commitment to the organisation's goals, values and plans
- The forms of bias/discrimination and how to deal with them

At this level the learner must demonstrate understanding of a broad knowledge base incorporating some theoretical concepts.

Underpinning Skills

- Functional literacy skills to access and use workplace information
- Assessing the competence of the team
- Facilitating the participation of team members
- Working effectively with team members who have diverse work styles, aspirations, cultures and perspectives
- Facilitating team development and improvement
- Assessing competency development requirements
- Gaining the trust and confidence of colleagues
- Dealing with people openly and fairly
- Using coaching and mentoring skills to provide support to colleagues
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

- In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the business services common competencies for the particular AQF level. Refer to the Key Competencies Levels at the end of this unit

BSBFLM409B**Unit Descriptor****Implement continuous improvement**

This unit specifies the outcomes required to implement the organisation's continuous improvement systems and processes. Particular emphasis is on using systems and strategies to actively encourage the team to participate in the process, monitoring and reviewing performance, and identifying opportunities for further improvements.

Application of the Unit

This unit replaces BSBFLM409A Implement continuous improvement.

Frontline managers have an active role in implementing the continuous improvement process in achieving the organisation's objectives. Their position, closely associated with the creation and delivery of products and services, means that they have an important responsibility in influencing the ongoing development of the organisation.

At this level, work will normally be carried out within routine and non-routine methods and procedures, which require planning and evaluation, and leadership and guidance of others.

This unit builds on BSBFLM309A Support continuous improvement systems and processes. Consider co-assessment with BSBFLM405B Implement operational plan, BSBCMN411A Monitor a safe workplace, BSBCMN412A Promote innovation and change and BSBFLM412A Promote team effectiveness. This unit is related to BSBFLM509B Facilitate continuous improvement.

Competency Field

Business Management Services : Domain - Frontline Management

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|--|
| 1. Implement continuous improvement systems and processes | <p>1.1 <i>Systems</i> are implemented to ensure that individuals and teams are actively encouraged and supported to <i>participate in decision making processes</i>, assume responsibility and exercise initiative</p> <p>1.2 The organisation's <i>continuous improvement processes</i> are communicated to individuals and teams, and feedback is obtained</p> <p>1.3 Effective <i>mentoring and coaching</i> ensures that individuals and teams are able to implement the organisation's continuous improvement processes</p> |
| 2. Monitor and review performance | <p>2.1 The organisation's systems and <i>technology</i> are used to monitor and review progress and to identify ways in which planning and operations could be improved</p> <p>2.2 <i>Customer service</i> is improved through continuous improvement techniques and processes</p> <p>2.3 Recommendations for adjustments are formulated and communicated to those who have a role in their development and implementation</p> |

3. Implement opportunities for further improvement
- 3.1 *Processes* are implemented to ensure that team members are informed of savings and productivity/ service improvements in achieving the business plan
 - 3.2 Work performance is documented to aid the identification of further opportunities for improvement
 - 3.3 Records, reports and recommendations for improvement are managed within the organisation's systems and processes

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

The bulleted points provide examples of how the key competencies can be applied for this unit.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	liaising with individuals and work team to improve the organisation's continuous improvement processes communicating the organisation's continuous improvement systems and processes ensuring the effective coaching and mentoring of team members is provided	2
Collecting analysing and organising information	analysing data related to progress and improvement organising information in such a way that it is accessible to team members making recommendations for adjustments to systems and processes	2
Planning and organising activities	planning customer service improvements	2
Working with others and in teams	encouraging team members to participate in decision making processes obtaining team feedback on further improvement initiatives	2
Using mathematical ideas and techniques	completing calculations for work improvement	1
Solving problems	implementing the organisation's continuous improvement processes, and investigating problems with introducing improvements	2
Using technology	using technology to assist the management of information to aid the continuous improvement	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal opportunity, industrial relations, anti-discrimination and record keeping standards and legislation
- relevant industry codes of practice

OHS considerations may include:

- provision of information about OHS legislative requirements, guidelines and the organisation's OHS policies, procedures and programs
- OHS practice as an ethical standard and legislative requirement
- training of all employees in health and safety procedures, and updating of records
- requirements of OHS legislation related to delegation and reporting
- implementation and monitoring of the continuous improvement processes of any OHS management system

Systems may refer to:

- organisation policies and procedures
- web based communication devices
- forums, meetings
- newsletters and reports

Participate in decision making processes may include:

- processes which ensures that all employees have the opportunity to contribute to organisational issues
- feedback in relation to outcomes of the consultative process

Continuous improvement processes may include:

- policies and procedures which allow an organisation to systematically review and improve the quality of its products, services and procedures
- cyclical audits and reviews of workplace, team and individual performance
- seeking and considering feedback from a range of stakeholders
- modifications and improvements to systems, processes, services and products
- evaluations and monitoring of effectiveness

Mentoring and coaching may refer to:

- teaching another member of the team, usually focusing on a specific work task or skill
- providing feedback, support and encouragement on a range of matters
- providing assistance with problem solving

Technology may include:

- computerised systems and software such as databases, project management and word-processing
- telecommunications devices
- any other technology used to carry out work roles and responsibilities

Customer service may be:

- internal or external
- to existing, new or potential clients

Processes may refer to:

- team meetings
- email/intranet, newsletters or other communication devices
- newsletters and bulletins
- staff reward mechanisms

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this standard must be able to provide evidence that they are able to implement, monitor and adjust plans, processes and procedures to improve performance; they must also be able to support others to implement the continuous improvement system/processes, and be able to identify and report opportunities for further improvement.

Required knowledge and understanding include:

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- the principles and techniques associated with:
 - continuous improvement systems and processes
 - benchmarking
 - best practice
- the quality approaches which the organisation may implement
- the methods that can be used in continuous improvement
- the organisation's recording, reporting and recommendation processes to facilitate continuous improvement
- change management
- the benefits of continuous improvement
- the barriers to continuous improvement

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- functional literacy skills to access and use workplace information
- communication skills to:
 - gain the commitment of individuals and teams to continuous improvement
 - deal with people openly and fairly
 - use consultation skills effectively
 - research, analysis, interpretation and reporting skills
 - monitoring and evaluation skills
 - skills to consolidate opportunities for improvement
 - coaching and mentoring skills to provide support to colleagues

Products that could be used as evidence include:

- documentation produced in implementing continuous improvement, such as:
 - contribution to organisational policies and procedures
 - contribution to procedures and policies for dealing with continuous improvement processes, and relevant codes of conduct
 - actions for information collection, analysis and retrieval
 - learning and development plans
 - materials developed for coaching, mentoring and training
 - induction programs developed and/or delivered
 - actions taken to address internal and external information management issues
 - actions taken to address issues and problems
 - reviews of people management
 - advice and input into management decisions related to continuous improvement
 - records of people management lessons learned

Processes that could be used as evidence include:

- how strategies have been implemented to encourage team members to participate in the decision making process
- examples of how continuous improvement processes were communicated to all stakeholders
- examples of coaching and mentoring used to support continuous improvement processes
- how technology was used to monitor operational progress
- recommendations for adjustments that have been made
- how team members were informed of improvements/innovations
- how work performance was documented to aid identification of further opportunities for improvement
- how future planning has included areas which have recorded improvements

Resource implications for assessment include:

- access by the learner and trainer to appropriate documentation and resources normally used in the workplace

Validity and sufficiency of evidence requires:

- that this unit can be assessed in the workplace or in a closely simulated work environment
- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- that examples of actions taken by candidate to implement continuous improvement are provided

Integrated competency assessment means:

- this unit should be assessed with other frontline management units taken as part of this qualification, as applicable to the candidate's leadership role in a work team and as part of an integrated assessment activity

BSBFLM505B

Unit Descriptor

Manage operational plan

This unit specifies the outcomes required to develop and monitor the implementation of the operational plan to provide efficient and effective workplace practices within the organisation's productivity and profitability plans. Management at a strategic level requires systems and procedures to be developed and implemented to facilitate the organisation's operational plan.

Application of the Unit

This unit replaces BSBFLM505A Manage operational plan.

Frontline managers have a key role managing individuals within work teams/groups. They play an important part in managing the performance of people who report to them directly.

At this level, work will normally be carried out within complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

This unit builds on BSBFLM405B Implement operational plan. Consider co-assessment with BSBFLM503B Manage effective workplace relationships, BSBFLM506B Manage workplace information systems, BSBMGT505A Ensure a safe workplace, BSBFLM509B Facilitate continuous improvement and BSBFLM512A Ensure team effectiveness.

Competency Field

Business Management Services : Domain - Frontline Management

ELEMENT

PERFORMANCE CRITERIA

- | | |
|-----------------------------|--|
| 1. Develop operational plan | <p>1.1 <i>Resource requirements</i> are researched, analysed and documented and an operational plan is <i>developed and/or implemented</i> in consultation with <i>relevant personnel, colleagues and specialist resource managers</i></p> <p>1.2 <i>Consultation processes</i> are developed and/or implemented as an integral part of the operational planning process</p> <p>1.3 <i>Operational plans</i> are developed to contribute to the achievement of the organisation's performance/business plan</p> <p>1.4 Details of the operational plan include the development of <i>key performance indicators</i> to measure organisational performance</p> <p>1.5 <i>Contingency plans</i> are developed and implemented at appropriate stages of operational planning</p> <p>1.6 The development and presentation of proposals for resource requirements are assisted by a variety of information sources, and specialist advice is sought as required</p> |
|-----------------------------|--|

- 2. Plan and manage resource acquisition
 - 2.1 Strategies are developed and implemented to ensure that employees are recruited and/or inducted within the organisation's human resource management policies and practices
 - 2.2 Strategies are developed and implemented to ensure that physical resources and services are acquired in accordance with the *organisation's policies, practices and procedures*

- 3. Monitor and review operational performance
 - 3.1 Performance systems and processes are developed, monitored and reviewed to assess progress in achieving profit and productivity plans and targets
 - 3.2 Budget and actual financial information is analysed and interpreted to monitor and review profit and productivity performance
 - 3.3 Areas of under performance are identified, solutions recommended, and prompt action is taken to rectify the situation
 - 3.4 Systems are planned and implemented to ensure that mentoring and coaching are provided to support individuals and teams to use resources effectively, economically and safely
 - 3.5 Recommendations for variations to operational plans are negotiated and approved by *designated persons/groups*
 - 3.6 Systems are developed and implemented to ensure that procedures and records associated with documenting performance are managed in accordance with the organisation's requirements

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

The bulleted points provide examples of how the key competencies can be applied for this unit.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	sharing information with all stakeholders, including members of work teams to manage the facilitation of the operational plan negotiating variation to operational plans	3
Collecting analysing and organising information	acquiring information for reporting and planning purposes to aid in the development and management of the operational plan	3
Planning and organising activities	planning resource acquisition and usage including human resources and contingency planning	3
Working with others and in teams	managing the operation to achieve planning outcomes, especially in regard to team effectiveness	3
Using mathematical ideas and techniques	developing, analysing and monitoring budget and financial plans	2
Solving problems	developing and managing risk management and contingency plans and addressing unsatisfactory performance in all areas of the operation	3
Using technology	using technology to assist the management of information and to aid the planning process	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

OHS considerations may include:

- knowledge of OHS legislation, principles and practice within the context of the organisation's operations and plans
- OHS practice as an ethical standard and legislative requirement
- training of all employees in health and safety procedures
- update and review of organisation's OHS systems, procedures and records
- organisation's procedures for dealing with hazardous events
- adjustment of communications and OHS approach to cater for social and cultural diversity and special needs
- inclusion of OHS in key performance indicators

Resource requirements may include:

- human, physical and financial resources - both current and projected
- stock requirements and requisitions
- good and services to be purchased and ordered

Developed and/or implemented in some cases may mean that:

- the operational plan has been developed at a higher or specialist level and that a frontline manager may have little or no input to its development

Relevant personnel, colleagues and specialist resource managers may include:

- managers
- supervisors
- other employees
- OHS committee(s) and other people with specialist responsibilities
- union or employee representatives
- people at the same level or more senior managers
- people from a wide range of social, cultural and ethnic backgrounds

Consultation processes may refer to:

- meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans
- mechanisms used to provide feedback to the work team in relation to outcomes of consultation

Operational plans may include:

- tactical plans developed by the department or section to detail product and service performance
- organisational plans

Key performance indicators may refer to:

- measures for monitoring or evaluating the efficiency or effectiveness of a system which may be used to demonstrate accountability and to identify areas for improvements

Contingency plans may include:

- rental, hire purchase or alternative means of procurement of required materials, equipment and stock
- contracting out or outsourcing human resource and other functions or tasks
- restructuring of organisation to reduce labour costs
- strategies for reducing costs, wastage, stock or consumables
- diversification of outcomes
- recycling and re-use
- finding cheaper or lower quality raw materials and consumables
- seeking further funding
- increasing sales or production
- risk identification, assessment and management processes
- succession planning

The organisation's policies, practices and procedures may include:

- those organisational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources
- Standard Operating Procedures
- undocumented practices in line with organisational operations
- organisational culture

Designated persons/groups may include:

- managers or supervisors whose roles and responsibilities include decision making on operations
- other work groups or teams whose work will be affected by recommendations for variations
- groups designated in workplace policies and procedures
- other stakeholders such as Board members

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this standard must be able to provide evidence of their ability to manage the implementation of the operational plans for department or section. This will include acquisition and use of resources, contingency planning, financial information and budgets, performance reports, and evidence of a system to monitor and adjust operational performance plans as required.

Required knowledge and understanding include:

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- the principles and techniques involved in the management and organisation of:
 - planning and managing operations
 - consultation and communication
 - contingency planning
 - resource planning and acquisition
 - resource management systems
 - budgeting and financial analysis and interpretation
 - monitoring and review of performance systems and processes
 - reporting performance
 - problem identification and resolution
- alternative approaches to improving resource usage and eliminating resource inefficiencies and waste
- ways of supporting individuals/teams who have difficulty in performing to the required standard

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- functional literacy skills to access and use workplace information
- skills to:
 - monitor and review a safe workplace and environment
 - access and use feedback to improve operational performance
 - prepare recommendations to improve operational plans
 - access and use established systems and processes
- coaching and mentoring skills to provide support to colleagues

Products that could be used as evidence include:

- documentation produced while managing the operational plan, such as:
 - operational plan
 - rosters and staff allocation
 - resource planning
 - actions taken to address resource shortfalls
 - financial plans and budgets
 - contingency planning
 - risk management plans
 - learning and development plans for team members
 - materials developed for coaching, mentoring and training
 - induction programs developed and/or delivered
 - actions taken to address poor, unsafe or excellent performance
 - actions taken to address issues and problems within work team
 - reviews of people management
 - advice and input into management decisions related to the operational plan
 - records of people management lessons learned

Processes that could be used as evidence include:

- how resource requirements have been researched and analysed, and management procedures addressed
- how work has been allocated within work team, and the rationale for allocation
- how strategies have been developed/implemented to ensure that employees were recruited and resources acquired
- how financial plans and budgets were formulated
- how the operational plan was developed and/or managed
- how key performance indicators were developed and used
- how contingency planning was undertaken
- how team members were guided and supported in performing their role, including induction process for new team members
- how individual learning and development pathways were developed
- how performance management system was implemented within work team and how areas of under performance were identified and addressed
- how problems and issues within the work team were addressed
- how input and advice was provided to management in relation to human resource management of the work team
- how own people management processes were reviewed and evaluated, and improvements identified, reported and acted upon

Resource implications for assessment include:

- access by the learner and trainer to appropriate documentation and resources normally used in the workplace

Validity and sufficiency of evidence requires:

- that this unit can be assessed in the workplace or in a closely simulated work environment
- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- that examples of actions taken by the candidate to manage the operational plan are provided

Integrated competency assessment means:

- that this unit should be assessed with other frontline management units taken as part of this qualification, as applicable to the candidate's leadership role in a work team and as part of an integrated assessment activity

BSBFLM507B**Unit Descriptor****Manage quality customer service**

This unit specifies the outcomes required to develop strategies to manage organisational systems that ensure products and services are delivered and maintained to standards agreed by the organisation and the customer.

Application of the Unit

This unit replaces BSBFLM507A Manage quality customer service.

Frontline managers are involved in ensuring that products and services are delivered and maintained to standards agreed by the organisation and the customer. They work within the context of the organisation's policies and practices as well as legislation, conventions and codes of practice.

At this level, work will normally be carried out within complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

This unit builds on BSBCMN410A Coordinate implementation of customer service strategies. Consider co-assessment with BSBFLM512A Ensure team effectiveness, BSBFLM506B Manage workplace information system, BSBMGT505A Ensure a safe workplace, and BSBFLM509B Facilitate continuous improvement.

Competency Field

Business Management Services : Domain - Frontline Management

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Plan to meet internal and external customer requirements | 1.1 The needs of <i>customers</i> are investigated, understood and assessed, and included in planning processes
1.2 Plans achieve the <i>quality</i> , time and cost specifications agreed with customers |
| 2. Ensure delivery of quality products and/or services | 2.1 Products and/or services are delivered to customer specifications within the team's business plan
2.2 Team performance is managed to consistently meet the organisation's quality and delivery standards
2.3 Leadership, supervision, coaching and mentoring assist colleagues to overcome difficulty in meeting customer service standards |

3. Monitor, adjust and review customer service
- 3.1 *Strategies* to monitor progress in achieving product and/or service targets and standards are developed and used
 - 3.2 Strategies to obtain customer feedback are developed and used to improve the provision of products and/or services
 - 3.3 *Resources* are developed, procured and used effectively to provide quality products and/or services to customers
 - 3.4 Decisions to overcome problems and to adapt customer service and products and/or service delivery are taken in consultation with appropriate individuals and groups
 - 3.5 Records, reports and recommendations are managed within the organisation's systems and processes

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

The bulleted points provide examples of how the key competencies can be applied for this unit.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	consulting with others on customer needs and to report on customer service outcomes	3
Collecting analysing and organising information	ensuring that appropriate strategies are in place to collect, organise and monitor customer information	3
Planning and organising activities	planning to meet customer needs and to manage a system for reporting/recording customer service outcomes	3
Working with others and in teams	using leadership, supervision, coaching and mentoring to manage team performance consulting with team members on planning, delivery and improvement	3
Using mathematical ideas and techniques	undertaking calculations associated with customer service	2
Solving problems	identifying and resolving deficiencies in customer service and developing strategies to improve service	3
Using technology	using technology to assist the management of customer information	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal opportunity, industrial relations, anti-discrimination and record keeping standards and legislation
- relevant industry codes of practice

OHS considerations may include:

- knowledge of OHS legislation, principles and practice within the context of the organisation's operations and plans
- OHS practice as an ethical standard and legislative requirement
- training of all employees in health and safety procedures
- regular updating and reviewing of the organisation's OHS systems, procedures and records
- organisation's responsibilities to customers and suppliers
- adjustment of communications and OHS approach to cater for social and cultural diversity and special needs

Customers may be:

- co-workers, peers and fellow frontline managers
- supervisors
- Board members
- clients, purchasers of services
- members of the general public who make contact with the organisation, such as prospective purchasers of services
- suppliers of goods and services and contractors providing goods and services
- potential funding bodies

Quality may refer to:

- the characteristics of a product, system, service or process meets the requirements of customers and interested parties

Strategies may refer to:

- policies and procedures
- long-term or short-term plans for monitoring achievement and evaluating effectiveness
- feedback forms and other devices to enable communication from customers
- electronic feedback mechanisms using intranet, internet and email
- training and development activities
- questionnaires, survey and interviews
- databases and other controls to record and compare data over time

Resources may include:

- people
- power/energy
- information
- finance
- buildings/facilities
- equipment
- technology
- time

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this standard must be able to provide evidence that they are able to develop strategies designed to meet customer needs; provide quality service; review and improve service; develop processes to access and follow-up customer feedback; and manage a system for reporting/recording customer service outcomes.

Required knowledge and understanding include:

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- the organisation's policies and procedures for dealing with customers
- the principles and techniques involved in the management and organisation of:
 - customer needs research
 - strategies to obtain customer feedback
 - customer relations
 - customer behaviour
 - problem identification and resolution
 - quality customer service delivery
 - ongoing product and/or service quality
 - record keeping and management methods
 - strategies for monitoring, managing and introducing ways to improve customer service relationships
- consultation and communication techniques
- leadership and mentoring techniques
- management of relationships to achieve strategic planning responsibilities
- strategies for contributing to the elimination of discrimination/bias

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- functional literacy skills to access and use workplace information
- communication skills
- skills to research, analyse and report information
- planning and organising skills
- team work skills
- problem-solving skills to deal with complex and non-routine difficulties
- technology skills at the appropriate level
- coaching and mentoring skills to provide support to colleagues

Products that could be used as evidence include:

- documentation produced in managing quality customer service, such as:
 - contribution to organisational policies and procedures
 - procedures and policies for dealing with customer service provision, and related codes of conduct
 - actions taken to address customer service information collection and retrieval
 - actions taken to address methods of analysing information and developing and/or maintaining a customer service information system
 - actions taken to address internal and external customer service issues
 - advice and input into management decisions related to customer service
 - learning and development plans for team members
 - materials developed for coaching, mentoring and training
 - induction programs developed and/or delivered
 - actions taken to address issues and problems within work team
 - reviews of people management
 - records of people management lessons learned

Processes that could be used as evidence include:

- how customers needs have been addressed
- how planning was conducted and specifications achieved
- how products and/or services have been delivered
- how team performance was managed
- how team members were guided and supported in performing their role
- examples of strategies developed to monitor customer service and to obtain customer feedback
- examples of resources developed to provide for customers needs
- examples of strategies to adapt customer service delivery to overcome problems
- examples of how records and reporting procedures were managed within the organisation's processes

Resource implications for assessment include:

- access by the learner and trainer to appropriate documentation and resources normally used in the workplace

Validity and sufficiency of evidence requires:

- that this unit can be assessed in the workplace or in a closely simulated work environment
- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- that examples of actions taken by the candidate to promote quality customer service are provided

Integrated competency assessment means:

- this unit should be assessed with other frontline management units taken as part of this qualification, as applicable to the candidate's leadership role in a work team and as part of an integrated assessment activity

BSBFLM512A

Unit Descriptor

Ensure team effectiveness

This unit specifies the outcomes required by frontline managers to facilitate all aspects of team work within the organisation. It involves taking a leadership role in the development of team plans, leading and facilitating team work and actively engaging with the management of the organisation.

Application of the Unit

This unit replaces BSBFLM502A Provide leadership in the workplace and BSBFLM504A Facilitate work teams, which have been combined to create this unit.

Frontline managers have an important facilitative role in the development and empowerment of work teams. This will be evident in the way frontline managers work with teams and individuals, work across teams, and the initiative they take in strengthening the links between teams and the organisation's management.

At this level, work will normally be carried out within complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

This unit builds on BSBFLM412A Promote team effectiveness.

Competency Field

Business Management Services : Domain - Frontline Management

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---|---|
| 1. Establish team performance plan | <p>1.1 Team members are <i>consulted</i> to establish team purpose, roles, responsibilities and <i>accountabilities</i> in accordance with organisational goals, plans and objectives</p> <p>1.2 <i>Performance plans</i> are developed in consultation with team members, to establish expected <i>outcomes, outputs, key performance indicators</i> and goals for work team</p> <p>1.3 Team members are supported in meeting expected performance outcomes</p> |
| 2. Develop and facilitate team cohesion | <p>2.1 <i>Strategies</i> are developed to ensure team members have input into planning, decision making and operational aspects of work team</p> <p>2.2 <i>Policies and procedures</i> are developed to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities</p> <p>2.3 Feedback is provided to team members to encourage, value and reward individual and team efforts and contributions</p> <p>2.4 <i>Processes</i> are developed to ensure that issues, concerns and problems identified by team members are recognised and addressed</p> |

- 3. Facilitate team work
 - 3.1 Team members and individuals are encouraged to participate in and take responsibility for team activities, including communication processes
 - 3.2 The team is supported in identifying and resolving work performance problems
 - 3.3 Own contribution to work team serves as a role model for others and enhances the organisation's image to all *stakeholders*

- 4. Liaise with stakeholders
 - 4.1 Open communication processes with all stakeholders are established and maintained
 - 4.2 Information from *line manager/management* is communicated to the team
 - 4.3 Unresolved issues, concerns and problems raised by team members are communicated to, and followed up with, line manager/management and other relevant stakeholders
 - 4.4 Unresolved issues, concerns and problems raised by internal or external stakeholders are evaluated, and necessary corrective action taken

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

The bulleted points provide examples of how the key competencies can be applied for this unit.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	communicating verbally to lead a team including negotiating, basic training, participating in meetings communicating in writing including report writing, communicating with management, identifying issues and concerns in writing	3
Collecting analysing and organising information	developing systems to maintaining records of own knowledge and skills and that of team members relevant to organisation planning undertaking analysis following planning activities developing systems and processes for monitoring and review	3
Planning and organising activities	planning for own work and the work of team members across a range of teams contributing to the effectiveness of other teams and the organisation as a whole	3
Working with others and in teams	leading and representing the team consulting team members for their input on team effectiveness strategies and feedback working with others including external parties and team members	3
Using mathematical ideas and techniques	using calculation skills associated with data manipulation relevant to work of team, including financial data	1
Solving problems	applying problem solving skills as required to address issues and conflicting requirements arising from inter and intro team activities assisting others to solve problems arising within and between teams	3
Using technology	using word processing packages, spreadsheets, databases, and other packages to produce written correspondence and reports of activities, financial reporting and data collation. understanding assistive technologies, as necessary	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal opportunity, industrial relations, anti-discrimination and record keeping standards and legislation
- relevant industry codes of practice

OHS considerations may include:

- knowledge of OHS legislation, principles and practice within the context of the organisation's operations and plans
- OHS practice as an ethical standard and legislative requirement
- training of all employees in health and safety procedures
- regular updating and reviewing of the organisation's OHS systems, procedures and records
- key performance indicators include relevant OHS procedures
- adjustment of communications and OHS approach to cater for social and cultural diversity and special needs

Consulted may refer to:

- conducting meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual performance plans
- mechanisms used to provide feedback to the work team in relation to outcomes of consultation

Accountabilities may refer to:

- a statement of conduct outlining responsibilities/actions/performance
- responsibilities as defined in position descriptions, codes of conduct/behaviour, duty statements or similar

Performance plans may refer to:

- team plans based on work assignments and responsibilities
- individual performance plans linked to team goals

Outcomes, outputs, key performance indicators may refer to agreed:

- measures for monitoring and evaluating the efficiency or effectiveness of systems or services
- targets for productivity improvements such as reduced downtime, higher production levels, decreases in absenteeism
- improved individual and team performance and participation
- improvements to systems, operations
- changes in work roles and responsibilities
- quality standards and expectations
- targets for training and development

Strategies may refer to:

- long-term or short-term plans factoring in opportunities for team input
- mentoring and 'buddy' systems to support team members in providing input
- clarification of roles and expectations
- training and development activities
- electronic communication devices and processes, such as intranet and email communication systems, to facilitate input
- newsletters and briefings

Policies and procedures may refer to:

- organisational guidelines and systems that govern operational functions
- procedures that detail the activities that must be carried out for the completion of actions and tasks
- Standard Operating Procedures

Processes may refer to:

- discussions with individuals regarding their concerns
- brainstorming options with the team for addressing concerns
- creating a matrix of issues and concerns and distributing it for comment
- distributing drafts for comment with a range of options for resolution of concerns
- training and development sessions

Stakeholders may include:

- the work team
- Board members
- union/employee groups and representatives
- business or government contacts
- funding bodies

Line manager/management may refer to:

- frontline manager's direct superior
- other management representatives
- the Chief Executive Officer

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence that they are able to demonstrate leadership in developing plans, in leading and facilitating team work and in actively engaging with stakeholders. They must also provide evidence that team work is actively promoted, supported and encouraged within the work team; and their own performance serves as a role model for others and enhances the organisation's image.

Required knowledge and understanding include:

- relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- organisational policies and procedures
- organisational goals, objectives and plans
- organisational structure and organisational chart
- the principles and techniques involved in:
 - contingency planning
 - performance planning
 - problem identification and resolution
 - consultation and communication
 - record keeping and management
 - relationship management including motivation and negotiation
 - group dynamics, processes and politics
- methods for collecting and utilising feedback
- development of strategies, processes and procedures to facilitate and monitor team effectiveness
- learning and development options available within and through organisation
- strategies that contribute to the elimination of discrimination/bias

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
- communication skills
- basic training skills, including mentoring and coaching
- planning and organising skills
- problem solving skills
- leadership skills
- skills to identify needs, goals and aspirations of others
- group facilitation skills
- attributes:
 - assertive
 - persuasive
 - empathic
 - communicative
 - showing positive leadership
 - self-aware
 - supportive
 - trusting
 - open
 - flexible
 - accommodating
 - initiating
 - loyal
 - recognising achievement
 - fair
 - adaptable

Products that could be used as evidence include:

- documentation produced in ensuring team effectiveness, such as:
 - reports
 - minutes or records of meetings
 - work journals or diaries
 - learning and development plans developed with team members
 - records of actions taken to address issues raised by team members

Processes that could be used as evidence include:

- how communication process was managed and implemented to ensure that consultation takes place
- how team members were supported and encouraged to meet expected outcomes
- strategies to develop and facilitate team cohesion
- how performance plans were developed
- how team members were guided and supported in performing their role, including induction process for new team members
- how performance management system was implemented within work team
- how problems and issues within the work team have been addressed
- how input and advice was provided to management in relation to human resource management of the work team
- how own people management processes were reviewed and evaluated, and improvements identified, reported and acted upon

Resource implications for assessment include:

- access by the learner and trainer to appropriate documentation and resources normally used in the workplace
- access to team members' input in relation to leadership of frontline manager

Validity and sufficiency of evidence requires:

- that this unit can be assessed in the workplace or in a closely simulated work environment
- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- that examples of actions taken by the candidate to ensure team effectiveness are provided

Integrated competency assessment means:

- that this unit should be assessed with other frontline management units taken as part of this qualification, as applicable to the candidate's leadership role in a work team and as part of an integrated assessment activity

BSBMGT503A**Unit Descriptor****Prepare budgets and financial plans**

This unit covers the preparation of financial plans and budgets by operational/non-financial managers, as required by their particular organisation.

This unit is related to BSBMGT504A Manage budgets and financial plans.

Competency Field

Business Management Services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Analyse strategic and operational plans | <ul style="list-style-type: none"> 1.1 <i>Strategic opportunities</i> are expressed in terms of tactical and operational objectives 1.2 Tactical and operational objectives are converted into special projects or work programs 1.3 Financial trends are analysed and interpreted in the context of the organisational strategic objectives 1.4 Financial planning objectives, process timeframes and resources are clearly identified |
| 2. Develop revenue, expenditure and capital investment proposals | <ul style="list-style-type: none"> 2.1 Individuals and groups are given responsibility for the development of specific <i>budgets and plans</i> 2.2 Consultation occurs with all <i>relevant groups and individuals</i> throughout the organisation 2.3 Proposals are developed taking account of past experience, present trends and future expectations 2.4 Outcomes of proposals are clearly linked to organisational strategic objectives 2.5 Realistic cost benefit and risk analyses/management plans are incorporated into all proposals 2.6 Organisational <i>investment target rates</i> are met for <i>capital expenditure</i> proposals 2.7 Performance measures and tactics for monitoring and control processes are identified for each proposal/action 2.8 Proposals comply with the organisation's <i>values, policies, Code of Conduct, legal and ethical obligations</i> 2.9 Proposals are developed within the agreed timeframes 2.10 <i>Supporting evidence</i> is valid and sufficient to allow proper evaluation of the proposals |

3. Build agreement for budgets and financial plans
- 3.1 Negotiation is undertaken with relevant groups and individuals in ways that build commitment to the plans
 - 3.2 Links to the achievement of organisational strategic objectives are identified and agreed
 - 3.3 Outcomes are confirmed in terms of clear, concise objectives and timeframes
 - 3.4 Negotiations lead to a clear agreement of those matters to be incorporated into *budgets and plans*
 - 3.5 *Budgets and plans* incorporate the outcomes of negotiations and meet organisation's approval processes
 - 3.6 *Delegations, accountabilities and responsibilities* are agreed and confirmed in writing
 - 3.7 Final *budget and plans* are clearly documented and a communication plan developed

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	to develop a communication plan for the budget	3
Collecting analysing and organising information	to support budget proposals	3
Planning and organising activities	to develop budgets	3
Working with others and in teams	to ensure appropriate groups and individuals participate in the process	3
Using mathematical ideas and techniques	to build the budget and other financial plans	2
Solving problems	to successfully negotiate commitment to the plans	3
Using technology	to assemble the plans and communicate them to users of the plans	2

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Strategic opportunities may include:

- new product/service development
- new models/revisions of products/services
- expansion/contraction of operational activities
- alliances/joint ventures
- outsourcing/in-sourcing

Budgets and plans may include:

- operation/production budgets
- financial budgets
- sales budgets
- capital expenditure budgets
- cash flow plans

Relevant groups and individuals means:

- all personnel within the organisation affected by the budgets and financial plans being developed

Investment target rates refers to:

- the minimum percentage rate of return required by the organisation for a capital investment project to proceed

Capital expenditure means:

- those components of the budget which, for internal policy reasons, are considered to provide benefits over more than one financial period and are to be evaluated as capital expenditure projects

Legal and ethical obligations means:

- compliance with all relevant statutes, regulations and audit requirements of the organisation, along with the organisation's policies and values

Supporting evidence may include:

- cost/benefit analyses
- risk management plans
- market research results
- net present value
- interest rate of return
- pay pack calculations

Delegations means:

- the decision-making accountabilities relating to the person's position description and/or other written and verbal delegations

Accountabilities and responsibilities means:

- clarification of who is to be accountable for a decision or action prior to its execution, and identification of groups, individuals and activities for which a person is responsible for managing

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Each of the elements needs to be clearly evidenced, both in terms of outcome and process, but this can be achieved through a holistic project approach to assessment
- Evidence needs to determine that people not only have done and can do what is required, but that they understand why these activities need to be undertaken
- Evidence of preparation and negotiation of proposed with clear links to strategic and operational plans

OHS considerations may include:

- sufficient resources for OHS in strategic and operational plans
- proposals include OHS risk assessment and control
- proposals meet OHS legislative requirements and address organisational OHS objectives

Underpinning Knowledge

- Relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- Financial planning within the organisation
- Budgeting
- Organisation's objectives and plans (strategic, tactical and operational)
- Consultative methods and processes
- Capital investment evaluation techniques
- Performance measurement
- Organisation roles in respect to financial delegations, accountabilities and responsibilities
- Standards for organisational record-keeping and audit requirements

At this level the learner must demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas.

Underpinning Skills

- Analytical skills to analyse and interpret relevant financial information
- Financial planning skills to develop formal estimates of reviews, costs, cash flows and logistic requirements
- Communication/consultation skills to ensure all relevant groups and individuals are advised of what is occurring and are provided with an opportunity for input
- Cost and benefit analysis skills to produce balanced arguments to support financial proposals
- Risk management skills to assess probability and consequences of any potential negative event
- Investment analysis skills to evaluate capital expenditure proposals (NPV, IROR, etc)
- Negotiation skills to negotiate agreement on budgets and financial plans with the relevant managers
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the business services common competencies for the particular AQF level. Refer to the Key Competency Levels

BSBOHS403A

Unit Descriptor

Identify hazards and assess OHS risks

This unit specifies the outcomes required to identify hazards and assess OHS risks in the workplace.

Application of the Unit

This unit addresses the knowledge, processes and techniques necessary to identify hazards and assess risks using developed processes and tools. The unit also introduces basic incident analysis as an important skill underlying incident investigation, which is addressed in greater complexity in BSBOHS508A Participate in the investigation of incidents.

This unit introduces the concept of risk assessment but it should be noted that more advanced units divide risk assessment into risk analysis and risk evaluation.

This unit is a companion unit to BSBOHS404A Contribute to the implementation of strategies to control OHS risk, and they will usually be co-presented and assessed together.

Competency Field

Business management services : Domain - Occupational health and safety

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--|--|
| 1. Investigate incidents for prevention | <p>1.1 <i>Appropriate techniques</i> to investigate <i>incidents</i> are selected and used</p> <p>1.2 <i>Actions and events</i> leading up to an incident, during the incident and through the post incident management phase are constructed</p> <p>1.3 Incident is analysed to identify the <i>hazard</i></p> <p>1.4 Incident is analysed to identify intervention points to prevent re-occurrence</p> |
| 2. Access existing sources of information and data to identify hazards | <p>2.1 <i>Workplace sources of information and data</i> are reviewed to access information and data and assist in identifying hazards</p> <p>2.2 <i>External sources of information and data</i> are accessed as required</p> <p>2.3 Input is sought from <i>stakeholders, key personnel</i> and <i>OHS specialists</i></p> |
| 3. Conduct hazard identification | <p>3.1 Formal and informal <i>techniques/tools</i> are sourced to identify hazards</p> <p>3.2 A suitable technique/tool is selected and modified as appropriate to identify hazards</p> <p>3.3 Hazard identification technique/tool(s) are reviewed in consultation with workers in the area, and OHS specialists if required, to ensure it is suitably comprehensive</p> <p>3.4 Technique/tool(s) and other appropriate <i>hazard identification procedures</i> are utilised to identify hazards</p> <p>3.5 Employees and their representatives have an opportunity to participate in workplace hazard identification</p> |

- 4. Assess risk
 - 4.1 A *risk assessment tool* is selected and used to identify key factors contributing to *risk*
 - 4.2 Workplace sources of information and data are applied to evaluate the effectiveness of risk controls
 - 4.3 Risks are prioritised considering the severity and likelihood of the consequences
 - 4.4 Stakeholders and key personnel are involved in risk assessment
 - 4.5 The method of risk assessment is documented

- 5. Participate in implementation process
 - 5.1 A *hazard register* is maintained relevant to the workplace
 - 5.2 The *level of authority* within the organisation to address the risk(s) is identified
 - 5.3 Outcomes of hazard identification and risk assessments are documented and communicated to key personnel and stakeholders

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

The bulleted points provide examples of how the key competencies can be applied for this unit.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	communicating with workgroup and relevant organisational personnel, specialists and managers effectively collecting information and data from employees about hazards and assessing risks preparing and presenting effective reports	2
Collecting analysing and organising information	gathering and analysing information and data from different sources to identify hazards and analyse risk developing and using effective hazard identification and risk analysis tools, such as inspection checklists	2
Planning and organising activities	planning and arranging hazard identification procedures	2
Working with others and in teams	working with workgroup and organisational personnel involved in hazard identification procedures and risk assessment	2
Using mathematical ideas and techniques	applying basic numerical skills required to analyse the risk of specific hazards and, where applicable, assigning numerical ratings to risk assessment	1
Solving problems	collecting information and data, identifying hazard(s) and assessing risks, and recommending controls	2
Using technology	using software systems to assist in extraction, analysis and reporting of required information to identify hazards and assess risks using word processing and other basic software for interpreting charts, flowcharts, graphs and other visual data and information for hazard identification and risk assessment using software systems for recording and filing documentation for hazard identification and risk assessment	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Appropriate techniques may include:

- interviews
- simulations
- examination of relevant information and data
- inspections
- timeline of actions and events
- use of accident models

An incident is:

- an event resulting in or having a potential for injury, ill health, damage or loss

Actions and events:

- include all actions and events that may have contributed to the occurrence or severity of the incident
- may be extended back for a short time or up to several years to identify design decisions that contributed to the incident occurring
- include facts about the incident itself including such things as systems, people, tools, equipment, materials, fixtures, the time and nature of the injury, etc

A hazard is:

- a source or a situation with a potential for harm in terms of human injury or ill-health, damage to property, damage to the environment, or a combination of these

Workplace sources of information and data may include:

- hazard, incident and investigation reports
- workplace inspections
- incident investigations
- minutes of meetings
- reports
- audits
- material safety data sheets (MSDSs) and registers
- legislation, standards, manufacturers' manuals and specifications available at the workplace

External sources of information and data may include:

- regulatory authorities (for other relevant legislation i.e. acts, regulations, codes of practice)
- other Australian standards
- industry bodies
- employer groups
- unions
- OHS specialists
- OHS professional bodies
- websites, journals and newsletters
- other manufacturers' manuals and specifications

Stakeholders:

- managers
- supervisors
- health and safety and other employee representatives
- OHS committees
- employees
- the community

Key personnel may include:

- managers from other areas
- people involved in OHS decision making or who are impacted by decisions

OHS specialists may be internal or external and include:

- ergonomists
- occupational hygienists
- health professionals
- injury management advisors

Techniques and tools may include:

- workplace processes such as 'walk throughs', surveys and inspections
- interviews
- hazard identification procedures based on checklists
- material safety data sheets (MSDS)
- body mapping
- those that are:
 - scheduled or unscheduled
 - undertaken by individuals or small groups
 - internally or externally developed
 - customised to the particular industry and workplace
 - reviewed on an ongoing basis to ensure they allow for emerging issues

- Hazard identification procedures may include:
- job and work system analysis (JSA)
 - reviews of:
 - OHS records
 - hazard and incident reports
 - investigations
 - registers of hazardous substances and dangerous goods
 - plant and equipment maintenance records
 - identification of employee concerns, such as through a hazard reporting system
 - input of managers, OHS representatives, OHS committee and others through consultative processes
- Risk is:
- the chance of something occurring that will result in injury or damage
 - measured in terms of consequences (injury or damage) and likelihood of the consequence
- Risk assessment tools may include:
- checklists, matrix nomograms and other aids that may be included in codes of practice, standards, guidelines or other relevant documentation
- Hazard register includes:
- a list of hazards
 - their location
 - a range of possible scenarios or circumstances under which they may cause injury or damage
 - the results of the risk analysis related to the hazards
- Level of authority:
- is commensurate with the actions required to address the risk

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence of hazard identification and risk analysis and evaluation activities using prepared identification and analysis and evaluation tools, either in an actual workplace, simulation exercise or scenario. Note that the combined process of analysis and evaluation of risk is also often referred to as risk assessment.

Required knowledge and understanding and required skills and attributes

These are detailed in the Certificate IV in Occupational Health and Safety knowledge and skills matrix.

Products that could be used as evidence include:

- documents used to inform and report to others in the organisation
- completed checklists
- emails, letters, reports and other records of processes undertaken to identify hazards and assess risks
- reports of other parties such as supervisors, managers, OHS specialists

Processes that could be used as evidence include:

- how hazard identification and risk assessment procedures were implemented

Resource implications for assessment include:

- access to workplace documentation and actual workplaces
- reports from other parties consulted in identifying hazards and conducting risk assessments
- access to relevant legislation, standards and guidelines

Validity and sufficiency of evidence requires:

- at least three examples of hazard identification and risk assessment activities, across a range of hazards, undertaken by the candidate to suit the specific operational context
- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- while there should be some access to an actual workplace, part of the assessment may be through simulated project based activity, scenarios, case studies, role plays or actual implementation of hazard identification and risk assessment processes

Integrated competency assessment:

- it is strongly recommended that assessment for this unit is integrated with BSBOHS404A Contribute to the implementation of strategies to control OHS risk

BSBOHS504A**Unit Descriptor****Apply principles of OHS risk management**

This unit specifies the outcomes required to use a generic approach to identify hazards and assess and control OHS risks.

Application of the Unit

This unit addresses the underlying knowledge and skills required to provide a systematic approach to hazard identification, risk assessment and risk control, with the emphasis on elimination or, where this is not possible, minimisation of risk. It also includes conceptual models for understanding the nature of hazards.

The unit provides a basis for the hazard-specific competencies in BSBOHS505A Manage hazards in the work environment, and BSBOHS506A Monitor and facilitate the management of hazards associated with plant.

This unit is underpinned by the competencies of units BSBOHS403A Identify hazards and assess OHS risks, and BSBOHS404A Contribute to the implementation of strategies to control OHS risk.

A more advanced approach to risk assessment, which identifies the separate elements of risk analysis and risk evaluation, is provided in unit BSBOHS603A Analyse and evaluate OHS risk.

Competency Field

Business management services : Domain - Occupational health and safety

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Access external sources of information and data to identify hazards | 1.1 <i>External sources of information and data</i> are accessed to assist in identifying <i>hazards</i>
1.2 <i>Workplace sources of information and data</i> are reviewed to access and assist in identification of hazards
1.3 Input is sought from <i>stakeholders, key personnel</i> and <i>OHS specialists</i>
1.4 Formal and informal research is conducted to ensure currency with <i>workplace issues</i> |
| 2. Analyse the work environment to identify hazards | 2.1 <i>Occasions when action for hazard identification is required</i> are defined, documented and communicated
2.2 <i>Tools</i> are sourced to assist in the analysis of identified hazards
2.3 <i>Task demands</i> and <i>task environment</i> are examined for impact on the person to identify situations with a potential for injury or ill health
2.4 Workforce structure, organisation of work and work relationships are examined to identify situations with a potential for injury or ill health
2.5 Work environment is examined for <i>agents</i> with a potential for injury or ill health
2.6 Input is sought from stakeholders to clarify and confirm issues |

- | | |
|--|--|
| 3. Assess risk associated with a hazard | <ul style="list-style-type: none"> 3.1 <i>Factors contributing to risk</i> are identified 3.2 Current risk controls for each hazard are identified 3.3 Adequacy of current controls (if any) is evaluated taking account of <i>relevant standards</i> and knowledge 3.4 Discrepancies between current controls and required <i>quality of control</i> are identified 3.5 Hazards requiring further control action are <i>prioritised</i> 3.6 Method and outcomes of <i>risk assessment</i> are documented |
| 4. Control risk associated with a hazard | <ul style="list-style-type: none"> 4.1 A range of control options is developed in consultation with stakeholders and taking account of the outcomes of the risk assessment and the <i>hierarchy of control</i> 4.2 Potential <i>factors impacting on the effectiveness of controls</i> are identified 4.3 Advice is sought from OHS specialists and key personnel if required 4.4 Appropriate authority and relevant resources to initiate and maintain controls are identified and sought 4.5 Actions required to achieve change are identified and documented 4.6 Extent of change and reduction in risk, as a result of controls, is analysed |
| 5. Maintain hazard identification and risk control processes | <ul style="list-style-type: none"> 5.1 A <i>risk register</i> is established and maintained relevant to the workplace 5.2 Risk management procedures are documented and communicated as appropriate to stakeholders and key personnel 5.3 Outcomes of risk management processes are documented and communicated to stakeholders and key personnel as appropriate 5.4 Stakeholders and operational staff are involved in the risk management processes 5.5 Situations are identified where OHS specialists may be required |
| 6. Monitor and review risk management processes | <ul style="list-style-type: none"> 6.1 The effectiveness of the risk management processes is reviewed regularly 6.2 Frequency, method and scope of review are determined in consultation with workplace stakeholders and key personnel 6.3 Stakeholders and key personnel have input to the review 6.4 Areas for improvement in the risk management processes are identified and recommendations made 6.5 Action plans, including allocated responsibilities and time frames, are prepared for implementation |

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

The bulleted points provide examples of how the key competencies can be applied for this unit.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	communicating with relevant organisational personnel at all levels, OHS specialists and managers preparing and presenting effective reports for a range of target audiences	3
Collecting analysing and organising information	gathering and analysing information and data from different sources to identify hazards, assess risk and develop control strategies	3
Planning and organising activities	coordinating risk management processes planning own activities	3
Working with others and in teams	working with organisational personnel, including OHS representatives, OHS committees, managers and supervisors and, as required, OHS specialists to maintain and evaluate risk management procedures	3
Using mathematical ideas and techniques	applying numerical skills required to assess the risk of specific hazards	2
Solving problems	collecting information and data applying risk management processes, particularly the development of control strategies	3
Using technology	using software systems to assist in extraction, analysis and reporting of required information and data for risk management accessing internal and other sources of information and data for risk management using word processing and other basic software for interpreting charts, flowcharts, graphs and other visual information and data for risk management and reporting using software systems for recording and filing documentation for risk management	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

External sources of information and data may include

- OHS regulatory authorities
- industry bodies
- employer groups
- unions
- OHS specialists
- legislation, codes of practice and standards
- databases such as national and state injury data and NICNAS (National Industrial Chemicals Notification and Assessment Scheme)
- journals and websites
- manufacturers' manual and specifications

A hazard is:

- a source or a situation with a potential for harm in terms of human injury or ill-health, damage to property, damage to the environment, or a combination of these

Workplace sources of information and data may include:

- employees
- OHS representatives
- hazard, incident and investigation reports
- workplace inspections
- minutes of meetings
- reports
- audits
- material safety data sheets (MSDSs)
- manufacturers' manuals and specifications

Stakeholders include:

- managers
- supervisors
- health and safety and other employee representatives
- OHS committees
- employees

Key personnel may include:

- managers from other areas
- people involved in OHS decision making or who are affected by OHS decisions

OHS specialists may be internal or external and include:

- ergonomists
- engineers
- occupational hygienists
- toxicologists
- organisational psychologists
- workplace injury and return to work advisors

Workplace issues may include:

- changes in work practice
- changes in equipment, including technology
- changes in work organisation, including contracting, hire arrangements, casualisation, supervisory arrangements, out workers, rosters, shift work, work hours and work relations
- changes to legislation and standards
- outcomes of court rulings
- new knowledge on hazards
- changes in social, political or community environment

Occasions when action for hazard identification is required include:

- at design or pre-purchase of buildings, equipment and materials
- commissioning or pre-implementation of new processes or practices
- new forms of work and organisation of work
- before changes are made to workplace, equipment, work processes or work arrangements
- planning major tasks or activities, such as equipment shutdowns
- following an incident report
- when new knowledge becomes available
- at regular intervals during normal operations
- prior to disposal of equipment, buildings or materials

Tools may include:

- job safety analysis (JSA)
- audits
- cause and effect diagrams
- surveys

Task demands may include:

- required precision or accuracy
- machine pacing or time pressure to complete a task
- physical or physiological demands
- arousal and alertness
- repetitive nature of task

Task environment may include:

- lighting
- noise
- air quality
- thermal

Agents may be:

- chemical
- physical
- biological
- ergonomic
- psychosocial

- Risk is:
- the chance of something occurring that will result in injury or damage
 - measured in terms of consequences (injury or damage) and likelihood of the consequence
- Factors contributing to risk may include those associated with:
- equipment
 - work environment
 - work organisation
 - task
 - the individual/operator
 - frequency and duration of exposure
 - number of people exposed/ involved
- Relevant standards may include:
- legislation
 - codes of practice
 - Australian and industry standards
 - current practice in the industry
 - current knowledge related to the specific hazard and controls
- Quality of control refers to:
- the level and reliability of the control compared with the level of risk
- Prioritisation may be done using:
- standard ranking tools
 - specially designed tools
 - other recognised processes
- Risk assessment includes identification of:
- factors contributing to risk
 - current controls and their adequacy
 - discrepancy between current control and required standard
 - prioritisation or ranking of a number of risks, where appropriate
- Hierarchy of control means developing risk controls within the following priority order:
- eliminate hazards
 - and where this is not practicable, minimise risk by:
 - substitution
 - isolating the hazard from personnel
 - using engineering controls
 - using administrative controls (e.g. procedures, training)
 - using personal protective equipment (PPE)

Factors impacting on the effectiveness of controls may include:

- language
- shift work and rostering arrangements
- literacy and numeracy levels
- workplace organisational structures (size of organisation, geographic, hierarchical)
- cultural diversity
- training required
- workplace culture related to OHS including commitment by managers and supervisors and compliance with procedures and training

A risk register may include all of the following:

- a list of hazards, their location and people exposed
- a range of possible scenarios or circumstances under which the hazards may cause injury or damage
- the results of the risk analysis related to the hazards
- possible control measures and dates for implementation

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence of application of a risk management approach to identifying hazards, and assessing and controlling OHS risk, either in an actual workplace, simulation scenario or scenario.

Evidence gathered for demonstration of competence will involve products developed for systematic approaches to identifying hazards, and assessing and controlling risks; evidence of how these products were developed; and evidence of use of the products.

Required knowledge and understanding and required skills and attributes

These are detailed in the Diploma in Occupational Health and Safety knowledge and skills matrix.

Products that could be used as evidence include:

- documents used to inform and report to others in the organisation
- policies and procedures
- emails, letters, reports and other records of processes undertaken to identify hazards and control risks
- reports of other parties such as supervisors, managers, OHS specialists

Processes that could be used as evidence include:

- how risk management procedures have been implemented

Resource implications for assessment include:

- access to workplace documentation and actual workplaces
- reports from other parties consulted in identifying hazards and controlling risks
- access to relevant legislation, standards and guidelines

Validity and sufficiency of evidence requires:

- at least three examples of development and/or application of risk management across a range of hazards, undertaken by the candidate
- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- that, while there should be some access to an actual workplace, part of the assessment may be through simulated project based activity, scenarios, case studies, role plays or actual implementation of risk management processes

Integrated competency assessment means:

- that this unit can be assessed alone or as part of an integrated assessment activity involving other relevant OHS related units, particularly BSBOHS505A Manage hazards in the work environment, and BSBOHS506A Monitor and facilitate the management of hazards associated with plant

BSBPM404A Unit Descriptor

Apply quality management techniques

This unit specifies the outcomes required to enhance project outcomes through the application of the quality policy by contributing to quality planning, applying quality policies and procedures, and contributing to continuous improvement within projects.

Application of the Unit

A project team member usually performs this function under the overall direction of the project manager and working with other project team members. The functions performed by a project team manager to manage quality for the whole project are addressed in BSBPM505A Manage project quality.

Competency Field

Business management services : Domain - Project management

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---|---|
| 1. Contribute to quality planning | 1.1 Contribution is made in determining quality requirements of project stakeholders
1.2 Contribution is made in establishing quantifiable quality criteria for project outcomes and objectives
1.3 <i>Information</i> is sourced to locate and interpret quality policy and procedures
1.4 Contribution is made to the development of quality requirements in the project plan and processes |
| 2. Apply quality policies and procedures | 2.1 Under <i>delegated authority</i> , work is undertaken to implement <i>quality assurance</i> within the project in accordance with agreed quality standards and guidelines
2.2 Records and documentation are maintained in accordance with set procedures to facilitate <i>quality control</i> and to provide an audit trail
2.3 Results of project activities and product performance are documented and evaluated to determine compliance with agreed quality standards
2.4 Shortfalls in quality outcomes are reported to <i>others</i> to enable appropriate action to be initiated |
| 3. Contribute to continuous improvement process | 3.1 Assistance is provided in the ongoing review of project outcomes to determine the effectiveness of quality management activities
3.2 Quality management issues and responses are reported to <i>others</i> for application in future projects |

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks

Key Competency	Example of Application	Performance Level
Communicating ideas and information	communicating as part of a team, including negotiating and developing reports communicating verbally, including making presentations, if required, and participating in meetings, questioning and discussions	3
Collecting analysing and organising information	tracking and monitoring and controlling quality within project applying relevant skills associated with reviewing project	2
Planning and organising activities	planning work and project tasks for self and with others	2
Working with others and in teams	working with others, including external parties/clients and project team manager	2
Using mathematical ideas and techniques	using calculation skills associated with specifications development conformance criteria involved in the project	1
Solving problems	applying problem-solving skills where required to address problems arising in managing quality within the project	2
Using technology	using word processing packages to produce written correspondence, reports of project activities using specific project management software tools using assistive technology, if required	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Information may include:

- project quality guidelines and instructions
- designated standard operating procedures and regulations
- organisational quality management policy and guidelines as applied to specific requirements of a project
- organisation and project standards

Delegated authority refers to those activities that are:

- within established organisational framework, procedures and routines
- carried out under limited guidance and supervision
- within agreed authorisation and limits
- subject to frequent change in a multi-disciplinary environment

Quality assurance may include:

- a systematic review of the project management process to ensure compliance with organisational policy and guidelines
- a project finalisation process to capture lessons learned and enable continuous improvement

Quality control activities may include:

- monitoring conformance with the specification
- inspections and audits in compliance with guidelines
- reporting of variances
- recommending ways to eliminate causes of unsatisfactory performance of products or processes
- regular inspection by the individual or the monitoring of inspections by internal or external agents

Others may include:

- project manager
- higher project authority
- team members
- project specialists or other personnel

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence that they have contributed the quality management of projects. This will include evidence of working with others to develop quality plans and quality assurance mechanisms for the project; monitoring and controlling quality within the project against requirements, and acting on identified problems/issues; contributing to continuous improvement; and reviewing quality on project completion and closure. This contribution may be within own area of expertise or across several aspects of the project.

Required knowledge and understanding include:

- the need for quality management within the broad project management framework
- the place of project quality management in the context of the project life cycle and other project management functions
- the application of quality management tools and techniques within the candidate's area of expertise
- how, when and why project quality management processes are implemented
- the importance of the individual's contribution to the project quality management process

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds, and physical and mental abilities
- project quality assurance skills
- project quality control skills
- project quality planning
- quality monitoring and control
- teamwork and communication skills
- attributes
 - attention to detail
 - accuracy

Products that could be used as evidence include:

- records of input to identification of stakeholder expectations, quality objectives, standards and levels
- records of input to the quality management plan
- records of use of quality management tools
- records of inspections and reports on project quality outcomes
- reports of progress on project quality issues
- input to project quality reviews, including reports of lessons learned and recommendations for improvement

Processes that could be used as evidence include:

- how project quality plan was developed
- how project quality requirements were determined
- how project quality assurance plan was implemented or integrated within overall project plan
- how project quality was monitored within project
- how issues/problems identified with project quality within project were acted upon
- how projects were reviewed in relation to quality and identified improvements were acted upon

Resource implications for assessment include:

- access to workplace documentation
- access to/inspection of audit trails of project documentation and organisational quality policy and guidelines

Validity and sufficiency of evidence requires:

- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- examples of projects where the candidate has contributed to managing quality within projects

Integrated competency assessment:

- this unit should be assessed with other project management units at Certificate IV, as applicable to the candidate's role in the project

BSBPM407A Unit Descriptor

Apply risk management techniques

This unit specifies the outcomes required to assist with aspects of risk management within a project. It specifically involves assisting the project team to plan, control and review risks associated with the project.

Application of the Unit

A project team member usually performs this function under the overall direction of the project manager and working with other project team members. The functions performed by a project team manager to manage risks within projects are addressed in BSBPM508A Manage project risk.

Competency Field

Business management services : Domain - Project management

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---|--|
| 1. Assist with risk analysis and planning | 1.1 Contribution is made to identify and prioritise potential risks throughout the project life cycle
1.2 Within <i>delegated authority</i> , input is provided to develop risk management strategies and risk management plans within established guidelines
1.3 Established <i>risk analysis methods, techniques and tools</i> are used to assist in the analysis of risks
1.4 Reporting mechanisms for risks are planned and agreed |
| 2. Conduct risk control activities | 2.1 Control activities are undertaken in accordance with agreed project and risk management plans to achieve project objectives
2.2 Progress is measured, and perceived, potential or actual risks are acted on within authority or reported to <i>others</i> for response
2.3 Contribution is made to the implementation of agreed risk approaches and the amendment of plans to reflect the changing environment
2.4 <i>Opportunities</i> are identified and reported for action in the same way as risks |
| 3. Contribute to assessing risk management outcomes | 3.1 Contribution is made to the ongoing <i>review</i> of project outcomes to determine the effectiveness of risk management activities by accessing project <i>records</i> and other available information
3.2 Risk management issues and responses are reported to others for lessons learned or application in future projects |

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks

Key Competency	Example of Application	Performance Level
Communicating ideas and information	communicating as part of a team, including negotiating and developing reports communicating verbally, including making presentations, if required, and participating in meetings, questioning and discussions	2
Collecting analysing and organising information	tracking, monitoring and controlling risk within the project applying relevant skills associated with reviewing projects	2
Planning and organising activities	planning work and project tasks for self and with others	2
Working with others and in teams	working with others, including external parties/clients and project team manager	2
Using mathematical ideas and techniques	using calculating associated with data manipulation involved in the project	2
Solving problems	applying problem-solving skills where required to address problems arising in managing risk within projects	2
Using technology	using word processing packages to produce written correspondence and reports of project activities using specific project management and risk management software tools using assistive technology, if required	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Risk analysis methods, techniques and tools may include:

- using personal experience and/or subject matter experts
- assisting in qualitative and/or quantitative risk analysis, such as schedule simulation, decision analysis, contingency planning and alternative strategy development
- using specialist risk analysis tools to assist in the decision making process

Delegated authority means:

- within established organisational framework, procedures and routines
- under limited guidance and supervision
- within agreed authorisation and limits
- subject to frequent change in a multi-disciplinary environment

Others may include:

- project manager
- higher project authorities
- team members
- project specialists or personnel

Opportunities may include:

- better means of achieving a result
- efficiencies or methods to work more effectively, such as ways of shortening an activity
- responses to changing commercial/competitive conditions
- changes in the project or broader environment that offer scope for rescheduling activities to better effect
- initial project activities that reveal entirely different sets of priorities, for example product development, research and policy development

Review may include evaluations of:

- agreed major milestones, for example phases and sub-contracts
- delivery of major deliverables
- change of key personnel
- finalisation of project and other agreed milestones

Records may include:

- lists of potential risk events (risk register/log)
- risk analysis and reappraisal
- risk management plan
- risk diaries, incident logs, occurrence reports and other such documentation
- project and/or organisation files and records
- risk management lessons learned

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence that they have contributed to the management of risk within projects. This will include evidence of working with others to identify risk and develop risk management strategies; controlling risks; monitoring risks (with an emphasis on variation management); and reviewing risk management within the project.

Required knowledge and understanding include:

- the need for project risk management within the broad project management framework
- the place of project risk management in the context of the project life cycle and other project management functions
- the application of project risk management tools and techniques within the candidate's area of expertise
- how, when and why risk identification, monitoring and reporting processes are implemented
- the importance of the individual's contribution to the project risk management process

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds' and physical and mental abilities
- risk management
- planning
- monitoring and tracking
- teamwork and communication skills
- attributes:
 - accuracy
 - attention to detail
 - thoroughness

Products that could be used as evidence include:

- records of input to risk management risk management plan and strategies
- lists of perceived, potential or actual risk events (risk register/log)
- risk management reports
- periodic reports that include updating project risk likelihood/impact ratings
- pre-planned response mechanisms for level of risk likelihood per activity
- records of (time/cost) contingency planning as an outcome of project risk management
- records of input to project risk reviews, including reports of lessons learned and recommendations for improvement

Processes that could be used as evidence include:

- how risks were determined, analysed, prioritised and planned for
- how risk management strategies were determined
- how contingency management process was aligned to risk management (planning and control) process
- how effectiveness of risk controls was monitored and any issues/problems acted upon
- how risk management was reviewed for project and identified improvements acted upon

Resource implications for assessment include:

- access to workplace documentation

Validity and sufficiency of evidence requires:

- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- examples of projects where the candidate has contributed to managing risk for projects

Integrated competency assessment means:

- that this unit should be assessed with other project management units at Certificate IV, as applicable to the candidate's role in the project

BSBPM505A Unit Descriptor

Manage project quality

This unit specifies the outcomes required to manage quality within projects. It covers determining quality requirements, implementing quality assurance processes, and using review and evaluation to make quality improvements in current and future projects.

Application of the Unit

A project manager usually performs this function. The functions performed by a program manager to manage quality within multiple projects are addressed in BSBPM605A Direct quality management of multiple projects/programs.

Competency Field

Business management services : Domain - Project management

ELEMENT

PERFORMANCE CRITERIA

- | | |
|-----------------------------------|---|
| 1. Determine quality requirements | <p>1.1 <i>Quality objectives</i>, standards and levels are determined, with input from stakeholders and guidance of a higher project authority, to establish the basis for quality outcomes and a <i>quality management plan</i></p> <p>1.2 Established <i>quality management methods, techniques and tools</i> are selected and used to determine preferred mix of quality, capability, cost and time</p> <p>1.3 Quality criteria are identified, agreed with a higher project authority and communicated to stakeholders to ensure clarity of understanding and achievement of quality and overall project objectives</p> <p>1.4 Agreed quality requirements are included in the project plan and implemented as basis for performance measurement</p> |
| 2. Implement quality assurance | <p>2.1 Results of project activities and product performance are measured and documented throughout the project life cycle to determine compliance with agreed quality standards</p> <p>2.2 Causes of unsatisfactory results are identified, in consultation with the client, and appropriate actions are recommended to a higher project authority to enable continuous improvement in quality outcomes</p> <p>2.3 Inspections of quality processes and <i>quality control</i> results are conducted to determine compliance of quality standards to overall quality objectives</p> <p>2.4 A quality management system is maintained to enable effective recording and communication of quality issues and outcomes to a higher project authority and stakeholders</p> |

- 3. Implement project quality improvements
 - 3.1 Processes are reviewed and agreed changes implemented continually throughout the project life cycle to ensure continuous improvement to quality
 - 3.2 Project outcomes are reviewed against performance criteria to determine the effectiveness of quality management processes and procedures
 - 3.3 Lessons learned and recommended *improvements* are identified, documented and passed on to a higher project authority for application in future projects

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks

Key Competency	Example of Application	Performance Level
Communicating ideas and information	communicating to lead a team, including negotiating and developing reports communicating verbally, including making presentations, and participating in meetings, questioning and discussions	3
Collecting analysing and organising information	tracking, monitoring and controlling quality of the project applying relevant skills associated with reviewing the project	2
Planning and organising activities	planning own work and that of project team members	2
Working with others and in teams	leading and representing the project team working with others, including external parties/clients and project team members	3
Using mathematical ideas and techniques	using calculation skills associated with data manipulation involved in project including financial data	1
Solving problems	applying problem-solving skills as required to address problems arising in managing the project assisting others to solve problems arising within project	3
Using technology	using word processing packages, spreadsheets, databases and other packages to produce written correspondence and reports of project activities, financial reporting and data collation using specific project management software tools using assistive technology, if required	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Quality objectives may include:

- requirements from the client and other stakeholders
- requirements from a higher project authority
- negotiated trade-offs between cost, schedule and performance
- those quality aspects which may impact on customer satisfaction

A quality management plan may include:

- established processes
- authorisations and responsibilities for quality control
- quality assurance
- continuous improvement

Quality management methods, techniques and tools may include:

- group work activities
- brainstorming
- benchmarking
- charting processes
- ranking candidates
- defining control
- undertaking benefit/cost analysis
- processes that limit and/or indicate variation
- control charts
- flowcharts
- histograms
- pareto charts
- scattergrams
- run charts

Quality control may include:

- monitoring conformance with specifications
- recommending ways to eliminate causes of unsatisfactory performance of products or processes
- monitoring of regular inspections by internal or external agents

Improvements may include:

- formal practices, such as total quality management or continuous improvement
- improvement by less formal processes which enhance both the product quality and processes of the project, for example client surveys to determine client satisfaction with project team performance

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence that they have taken responsibility for quality management of projects. This will include evidence of managing the work of others within the project team with respect to quality.

Required knowledge and understanding include:

- broad knowledge and understanding of:
 - the principles of project quality management and their application
 - acceptance of responsibilities for project quality management
 - use of quality management systems and standards
 - the place of quality management in the context of the project life cycle
 - appropriate project quality management methodologies; and their capabilities, limitations, applicability and contribution to project outcomes

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds, and physical and mental abilities
- project management
- quality management
- planning and organising
- communication and negotiation
- problem-solving
- leadership and personnel management
- monitoring and review skills
- attributes:
 - analytical
 - attention to detail
 - able to maintain an overview
 - communicative
 - positive leadership

Products that could be used as evidence include:

- documentation produced in managing projects such as:
 - lists of quality objectives, standards, levels and measurement criteria
 - records of inspections, recommended rectification actions and quality outcomes
 - management of quality management system and quality management plans
 - application of quality control, quality assurance and continuous improvement processes
 - records of quality reviews
 - lists of lessons learned and recommended improvements

Processes that could be used as evidence include:

- how quality requirements and outcomes were determined for projects
- how quality tools were selected for use in projects
- how team members were managed throughout projects with respect to quality within the project
- how quality was managed throughout projects
- how problems and issues with respect to quality and arising during projects were identified and addressed
- how projects were reviewed with respect to quality management
- how improvements to quality management of projects have been acted upon

Resource implications for assessment include:

- access to workplace documentation

Validity and sufficiency of evidence requires:

- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- examples of projects where the candidate has managed quality within projects

Integrated competency assessment means:

- this unit should be assessed with other project management units at a Diploma qualification, as applicable to the candidate's management role in projects

BSBPM508A Unit Descriptor

Manage project risk

This unit specifies the outcomes required to manage risk within a project in order to avoid adverse effects on project outcomes. It covers determining, monitoring and controlling project risks, and assessing risk management outcomes.

Application of the Unit

A project manager usually performs this function. The functions performed by a program manager to manage risks within multiple projects are addressed in BSBPM608A Direct risk management of multiple projects/programs.

Competency Field

Business management services : Domain - Project management

ELEMENT

PERFORMANCE CRITERIA

- | | |
|-------------------------------------|---|
| 1. Determine project risks | <p>1.1 <i>Risks</i> are identified, documented and analysed, in consultation with stakeholders and a higher project authority, as the basis for risk planning</p> <p>1.2 Within <i>delegated authority</i>, established <i>risk management techniques and tools</i> are used to analyse risks and assess options, and preferred risk approaches are recommended to a higher authority</p> <p>1.3 Plans are developed, agreed with stakeholders, and communicated to ensure clarity of understanding and ongoing management of risk factors</p> <p>1.4 Designated <i>risk management processes and procedures</i> are established to enable effective management and communication of risk events, responses and results</p> |
| 2. Monitor and control project risk | <p>2.1 Project is managed in accordance with established project and risk management plans to ensure a common approach to the achievement of objectives</p> <p>2.2 Progress is monitored against project plans to identify variances and <i>recommend responses</i> to a higher project authority for remedial action</p> <p>2.3 Agreed risk responses are implemented and plans modified to reflect changing project objectives in an environment of uncertainty</p> |
| 3. Assess risk management outcomes | <p>3.1 Project outcomes are reviewed to determine effectiveness of risk management processes and procedures</p> <p>3.2 Risk issues and recommended improvements are identified, documented and passed on to a higher project authority for application in future projects</p> |

KEY COMPETENCIES

The seven key competencies represent generic skills considered essential for effective work participation. Innovation skills represent a further area of generic competence. The bracketed numbering indicates the performance level required in this unit:

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks

Key Competency	Example of Application	Performance Level
Communicating ideas and information	communicating to lead a team, including negotiating and developing reports communicating verbally, including making presentations, and participating in meetings, questioning and discussions	3
Collecting analysing and organising information	tracking and monitoring the project applying relevant skills associated with reviewing the project	2
Planning and organising activities	planning own work and that of project team members	2
Working with others and in teams	leading and representing the project team working with others including external parties/clients and project team members	3
Using mathematical ideas and techniques	using calculation skills associated with data manipulation involved in project including financial data	1
Solving problems	applying problem-solving skills as required to address problems arising in managing the project assisting others to solve problems arising within project	3
Using technology	using word processing packages, spreadsheets, databases and other packages to produce written correspondence and reports of project activities, financial reporting and data collation using specific project management software tools using assistive technology, if required	2

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- relevant legislation from all levels of government that affects business operation, especially in regard to Occupational Health and Safety and environmental issues, equal opportunity, industrial relations and anti-discrimination
- relevant industry codes of practice

Risks may be:

- potential
- perceived
- actual
- likely/probable

Delegated authority refers to planning and activities that may:

- be done independently within broad guidance or by taking the lead of a team
- involve consultation with other project members, teams and internal stakeholders
- involve the selection, use and supervision of appropriate risk management methods, tools and techniques
- be conducted routinely or as changing circumstances dictate

Risk management techniques and tools may include:

- calling upon personal experience and/or subject matter experts
- conducting or supervising qualitative and/or quantitative risk analysis, such as schedule simulation, decision analysis, contingency planning and alternative strategy development
- using specialist risk analysis tools to assist in the decision making process

Risk management processes and procedures may include:

- setting key milestones at significant points during the project and at completion
- measurement of actual progress against planned milestones
- recording and reporting of major variance
- implementation of risk control trigger mechanisms
- communication with stakeholders, dispute resolution, and modification procedures

Recommended responses to variations may be made:

- independently or with higher project authority endorsement if necessary
- regularly throughout the project life cycle
- in consultation with project team members, section heads, project manager and stakeholders
- taking into account internal organisational change and external environmental change

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the parent Training Package.

Overview of Assessment Requirements

A person who demonstrates competence in this unit must be able to provide evidence that they have taken responsibility within projects for risks associated with the projects. This will include evidence of managing the work of others within the project team with respect to risk management within the project.

Required knowledge and understanding include:

- broad knowledge and understanding of:
 - uncertainty and the means of its measurement
 - personal attitudes to uncertainty and risk, and how they might affect the project's approach to risk management
 - the place of risk management in the context of the project life cycle
 - appropriate risk management methodologies, their capabilities, limitations, applicability and outcomes

Required skills and attributes include:

- ability to relate to people from a range of social, cultural and ethnic backgrounds, and physical and mental abilities
- project management
- risk management
- planning and organising
- communication and negotiation
- problem solving
- leadership and personnel management
- monitoring and review skills
- attributes:
 - attention to detail
 - able to maintain an overview
 - positive leadership
 - analytical
 - organised

Products that could be used as evidence include:

- documentation produced in managing projects such as:
 - application of lessons learned from previous project(s) in planning a new project
 - lists of potential risk events
 - records of identification and prioritisation of risk events
 - risk management plans
 - reports of variance and recommendations for action
 - details of conduct of risk reappraisal
 - risk management lessons learned

Processes that could be used as evidence include:

- how risks were identified and documented for projects
- how a risk management plan was developed for projects
- how team members were managed throughout projects with respect to risk management
- how risk was managed during projects
- how risks arising during projects were identified and addressed
- how projects were reviewed with respect to risk management
- how improvements to risk management of projects have been acted upon

Resource implications for assessment include:

- access to workplace documentation

Validity and sufficiency of evidence requires:

- that where assessment is part of a learning experience, evidence will need to be collected over a period of time, involving both formative and summative assessment
- examples of projects where the candidate has managed risks within projects

Integrated competency assessment means:

- that this unit should be assessed with other project management units at a Diploma qualification, as applicable to the candidate's management role in projects

BSBSBM401A**Unit Descriptor****Establish business and legal requirements**

The unit involves identifying and complying with business legal and administrative requirements. It is suitable for setting up or existing micro and small businesses or a department in a larger organisation.

This unit is related to BSBSBM404A Undertake business planning.

Competency Field

Business Management Services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Identify and Implement business legal requirements | <p>1.1 Possible legal options for the business structure are identified</p> <p>1.2 <i>Legislation, codes and regulatory requirements</i> affecting the structure and operations of the business are determined and procedures are developed and implemented to ensure full compliance</p> |
| 2. Comply with legislation, codes and regulatory requirements | <p>2.1 Systems are established to ensure the <i>legal rights and responsibilities</i> of the business are identified, and the business is adequately protected, especially in regard to <i>Occupational Health and Safety</i>, business registration and environmental requirements</p> <p>2.2 <i>Taxation principles and requirements</i> relative to the business are identified, and procedures are followed to ensure compliance</p> <p>2.3 <i>Legal documents</i> are identified, carefully maintained and relevant <i>records</i> are kept and updated to ensure their ongoing security and accessibility</p> <p>2.4 <i>Insurance requirements</i> are identified and adequate cover is acquired</p> <p>2.5 Compliance with legal and regulatory requirements monitored</p> <p>2.6 Investigations conducted to identify areas of non-compliance with legal and regulatory requirements and corrective action taken where required</p> |
| 3. Negotiate and arrange contracts | <p>3.1 Legal advice on contractual rights and obligations is sought, if required, to clarify business liabilities</p> <p>3.2 Potential products/services are investigated and assessed to determine <i>procurement rights</i> and to ensure protection of business interests where applicable</p> <p>3.3 Conditions applying to production/provision of relevant products and services are investigated to ensure compliance with legal and contractual requirements as required</p> <p>3.4 Contractual procurement rights for goods and services including <i>contracts with relevant people</i>, negotiated and secured as required in accordance with the business plan</p> <p>3.5 Options for leasing/ownership of business premises identified and contractual arrangements completed in accordance with the business plan</p> |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	to establish business structure	2
Collecting analysing and organising information	to determine business legal requirements	3
Planning and organising activities	to comply with legal requirements for the business legal structure	3
Working with others and in teams	to obtain compliance with legal requirements	2
Using mathematical ideas and techniques	to support the business operation	2
Solving problems	to reduce risk and establish business legal structure	3
Using technology	to optimise business performance	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- national, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- relevant industry codes of practice

Occupational Health and Safety and requirements must include:

- establishing hazard management arrangements to identify workplace specific hazards
- establishing hazard management arrangements to assess and control the risks associated with workplace hazards including development of written safe operating procedures
- establishing OHS record keeping arrangements in accordance with regulatory requirements
- developing and implementing procedures to evaluate and review effectiveness of risk control measures
- the establishment and maintenance of a system for managing OHS
- OHS Duty of Care responsibilities (knowledge of legislation)

- And may include:
- establishing arrangements to induct, train and provide information on workplace hazards and their control, to all workplace personnel
 - developing workplace arrangements to consult employees
- Legal options for the business structure may include:
- company, trust, partnership or sole trader structure or form of business recognised by law. It may be profit or non-profit based
- And may be influenced by:
- preferences of owners
 - requirements of financial backers
 - confidentiality
 - taxation
 - superannuation
 - ownership transfer
 - partnership considerations
- Ownership transfer considerations may include:
- ownership transfer may occur as a result of forced business closure, death, divorce, sale of business, buying out other partners, succession planning etc
- Legislation, codes and regulatory requirements may include:
- local, state, national and international legislation and regulations affecting business operations such as: business registration, planning and other permissions, license to practice, franchising, agencies, licensing eg (Real Estate Agents, Customs Brokers), fire, occupational health and safety and environmental legislation, industrial, taxation including GST, copyright, patent trademark and design regulations, codes of practice, standards and anti-competition/monopoly, anti-trust and consumer legislation, Law of Torts
- Legal rights and responsibilities may include:
- marketing the business in accordance with consumer legislation
 - operating the business with a duty of care (Law of Torts)
 - obligations imposed by choice of business structure
- Taxation principles and requirements may include:
- tax file number, Australian Business number, GST registration, PAYG and withholding arrangements
 - relevant taxation requirements/obligations for business
- Legal documents may include:
- partnership agreements, constitution documents, statutory books for companies (Register of Members, Register of Directors and Minute Books), Certificate of Incorporation, Franchise Agreements and financial documentation, appropriate software for financial records

Recordkeeping may include but is not restricted to:

- personnel, financial, taxation, OHS and environmental

OHS recordkeeping may include:

- workers compensation and rehabilitation;
- hazardous substances register;
- material safety data sheets;
- manufacturers' and suppliers' information;
- OHS audits and inspections;
- first aid and medical; accident reports and investigations
- plant maintenance and testing;
- instruction & training

Insurance requirements may include:

- third party bodily injury on motor vehicles
- workers compensation
- any other insurance cover declared mandatory by State or Federal legislation

Procurement rights to products and services may include:

- royalties, copyright, patents, trademarks, registered design and applications, intellectual property, software licenses, franchises, agencies and any form of licensing

Contracts with relevant people may include:

- owners, suppliers, employees, landlords, agents, distributors, customers or any person with whom the business has, or seeks to have, a performance-based relationship

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- The capacity to implement a systematic approach to identifying, managing and meeting legal business requirements and
- Interpreting compliance data and formulating appropriate action

Underpinning Knowledge

- National, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- Relevant OHS responsibilities and procedures
- Business registration and licensing requirements
- Legal rights and obligations of alternative ownership structures
- Relevant taxation and related legislative requirements and legal rights and responsibilities related to the business
- Bookkeeping and record keeping procedures to meet minimum financial and legal requirements
- Award and enterprise agreements, where required
- Industrial law relevant to recruitment and dismissal of employees
- Creation and termination of relevant legal contracts
- Duty of care imposed by Law of Torts
- Relevant industry codes of practice
- Relevant consumer legislation

At this level the learner must demonstrate understanding of a broad knowledge base incorporating some theoretical concepts.

Underpinning Skills

- Literacy skills to interpret legal requirements, develop company policies and procedures and analyse compliance information
- Communication, reporting and consultation skills necessary for the business operation
- Time management skills to prioritise tasks and to meet datelines
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

- In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range of Variables
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the business services common competencies for the particular AQF level. Refer to the Key Competency Levels at the end of this unit

BSBSBM402A**Unit Descriptor****Undertake financial planning**

This unit involves the development of a financial plan to support business viability. It is suitable for setting up or existing micro and small businesses or a department in a larger organisation.

This unit is related to BSBSBM404A Undertake business planning.

Competency Field

Business Management Services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Analyse the financial requirements of the business | <ul style="list-style-type: none"> 1.1 Income and outgoing expenditure is identified and assessed to plan for business viability 1.2 Costs associated with the production and delivery of the business' products/services are identified and documented 1.3 Appropriate pricing strategies are identified in relation to market conditions to meet the profit targets of the business 1.4 Contribution margins of products/services are considered to obtain the optimum sales mix 1.5 Profit projections are prepared to supplement the business plan |
| 2. Develop a financial plan | <ul style="list-style-type: none"> 2.1 <i>Profit targets/goals</i> set to reflect owners desired returns 2.2 Working capital requirements necessary to attain profit projections are identified 2.3 Non-current asset requirements are identified and alternative asset management strategies considered 2.4 <i>Cash flow projections</i> are prepared to enable business operation in accordance with the business plan and legal requirements 2.5 Capital investment requirements are identified accurately for each operational period 2.6 Budget targets are selected to enable ongoing monitoring of financial performance |
| 3. Acquire finance | <ul style="list-style-type: none"> 3.1 Startup and ongoing financial requirements identified according to financial plan/budget 3.2 Sources of finance, including potential <i>financial backers</i>, to provide required liquidity for the business are identified to complement business goals and objectives 3.3 Cost of securing finance on optimal terms is investigated 3.4 Strategies to obtain finance are identified as required to ensure financial viability of the business |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	to obtain and convey financial information	2
Collecting analysing and organising information	to acquire and plan finances	2
Planning and organising activities	to comply with legal requirements and plan finances	2
Working with others and in teams	to obtain finance and financial information	2
Using mathematical ideas and techniques	to plan and maintain finances	2
Solving problems	to maximise business financial viability	2
Using technology	to optimise business performance	2

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- national, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- relevant industry codes of practice

Costs may include:

- direct/indirect costs
- fixed, variable, semi-variable costs

Pricing strategies may include:

- cost/volume/profit analysis
- competitor analysis
- market conditions
- perceived value
- penetration pricing
- skimming
- discounting

Pricing methods may include:

- mark up on cost
- hourly chargeout rates
- unit cost of production

Profit targets/ goals may include:

- desired return on investment
- desired actual/notional salary for owner/manager(s)
- sales turnover/gross fees or income
- cost of goods/services sold
- gross profit/net profit
- breakeven point

Financial plan may include:

- working in conjunction with external consultants e.g. investment analyst, accountant/s, financiers
- the current financial state of the enterprise (or owner/operator)
- financial performance to date (if applicable)
- likely return on investment
- a review of financial inputs required (sources and forms of finance)
- projections of likely financial results (budgeting)
- projected profit targets, pricing strategies, margins
- profit, turnover, capital and equity targets
- risks and measures to manage or minimise risks
- working, fixed, debt and equity capital
- non-recurrent assets calculations
- projections may vary depending on the importance of such information and the stage in the life of the business
- monthly, quarterly or annual returns
- analysis of sales by product/service, identifying where they were sold and to whom
- estimates of profit and loss projections for each forward period
- cash flow estimates for each forward period
- resources required to implement the proposed marketing and production strategies (staff, materials, plant and equipment)

Cash flow projections may include:

- customer credit policy/debt recovery
- anticipated receipts
- anticipated payments
- taxation provisions

Financial backers may include:

- financiers/banks/lending institutions
- shareholders/partners/owners

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Development of a financial plan which identifies the financial requirements of the business, including profit targets, cash flow projections and strategies for the acquisition of finance

Underpinning Knowledge

- National, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- Financial decision making relevant to the business
- Basic costing for the business, including margin/mark-up, hourly chargeout rates and unit costs
- Breakeven analysis
- Working capital cycles
- Methods and relative costs of obtaining finance
- Purpose of financial reports
- Relevant accounting terminology
- Basic accounting principles
- principles of budgeting
- Principles for preparation of profit and loss statements
- Principles for preparation of balance sheets
- Principles for preparation of cash flow forecasts

At this level the learner must demonstrate understanding of a broad knowledge base incorporating some theoretical concepts.

Underpinning Skills

- Numeracy concepts to analyse financial information regarding the business
- Communication including reporting
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range of Variables
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the business services common competencies for the particular AQF level. Refer to the Key Competency Levels earlier in this unit

BSBSBM404A**Unit Descriptor****Undertake business planning**

This unit covers the research and development of an integrated business plan for achieving business goals and objectives. It is suitable for setting up or existing micro and small businesses or a department in a larger organisation.

This unit is related to BSBSBM301 Research business opportunities. Consider co-assessment with BSBSBM401 Establish business and legal requirements, BSBSBM402 Undertake financial planning and BSBSBM403 Promote the business.

Competency Field

Business Management Services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|--|--|
| 1. Identify elements of a business plan | <ul style="list-style-type: none"> 1.1 Components of a business plan relevant to a <i>business opportunity</i> identified and reviewed 1.2 Purpose of the <i>business plan</i> is identified 1.3 <i>Business goals and objectives</i> are identified and documented, as a basis for measuring business performance |
| 2. Develop a business plan | <ul style="list-style-type: none"> 2.1 The <i>business plan</i> demonstrates research into customer needs, resources and legal requirements especially occupational health and safety, in accordance with business goals and objectives 2.2 The <i>financial plan</i> identifies sources and costs of finance to provide required liquidity and profitability for the business 2.3 <i>Marketing/ promotion strategies</i> identify methods to promote the market exposure of the business 2.4 <i>Production/operations plan</i> identifies methods/means of production/operation to conform with business goals and objectives 2.5 <i>Staffing</i> requirements, are identified as required to effectively produce/deliver products/services 2.6 <i>Specialist services</i> and sources of advice are identified where required, and costed in accordance with resources available |
| 3. Develop strategies for minimising risks | <ul style="list-style-type: none"> 3.1 Specific interests and objectives of <i>relevant people</i> are identified and their support of the planned business direction is sought and confirmed 3.2 <i>Risk management strategies</i> are identified and developed according to business goals and objectives and relevant legal requirements 3.3 <i>Contingency plan</i> is developed to address possible areas of non conformance to plan |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	to gain support for the business plan	2
Collecting analysing and organising information	to develop a business plan	3
Planning and organising activities	to support the business operation	3
Working with others and in teams	to plan staffing and supply of goods and services	2
Using mathematical ideas and techniques	to aid financial planning	3
Solving problems	to support business planning	3
Using technology	to aid business planning	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- national, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- relevant industry codes of practice

Occupational Health and Safety issues must include:

- management of the organisation and operation of OHS as part of the business plan
- procedures for managing hazards in the workplace (identify, assess & control)
- identification of specific hazard issues such as occupational violence, security, manual handling, equipment and hazardous substances.
- Provisions for ensuring safety of members of the public and contractors visiting the premises/worksite.

Business plan may include:

- proposed size and scale of the business
- market focus of the business
- marketing requirements
- sources of funding
- need to raise finance and requirements of lenders
- level of risk involved, risk assessment and management
- stages in the business development
- business opportunities
- resources required and available
- details of ownership/management
- staffing
- organisation/operational arrangements
- specialist services and sources of advice which may be required
- finance, expenditure statement, balance sheet and cash flow forecast, projections for the initial years of operation assumptions underlying the business plan, expected level of inflation and taxation, expected trend of interest rate, capital expenditure and its timing, stock turnover, debtors collection period, creditor payment period, return on investment
- recognition of any seasonal or cyclical (time-based) elements which are crucial to the success of the enterprise

Business opportunities may be influenced by:

- expected financial viability,
- skills of operator
- amount and types of finance available

Business goals and objectives may include:

- goals, objectives, plans, systems and processes
- short, medium or long term goals
- financial projections
- customer needs/marketing projections
- proposed size and scale of the business
- market focus of the business
- lifestyle issues

Financial plan may include:

- the current financial state of the enterprise (or owner/operator)
- financial performance to date (if applicable)
- likely return on investment
- a review of financial inputs required (sources and forms of finance)
- projections of likely financial results (budgeting)
- projected profit targets, pricing strategies, margins
- profit, turnover, capital and equity targets
- risks and measures to manage or minimise risks
- working, fixed, debt and equity capital
- non-recurrent assets calculations
- projections may vary depending on the importance of such information and the stage in the life of the business
- monthly, quarterly or annual returns
- analysis of sales by product/service, identifying where they were sold and to whom
- estimates of profit and loss projections for each forward period
- cash flow estimates for each forward period
- resources required to implement the proposed marketing and production strategies (staff, materials, plant and equipment)

Financial resources may include:

- personal, financial institutions, trade/industry sources
- government sources eg. Federal and State governments which provide various forms of technical and financial assistance including direct cash grants, subsidies, tax concessions and professional and technical advice

Financial backers may include:

- owner, family and friends
- providers of venture capital
- banks or finance companies
- leasing and hire purchase financiers

Production/operations plan may include:

- options for production, delivery, technical and customer service and support
- means of supply and distribution
- operational targets and action plan may include short, medium or long term goals
- customer requirements, market expectations, budgetary constraints
- industrial relations climate and quality assurance considerations

Staffing requirements may include:

- owner/operator
- full-time, part-time staff, permanent, temporary or casual staff
- sub-contractors or external advisers/consultants

Specialist services may include:

- accountants
- lawyers and providers of legal advice
- government agencies
- industry/trade associations
- online gateways
- business brokers/business consultants

Relevant people may include:

- owner/operator, partners, financial backers
- family members
- clients
- suppliers
- franchise agency
- trade or industry associations
- regulatory bodies

Risk management strategies may include:

- security systems to provide physical security of premises, plant, equipment, goods and services
- security of intellectual property
- knowledge management
- breach of contract, product liability
- measures to manage risk including securing appropriate insurance to cover loss of earnings through sickness/accidents, drought, flood, fire, theft, professional indemnity

And must include:

- Occupational Health and Safety requirements

Contingency plan may include:

- disturbances to cash flow, supply and/or distribution
- sickness or personal considerations

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- The development of a business plan which provides for finance, marketing and provision of products/ services to facilitate the business goals and objectives
- Ability to identify and plan for Occupational Health and Safety, Duty of Care responsibilities (knowledge of relative legislation)

Underpinning Knowledge

- National, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- OHS responsibilities and procedures for identifying hazards relevant to business
- reasons for and benefits of business planning
- planning processes
- preparation of a business plan
- setting goals and objectives
- methods of evaluation
- types of business planning:- feasibility studies, strategic, operational, financial planning
- relevant industry codes of practice
- principles of risk management relevant to business planning

At this level the learner must demonstrate understanding of a broad knowledge base incorporating some theoretical concepts.

Underpinning Skills

- Literacy skills to enable interpretation of business information,
- Communication skills relevant to business performance
- Numeracy skills for data analysis
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

These may include:

- Computer equipment
- Business references such as relevant legislation and regulation relating to the business operation especially OHS requirements

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range of Variables
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the business services common competencies for the particular AQF level. Refer to the Key Competency Levels earlier in this unit

BSBSBM405A**Unit Descriptor****Monitor and manage business operations**

This unit is concerned with the operation of the business and with implementing the business plan. The strategies involve monitoring, managing and reviewing operational procedures. It is suitable for existing micro and small businesses or a department in a larger organisation.

Competency Field

Business Management Services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------------|--|
| 1. Develop operational strategies | <ul style="list-style-type: none"> 1.1 Action plan is developed to provide a clear and coherent direction in accordance with the <i>business goals and objectives</i> 1.2 Occupational Health and Safety and environmental issues are identified and strategies implemented to minimise risk factors 1.3 Strategies for using existing, new or emerging technologies are developed and implemented where practicable to optimise business performance 1.4 Performance measures, operational targets and quality assurance issues are developed to conform with the business plan 1.5 Structured approach to innovation, including the utilisation of existing, new or emerging technologies, is developed to respond to changing customer requirements |
| 2. Implement operational strategies | <ul style="list-style-type: none"> 2.1 Systems and key performance indicators/targets are implemented to monitor business performance and customer satisfaction 2.2 Systems to control stock, expenditure/cost, wastage/shrinkage and risks to health & safety are implemented in accordance with the business plan 2.3 Staffing requirements, where applicable, are maintained within budget to maximise productivity 2.4 The provision of goods/services is carried out in accordance with established <i>technical</i>, legal and ethical <i>standards</i> 2.5 The provision of goods/services meets time, cost and quality specifications in accordance with customer requirements 2.6 Quality procedures are applied to address product/service and customer requirements |

- | | |
|---------------------------------|---|
| 3. Monitor business performance | 3.1 The achievement of operational targets is regularly monitored/reviewed to ensure optimum business performance in accordance with the goals and objectives of the business plan
3.2 Systems and structures are reviewed, with a view to more effectively supporting business performance
3.3 Operating problems are investigated and analysed to establish causes, and changes implemented as required
3.4 Operational policies and procedures are changed to incorporate corrective action taken |
| 4. Maintain networks | 4.1 Relevant personal and professional networks identified and maintained to support business operation
4.2 Strategies developed for use of networks to assist in promoting the business and for monitoring changing business requirements |
| 5. Review business operations | 5.1 Business plan is reviewed and adjusted as required to maintain business viability in accordance with business goals and objectives
5.2 Proposed changes are clearly recorded to aid future planning and evaluation
5.3 Ongoing research into new business opportunities is undertaken and business goals and objectives adjusted as new business opportunities arise |

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	to deal with customers, suppliers and staff	3
Collecting analysing and organising information	to assist in business operation	3
Planning and organising activities	to support and enhance the business operation	3
Working with others and in teams	to build the business	3
Using mathematical ideas and techniques	to support the business operation	2
Solving problems	to reduce risk and enhance business opportunities	3
Using technology	to optimise business performance	1

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- national, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- relevant industry codes of practice

Operational strategies/procedures may be determined by:

- business premises (eg size, location, layout)
- purchase (sole or shared ownership) or leasing.
- premises, plant and equipment may be new or previously owned.
- requirements may be one-off requirements or recurrent requirements (such as equipment maintenance) specific to the nature of the business
- use of existing, new and emerging technologies including e-commerce
- plant and equipment , including OHS requirements
- physical and natural resources
- methods/techniques/technology
- management and administrative systems and procedures
- technology
- raw materials

Occupational Health and Safety and environmental issues must include:

- establishment and maintenance of procedures for identifying risks to health and safety
- establishment and maintenance of procedures for assessing and controlling risks
- controls may include instructions to workplace personnel concerning: site hazards and controls, material safety data sheets, use of personal protective equipment, vehicle access, signs and barricades, traffic control, outside contractors
- waste and by-products

Business goals and objectives may include:

- goals, objectives, plans, systems and processes
- short, medium or long term goals
- financial projections
- customer needs/marketing projections
- proposed size and scale of the business, market focus of the business
- lifestyle issues

- Business outputs may include:
- products
 - services
- Operational targets may include:
- internal targets which may relate to size, quality, quantity and diversity, wages to sales, sales to area/stock levels/stock turnover/average debtor payment periods and levels
 - external targets which may relate to market share and positioning and may involve exploring new markets, building national or international trade links
 - targets which may be short, medium or long term
 - staffing level and skills mix
- Technical standards may include:
- any current and generally agreed descriptions of what the product/service is, how it should be produced/delivered and the quality, safety, efficiency or other measures to determine the activity is done effectively
- Networks may include:
- personal contacts
 - professional associations
 - business/ industry association contacts
 - formal/ informal/ individual/ group/ organisational contacts
- And may assist in the provisions of information on:
- business trends
 - changes in business environment
 - client requirements
 - technical support
 - financial advice

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- ability to develop strategies to successfully manage the operation of the business by interpreting information and
- making appropriate adjustments to the business operations as required

Underpinning Knowledge

- National, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- OHS responsibilities and procedures for managing hazards
- technical or specialist skills relevant to the business operation
- relevant industry codes of practice
- identification of relevant performance measures
- quality assurance principles and methods
- role of innovation
- principles of risk management relevant to the business, including risk assessment
- relevant marketing, sales and financial concepts
- methods for implementing operation and revenue control systems
- systems to manage staff, control stock, expenditure, services and customer service
- methods for monitoring performance and implementing improvements
- methods for developing and maintaining networks

At this level the learner must demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas.

Underpinning Skills

- literacy skills to interpret legal requirements, company policies and procedures
- communication skills including questioning, clarifying, reporting
- numeracy skills for performance information and financial control
- technical skills as relevant to the business
- ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations.

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range of Variables
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the business services common competencies for the particular AQF level. Refer to the Key Competency Levels earlier in this unit

BSBSBM406A**Unit Descriptor****Manage finances**

This unit involves the implementation, monitoring and review of strategies for the ongoing management of finance. It also includes day-to-day financial management of the business. It is suitable for existing micro and small businesses or a department in a larger organisation.

Competency Field

Business Management Services

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|-------------------------------|---|
| 1. Maintain financial records | <p>1.1 <i>Financial information</i> requirements are identified and <i>specialist services</i> obtained, as required, to profitably operate and extend the business in accordance with the business plan</p> <p>1.2 Financial information records are identified to meet the needs of the business in accordance with legal requirements</p> <p>1.3 <i>Relevant accounting</i> procedures maintained according to legal requirements and/or specialist services sought as required</p> <p>1.4 Administration and financial record keeping procedures are developed and documented in accordance with legal requirements</p> |
| 2. Implement financial plan | <p>2.1 Financial budgets/projections, including cash flow estimates, are produced as required for each forward period, and distributed to <i>relevant people</i> in accordance with legal requirements</p> <p>2.2 Business capital is negotiated/ secured/ managed to best enable implementation of the business plan and meet the requirements of <i>financing bodies</i></p> <p>2.3 Taxation records are maintained and reporting requirements complied with</p> <p>2.4 Strategies to enable adequate financial provision for taxation developed and maintained in accordance with legal requirements</p> <p>2.5 Client <i>credit policies</i> including contingencies for debtors in default are developed, monitored and maintained to maximise cash flow</p> <p>2.6 Key performance indicators are selected to enable ongoing monitoring of financial performance</p> <p>2.7 Financial procedures are recorded and communicated to relevant people to facilitate implementation of the business plan</p> |

3. Monitor financial performance
- 3.1 Financial performance targets are regularly monitored and reported and data is gathered to establish the extent to which the financial plan has been met
 - 3.2 Marketing and operational strategies are monitored for their effects on the financial plan
 - 3.3 Financial ratios are calculated and evaluated according to own/industry benchmarks
 - 3.4 Financial plan is assessed to determine whether variations or alternative plans are indicated and changed as required
 - 3.5 Appropriate action is taken to ensure the achievement of profit and return to enable business operation in accordance with the business plan and legal requirements

KEY COMPETENCIES

NB: These levels do not relate to the Australian Qualifications Framework. They relate to the seven areas of generic competency that underpin effective workplace practices.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	to obtain and convey financial information	2
Collecting analysing and organising information	to acquire and manage finances	3
Planning and organising activities	to comply with legal requirements and manage finances	2
Working with others and in teams	to obtain financial information	2
Using mathematical ideas and techniques	to plan and maintain finances	2
Solving problems	to maximise business financial viability	3
Using technology	to optimise business performance	3

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Legislation, codes and national standards relevant to the workplace which may include:

- award and enterprise agreements and relevant industrial instruments
- national, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- relevant industry codes of practice

Financial information may include:

- financial budgets
- business capital
- cash flow forecasts
- statements/forecasts
- bookkeeping/accounting/stock/job costing records
- asset registers
- profit and loss statements
- balance sheets
- payroll records, superannuation entitlements
- accrual of staff leave/entitlements
- taxation returns including GST
- business activity statements
- ratios for profitability, liquidity/efficiency/financial structure
- risk management
- financial indicators may be short, medium and/or long term
- asset management strategies which may include:
 - owning, leasing, sharing, syndicating
 - maintaining and deploying assets

Relevant accounting procedures may include:

- accrual/cash
- single entry/double entry
- manual/computerised

Specialist services may include:

- accountants
- lawyers and providers of legal advice
- government agencies
- industry/trade associations
- online gateways
- business brokers/business consultants

Relevant people may include:

- owner/operator
- partners
- financial backers
- family members
- franchise agency
- trade or industry associations
- regulatory bodies

Legal requirements may include:

- contractual arrangements (eg partnership agreements, trust deeds)
- corporations law
- industrial law (for payroll records)
- taxation law

Financial bodies may include:

- financiers/banks/lending institutions
- shareholders/partners/owners

Credit policies may include:

- debt collection
- trading terms
- credit limits
- payment options
- credit references

Financial ratios may include:

- Gross profit percentage
- Net profit percentage
- Expense percentages
- Stockturn rates
- Staff productivity measures
- Return on investment/Return on total assets
- Current ratio
- Liquid ratio
- Days stock on hand
- Days debtors outstanding
- Proprietary/debt ratio

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence

- Ability to develop, implement and review strategies for the ongoing management of finance and
- To maintain day-to-day financial management of the business as well as implementation of broad financial strategies.

Underpinning Knowledge

- National, State/Territory and Local Government legislative requirements affecting business operation, especially in regard to Occupational Health and Safety and environmental issues, EEO, industrial relations and anti-discrimination
- Financial decision making relevant to the business
- Basic knowledge of specific tax requirements relevant to the individual industry
- Legal obligations for record keeping
- Processing financial transactions
- Basic accounting principles (single entry/double entry)
- Purpose of financial reports
- Financial ratios
- Interpretation of comparative profit and loss statements
- Interpretation of comparative balance sheets
- Preparation and interpretation of budget/actual reports
- Stock records/stock control relevant to the business
- Benchmarking
- Methods and relative costs of obtaining finance

At this level the learner must demonstrate understanding of a broad knowledge base incorporating some theoretical concepts.

Underpinning Skills

- Literacy skills to interpret legal requirements, company policies and procedures
- Communication including reporting
- Numeracy skills to undertake financial calculations
- Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities

Resource Implications

The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Consistency of Performance

In order to achieve consistency of performance, evidence should be collected over a set period of time which is sufficient to include dealings with an appropriate range and variety of situations

Context/s of Assessment

- Competency is demonstrated by performance of all stated criteria, including paying particular attention to the critical aspects and the knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statement
- Assessment must take account of the endorsed assessment guidelines in the Business Services Training Package
- Assessment of performance requirements in this unit should be undertaken in an actual workplace or simulated environment
- Assessment should reinforce the integration of the key competencies and the business services common competencies for the particular AQF level. Refer to the Key Competency Levels earlier in this unit

CHCCS405A**Work effectively with culturally diverse clients and co-workers****Unit Descriptor**

This unit deals with the cultural awareness required for effective communication and cooperation with persons of diverse cultures.

Unit Sector

No sector assigned

ELEMENT**PERFORMANCE CRITERIA**

- | | |
|---|---|
| 1. Apply an awareness of culture as a factor in all human behaviour | 1.1 Work practices followed are culturally appropriate
1.2 Work practices followed create a culturally and psychologically safe environment for all persons
1.3 Work practices are reviewed and modified in consultation with persons from diverse cultural backgrounds |
| 2. Contribute to the development of relationships based on cultural diversity | 2.1 Respect for cultural diversity is demonstrated in all communication and interactions with clients, colleagues and customers
2.2 Specific strategies are used to eliminate bias and discrimination in dealing with clients and co-workers |
| 3. Communicate effectively with culturally diverse persons | 3.1 Respect for cultural diversity is demonstrated in all communication with clients, their families staff, customers and others
3.2 Communication is used constructively to develop and maintain effective relationships, mutual trust and confidence
3.3 Where language barriers exist, efforts are made to communicate in the most effective way possible
3.4 Assistance is sought from interpreters or other persons as required |
| 4. Resolve cross-cultural misunderstandings | 4.1 Issues that may cause conflict are identified
4.2 If difficulties or misunderstandings occur, cultural differences are considered
4.3 Effort is made to sensitively resolve differences, taking account of cultural considerations
4.4 Difficulties are addressed with appropriate people and assistance sought when required |

RANGE STATEMENT

Work practices may relate to:

- Dealing with persons of diverse race, ethnicity, class, ability, sexual preference and age
- Compliance with duty of care policies of the organisation
- Collection and provision of information
- Communication
- Provision of assistance
- Contact with families and carers
- Physical contact
- Care of deceased persons
- Handling personal belongings
- Provision of food services

Work practices that are culturally appropriate would be non-discriminatory and free of bias, stereotyping, racism and prejudice:

Cultural diversity may include:

- Ethnicity
- Race
- Language
- Cultural norms and values
- Religion
- Beliefs and customs
- Kinship and family structure and relationships
- Personal history and experience, which may have been traumatic
- Gender and gender relationships
- Age
- Disability
- Sexuality
- Special needs

Communication may be:

- Verbal
- Appropriate gestures and facial and physical expressions
- Posture
- Written
- Signage
- Through an interpreter or other person

Strategies to eliminate bias and discrimination may include:

- Cross cultural work teams
- Cross cultural employee representation on committees
- Workplace free of culturally insensitive literature, posters, signage
- inclusion in decision-making

EVIDENCE GUIDE

Critical aspects of assessment:

- Demonstration of respect and inclusiveness of culturally diverse people in all work practices
- Effective communication demonstrated with culturally diverse persons
- Effective use of strategies to eliminate discrimination and bias in the workplace

Essential knowledge:

- Recognition of cultural diversity in Australian society with many individuals living in many cultures
- Recognition of cultural influences and changing cultural practices in Australia and its impact on diverse communities that make up Australian society
- Knowledge of one's own cultural conceptions and pre-conceptions and perspective of diverse cultures
- Recognition of impact of cultural practices and experiences on personal behaviour, interpersonal relationships, perception and social expectations of others
- Recognition of culture as a dynamic social phenomenon.
- Recognition of culture as a range of social practices and beliefs evolving over time
- Recognition that the word 'normal' is a value-laden, excluding concept that often precludes acknowledgment of the diversity of people, their life experiences and situations
- Recognition of the unique way individuals may experience a culture and respond to past experiences
- Knowledge of the principles of equal employment opportunity, sex, race, disability, anti-discrimination and similar legislation and the implications for work and social practices
- Knowledge of availability of resources and assistance within and external to the organisation in relation to cultural diversity issues
- Knowledge of the role and use of language and cultural interpreters

Essential skills:

- Ability to employ culturally respectful practices
- Ability to sensitively and respectfully communicate with persons of diverse backgrounds and cultures
- Ability to respectfully and sensitively respond to cultural beliefs and practices that may cause harm
- Ability to form effective workplace relationships with co-workers and colleagues of diverse backgrounds and culture
- Ability to participate in identifying and implementing culturally safe work practices
- Ability to employ basic conflict resolution and negotiation skills

Relationship with other units:

This unit can be delivered and assessed independently, however holistic assessment practice with other general health services units of competency is encouraged.

Resource implications:

Resource requirements include all the relevant resources commonly provided in the health service setting. Specific tools may include:

- Relevant policies and procedures manuals, legislation and standards
- Organisation's mission statement, strategic and business plan
- Other documentation relevant to the work context such as:
- Organisational charts
- Organisations protocols for access to interpreter services

Method of assessment:

- Assessment may include:
- Observation of work performance
- Written tasks
- Interview and questioning
- Authenticated portfolio/log book
- Supporting statement of supervisor(s)
- Authenticated evidence of relevant work experience and/or formal/informal learning

Context of assessment:

- This unit is most appropriately assessed in the workplace or a simulated workplace environment under the normal range of work conditions.
- Assessment should be conducted on more than one occasion to cover a variety of circumstances to establish consistency.
- A diversity of assessment tasks is essential for holistic assessment.

MEM1010AA Unit Descriptor

Install pipework and pipework assemblies

Band: Specialisation band A

Unit Weight: 4

Unit Sector

Installation & commissioning

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--------------------------|--|
| 1. Plan the installation | <p>1.1 Quantity and type of pipework and pipework assemblies are selected according to specifications.</p> <p>1.1.1 Assessor guide: observe that - Appropriate specifications are obtained.</p> <p>1.1.2 Assessor guide: confirm that - Specifications are interpreted to select correct types and quantities.</p> <p>1.2 Appropriate sequence for the installation of pipework and pipework assemblies determined.</p> <p>1.2.1 Assessor guide: observe that - Sequence determined with regard to type of installation, site conditions, other structures present, work integrated with other site activities.</p> <p>1.2.2 Assessor guide: confirm that - Sequence can be determined for a range of situations, materials and conditions.</p> <p>1.3 Work site prepared for installation of pipework and pipework assemblies.</p> <p>1.3.1 Assessor guide: observe that - Site is prepared with due regard to OHS including site safety, clear working space, other materials/structures/personnel in vicinity, isolation of work site where required.</p> <p>1.3.2 Assessor guide: confirm that - Safety issues can be clearly identified and explained, adequate precautions determined and applied, awareness of other site factors that could be effected by the work.</p> |
|--------------------------|--|

- 2. Pipework and pipework assemblies prepared for assembly
 - 2.1 Pipework is cleaned in accordance with standard operating procedures.
 - 2.1.1 Assessor guide: observe that - All pipework and assemblies are cleaned to specifications safely, in accordance with standard operating procedures.
 - 2.1.2 Assessor guide: confirm that - The procedures for cleaning pipework and assemblies can be given. The solvents/cleaning materials to be used in cleaning the pipework and assemblies can be identified. The reasons for selecting the chosen solvent/cleaning material can be explained. The solvents/cleaning materials to be used on a variety of pipe materials and piping applications can be given. The precautions to be taken when using solvents/cleaning materials can be given.
 - 2.2 Pipework and assemblies are purged in accordance with standard operating procedures.
 - 2.2.1 Assessor guide: observe that - Pipework and assemblies are purged safely in accordance with standard operating procedures using appropriate tools, techniques and equipment.
 - 2.2.2 Assessor guide: confirm that - The reasons for purging pipework and assemblies can be explained. A variety of purging materials and their application can be given. The appropriate purging material for the given pipework and assemblies can be identified. The reasons for selecting the chosen purging material can be given. The precautions to be taken when purging pipework and assemblies can be given. The tools, techniques and equipment required to purge pipework and assemblies can be identified.
 - 2.3 Pipework and assemblies are capped/sealed.
 - 2.3.1 Assessor guide: observe that - Pipework and assemblies are capped/sealed to specification in accordance with standard operating procedures.
 - 2.3.2 Assessor guide: confirm that - The procedures for capping/sealing pipework and assemblies can be given. The methods of capping/sealing pipework and assemblies can be identified. The reasons for selecting the chosen capping/sealing method can be given. The reasons for capping/sealing pipework and assemblies can be explained.

- 3. Install pipework and assemblies
 - 3.1 Enclosures/hangers/support systems are installed without damage or distortion to the surrounding environment or other services.
 - 3.1.1 Assessor guide: observe that - Appropriate enclosures/hangers/support systems are installed in the correct location, in accordance with standard operating procedures without damage or distortion to the surrounding environment or other services.
 - 3.1.2 Assessor guide: confirm that - The location/layout of pipework and assemblies can be identified. A variety of enclosures/hangers/ support systems and their application can be given. The method of attachment of the enclosures/hangers/support systems to the surrounding environment can be identified. The precautions to be taken installing enclosures/hangers/support systems can be identified. The procedures to be followed when installing enclosures/hangers/support systems can be given.
 - 3.2 Pipework and assemblies are installed without damage or distortion to either pipework, assemblies or surrounding environment or other services.
 - 3.2.1 Assessor guide: observe that - Pipework and assemblies are installed in correct location in accordance with standard operating procedures without damage or distortion to pipework, assemblies, surrounding environment or other services.
 - 3.2.2 Assessor guide: confirm that - The procedures for installing pipework and assemblies can be given. The method of attachment of the pipework and assemblies to the enclosures/hangers/support systems can be identified. The precautions to be taken when installing pipework and assemblies can be explained.
 - 3.3 Leak test pipework in accordance with standard operating procedures.
 - 3.3.1 Assessor guide: observe that - The installed pipework and assemblies are leak tested in accordance with standard operating procedures using appropriate tools, techniques and equipment. The installed pipework and assemblies are free of leaks and conform to specifications.
 - 3.3.2 Assessor guide: confirm that - The procedures for leak testing pipework and assemblies can be given. The precautions to be taken when leak testing is being carried out can be explained. The tools, techniques and equipment necessary to carry out leak testing of pipework and assemblies can be identified. The operational specification of the system incorporating the installed pipework and assemblies can be identified.
 - 3.4 All ancillary devices and materials are installed to specification in accordance with standard operating

procedures.

- 3.4.1 Assessor guide: observe that - All required ancillary devices and materials are installed safely to specification in accordance with standard operating procedures.
- 3.4.2 Assessor guide: confirm that - All ancillary devices and materials to be installed in conjunction with the pipework and assemblies can be identified. The procedures for installing ancillary devices and materials can be given. The precautions to be taken when installing ancillary devices and materials can be given.

RANGE STATEMENT

Range Description

Work is undertaken autonomously or in a team environment using predetermined standards of safety, quality and workshop procedures. Work may be undertaken at the installation site given appropriate facilities and equipment are available or at a remote location. Pipework refers to pipes and tubes made from ferrous and non-ferrous metals and plastics. Piping accessories include flanges, joints, valves, unions, collars, etc. Ancillary components include insulation materials, valve control systems, etc. Enclosures include metal and PVC ducts, etc. Support systems include pipe/tube bundle support, ties, unistrut, trays, ladder racks, etc. Where pipework and assemblies are to be part of a system/process covered by legislative/regulatory requirements, the units relating to the appropriate welding certificates for the pipe material and application must be accessed. Where pipework is to be cut by mechanical or thermal methods, or welding processes used, the appropriate unit(s) should be accessed. Where the pipework is to be formed and shaped using mechanical and/or thermal techniques, Unit 5.10A (Undertake fabrication, forming, bending and shaping), should be accessed.

EVIDENCE GUIDE

Assessment context

This unit may be assessed on the job, off the job or a combination of on and off the job. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. Assessment should be conducted in an environment that the individual is familiar with.

Assessment conditions

The candidate will have access to: - All tools, equipment, materials and documentation required. The candidate will be permitted to refer to the following documents: - Any relevant workplace procedures. - Any relevant product and manufacturing specifications. - Any relevant codes, standards, manuals and reference materials. The candidate will be required to: - Orally, or by other methods of communication, answer questions put by the assessor. - Identify colleagues who can be approached for the collection of competency evidence where appropriate. - Present evidence of credit for any off-job training related to this unit. Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Critical aspects

This unit could be assessed in conjunction with other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the installation of pipework and accessories or other competencies requiring the exercise of the skills and knowledge covered by this unit.

Special notes

During assessment the individual will: - demonstrate safe working practices at all times; - communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment; - take responsibility for the quality of their own work; - plan tasks in all situations and review task requirements as appropriate; - perform all tasks in accordance with standard operating procedures; - perform all tasks to specification; - use accepted engineering techniques, practices, processes and workplace procedures. Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

Pre-Requisites**Pre-requisite units - Path1**

9.1A Draw and interpret sketch 9.2A Interpret technical drawing 18.1A Use hand tools

18.2A Use power tools/hand held operations

MEM109AA

Install refrigeration and air conditioning plant and equipment

Unit Descriptor

Band: Specialisation band A

Unit Sector

Unit Weight: 4

Installation & commissioning

ELEMENT**PERFORMANCE CRITERIA**

1. Inspect and prepare installation site
 - 1.1 Site checked for correct location, dimension and levels, etc. utilising appropriate measuring equipment.
 - 1.1.1 Assessor guide: observe that - All relevant drawings, specifications and instructions are obtained with workplace procedures. The site is checked for correct location, dimensions and where appropriate, levels, in accordance with standard operating procedures.
 - 1.1.2 Assessor guide: confirm that - The work to be undertaken can be identified. The location, dimensions and levels applicable to the work to be undertaken can be identified. Where appropriate, the technique/equipment to be used to check the site levels can be identified.
 - 1.2 Non-compliance with specification reported to appropriate authority.
 - 1.2.1 Assessor guide: observe that - Where appropriate, any non-compliance to specifications detected are reported to the appropriate authority in accordance with standard operating procedures.
 - 1.2.2 Assessor guide: confirm that - The procedures to be followed if the location, dimensions and/or levels of the site do not comply with the specifications can be given. The appropriate authority to which non-compliances are to be reported can be given. The specification of the refrigeration/air conditioning plant and equipment can be identified. The procedures for checking the refrigeration/air conditioning plant and equipment can be given.
 - 1.3 Alteration, correction undertaken with approval of appropriate authority.
 - 1.3.1 Assessor guide: observe that - Where appropriate, authorised alterations, corrections or adjustments are made to the site and/or refrigeration/air conditioning plant and equipment in accordance with standard operating procedures.
 - 1.3.2 Assessor guide: confirm that - Any alterations, corrections or adjustments to be made to the site can be identified. Any alterations, corrections or adjustments to be made to the refrigeration/air conditioning plant and equipment can be identified. The appropriate authority to approve alterations, corrections or adjustments to the site and/or structure can be identified. Approval for any alterations, corrections or adjustments to be made has been received from the appropriate authority.
 - 1.4 All surfaces, materials and components prepared for use.
 - 1.4.1 Assessor guide: observe that - Where appropriate, surfaces, materials and/or components are prepared or use in accordance with specifications

- and standard operating procedures.
- 1.4.2 Assessor guide: confirm that - The materials and components to be used in the installation of the refrigeration/air conditioning plant and equipment can be identified. Any preparation of surfaces required prior to commencing the installation of the refrigeration/air conditioning plant and equipment can be identified.

- 2. Install refrigeration/air conditioning plant and equipment
 - 2.1 All work carried out safely and in accordance with site procedures and to Australian Standards.
 - 2.1.1 Assessor guide: observe that - All work is carried out safely to specification and in accordance with all relevant codes, standards and standard operating procedures.
 - 2.1.2 Assessor guide: confirm that - The safety procedures to be followed while undertaking the work can be identified. All safety equipment and personal protective clothing to be used/worn while undertaking the work can be identified. All relevant codes and standards can be identified.
 - 2.2 Refrigeration/air conditioning plant and equipment/components are prepared for correct sequential installation.
 - 2.2.1 Assessor guide: observe that - All components of the refrigeration/air conditioning plant are prepared for correct sequential installation in accordance with standard operating procedures.
 - 2.2.2 Assessor guide: confirm that - The sequence in which components of the refrigeration/air conditioning plant are to be installed can be identified. The reasons for selecting the chosen installation sequence can be explained.
 - 2.3 Refrigeration/air conditioning plant and equipment/components are installed in conformance with manufacturers' and site specification.
 - 2.3.1 Assessor guide: observe that - All components of the refrigeration/air conditioning plant are installed and fixed in conformance to specifications and in accordance with standard operating procedures.
 - 2.3.2 Assessor guide: confirm that - The methods of fixing/fastening the components of the refrigeration/air conditioning plant can be identified. The methods of lifting/moving the components of the refrigeration/air conditioning plant can be identified. The methods of locating/holding the components of the refrigeration/air conditioning plant prior to fixing/fastening can be identified. The reasons for selecting the chosen methods of lifting/moving and locating/holding the components of the refrigeration/air conditioning plant can be given.
 - 2.4 Routine modifications/alterations of the refrigeration/air conditioning plant and equipment are undertaken to standard operating procedures where required.
 - 2.4.1 Assessor guide: observe that - The refrigeration/air conditioning plant and equipment is checked for conformance to specifications in accordance with standard operating procedures. Where appropriate, the approved modifications/alterations are made to the refrigeration/air conditioning plant and equipment in accordance with specifications and standard operating procedures.

- 2.4.2 Assessor guide: confirm that - The procedures to be followed if the refrigeration/air conditioning plant does not comply with the specifications can be identified. The authority to whom non-conformances are to be reported can be identified. The procedures for checking refrigeration/air conditioning plant and equipment for conformance to specifications can be given. Where appropriate, modifications/alterations to be made to bring the refrigeration/air conditioning plant and equipment into specification can be identified. The appropriate authority to approve modifications/alterations to the refrigeration/air conditioning plant and equipment can be identified. Approval for any modifications/alterations to be made has been received from the appropriate authority.
- 2.5 Refrigeration/air conditioning plant and equipment levelled, aligned, coupled and connected in accordance with specifications.
- 2.5.1 Assessor guide: observe that - Where appropriate, the refrigeration/air conditioning plant and equipment is levelled, aligned, coupled and connected to specification in accordance with manufacturers'/standard operating procedures. Where appropriate, electrical connections are scheduled with the appropriate person(s) in accordance with standard operating procedures. All necessary permits and clearances associated with the connection of services to the refrigeration/air conditioning plant and equipment are obtained in accordance with the relevant legislation and regulations.
- 2.5.2 Assessor guide: confirm that - All connections and couplings to be made to the refrigeration/air conditioning plant and equipment can be identified. The levelling and alignment requirements of the refrigeration/air conditioning plant and equipment can be identified. Where appropriate, the person(s) responsible for making electrical connections can be identified. All services to be connected to the refrigeration/air conditioning plant and equipment can be identified. All state/territory regulations and legislation relating to the services to be connected can be identified.
- 2.6 The refrigeration system is charged with refrigerant and lubricant in accordance with standard operating procedures.
- 2.6.1 Assessor guide: observe that - The refrigeration system is charged with the correct refrigerant, to specifications in accordance with standard operating procedures. The refrigeration system is checked for leaks using appropriate tools, techniques and equipment in accordance with

- standard operating procedures.
- 2.6.2 Assessor guide: confirm that - The procedures for charging refrigeration systems with refrigerant and lubricants can be given. The procedures for checking refrigeration systems for leaks can be given. The appropriate refrigerant and lubricant can be identified.
- 2.7 Site cleaned and cleared of all debris and left in a safe state.
- 2.7.1 Assessor guide: observe that - The installation site is cleared of all debris, cleaned and left in a safe state in accordance with occupational health and safety requirements and standard operating procedures.
- 2.7.2 Assessor guide: confirm that - The requirements for cleaning and clearing the installation site can be identified. Where appropriate, the equipment required to clean and or clear the site can be identified.

- 3. Start up refrigeration/air conditioning plant and equipment
 - 3.1 The refrigeration/air conditioning plant and equipment is started up in accordance with standard operating procedures.
 - 3.1.1 Assessor guide: observe that - Pre-start checks are undertaken in accordance with standard operating procedures. The refrigeration/air conditioning plant and equipment is started up safely and correctly in accordance with standard operating procedures.
 - 3.1.2 Assessor guide: confirm that - The procedures for checking refrigeration/air conditioning plant and equipment prior to start-up can be given. The reasons for carrying out pre-start checks can be explained. The safety procedures to be followed when starting up refrigeration/air conditioning plant and equipment can be given. All appropriate safety equipment can be identified and its application given. The procedures for starting the refrigeration/air conditioning plant and equipment can be given. The consequences of not following prescribed start-up procedures can be explained.
 - 3.2 The refrigeration/air conditioning plant and equipment is operated, monitored and adjusted to specification.
 - 3.2.1 Assessor guide: observe that - The refrigeration/air conditioning plant and equipment is operated, monitored and adjusted to specification using appropriate tools, techniques and equipment in accordance with standard operating procedures.
 - 3.2.2 Assessor guide: confirm that - The procedures for operating the refrigeration/air conditioning plant and equipment can be given. The procedures, tools, techniques and equipment required to monitor the performance of the refrigeration/air conditioning plant and equipment can be identified. The procedures for adjusting the refrigeration/air conditioning plant and equipment to specification can be given.
 - 3.3 All reports, documentation completed correctly to required specifications.
 - 3.3.1 Assessor guide: observe that - All reports and documentation are completed correctly and in accordance with standard operating procedures.
 - 3.3.2 Assessor guide: confirm that - The reports and/or documentation to be completed before, during and after the installation and start-up of refrigeration/air conditioning plant and equipment can be identified.

RANGE STATEMENT

Range Description

Work is undertaken autonomously or in a team environment using predetermined standards of safety, quality and workshop procedures. Refrigeration/air conditioning systems include commercial, industrial and transport applications - Refer to Field Definitions. Refrigeration/air conditioning components include, but not limited to compressors, evaporators, condensers, valves, controllers, fans, solenoids, sensors, thermostats, switches, recorders, etc. Controls may be mechanical, pneumatic, electric, electronic and may be sequenced/controlled by programmable controllers or computer systems. All work is to be undertaken in accordance with all relevant state or territory legislation and regulatory requirements. Modifications and alterations are of a routine/minor nature and do not require specification changes or technical recording. For example, the fitting of spacers, relocation of brackets, alignment of holes, etc. Work is undertaken utilising new or existing internal or external locations and sites. Footings, foundations, beds and frameworks are completed prior to installation. This unit should not be selected with Unit 10.6A (Install machine/plant), but appropriate air conditioning/refrigeration would still be required where Unit 10.6A (Install machine/plant) is substituted for Unit 10.9A (Install refrigeration and air conditioning plant and equipment). Where any extensive fitting, alignment is required, then Unit 18.6A (Dismantle/repair/replace/assemble and fit engineering components) and Unit 18.9A (Levelling and alignment of machines and engineering components) may also need to be considered. Where modifications involve electrical disconnection and reconnection, then Unit 18.49A (Disconnect/reconnect fixed wired equipment (which use up to 1000vAC/1500vDC)), should also be considered. If brazing/silver soldering skills are required, Unit 5.6A (Perform brazing and/or silver soldering) should also be accessed.

EVIDENCE GUIDE

Assessment context

This unit should be assessed on the job. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. Assessment should be conducted in an environment that the individual is familiar with.

Assessment conditions

The candidate will have access to: - All tools, equipment, materials and documentation required. The candidate will be permitted to refer to the following documents: - Any relevant workplace procedures. - Any relevant product and manufacturing specifications. - Any relevant drawings, manuals, catalogues, codes, standards, regulations and reference material relevant to the work. The candidate will be required to: - Orally, or by other methods of communication, answer questions put by the assessor. - Identify colleagues who can be approached for the collection of competency evidence where appropriate. - Present evidence of credit for any off-job training related to this unit. Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Critical aspects

This unit could be assessed in conjunction with other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the installation of refrigeration/air conditioning plant and equipment or other competencies requiring the exercise of the skills and knowledge covered by this unit.

Special notes

During assessment, the individual will: - demonstrate safe working practices at all times; - communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment; - take responsibility for their own work; - plan tasks in all situations and review task requirements as appropriate; - perform all tasks in accordance with standard operating procedures; - perform all tasks to specification; - use accepted engineering techniques, practices, processes and workplace procedures. Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.

Pre-Requisites**Pre-requisite units - Path1**

2.5C11 Measure with graduated devices 9.1A Draw and interpret sketch 9.2A Interpret technical drawing

10.10A Install pipework and pipework assemblies 18.1A Use hand tools 18.2A Use power tools/hand held operations

18.55A Dismantle, replace and assemble engineering 18.86A Test, evacuate and charge refrigeration systems

components

MEM1886AA

Test, evacuate and charge refrigeration systems

Unit Descriptor

Band: Specialisation band A

Unit Sector

Unit Weight: 4

Maintenance & diagnostics

ELEMENT

PERFORMANCE CRITERIA

1. Assess refrigeration system operation
 - 1.1 Refrigeration system operating principles and terminology understood.
 - 1.1.1 Assessor guide: observe that -
 - 1.1.2 Assessor guide: confirm that - The operating principles of refrigeration systems can be explained. The range of refrigerants available for use in refrigeration systems can be identified. The characteristics and properties of each type of refrigerant can be given. The safety precautions to be taken when handling or working with refrigerants can be given. The methods of identifying stored refrigerants can be given. The methods of identifying the type of refrigerant used in refrigeration systems can be described.
 - 1.2 All relevant information is obtained and correctly interpreted prior to the commencement of work on the refrigeration system.
 - 1.2.1 Assessor guide: observe that - All relevant drawings, instructions, specifications, procedures, codes and regulations are obtained in accordance with workplace procedures.
 - 1.2.2 Assessor guide: confirm that - The correct refrigerant for the given system can be identified. The precautions to be taken when handling or working with the refrigerant can be given. The relevant codes and regulations applying to the given refrigeration system can be identified. The operating specifications of the refrigeration system can be identified.
 - 1.3 Refrigeration system checks are undertaken safely in accordance with standard operating procedures, relevant codes and regulations.
 - 1.3.1 Assessor guide: observe that - Refrigeration system is checked safely in accordance with standard operating procedures, relevant codes and regulations.
 - 1.3.2 Assessor guide: confirm that - The procedures for testing/checking refrigeration systems can be given. The precautions to be taken when checking refrigeration systems can be identified.
 - 1.4 Pressures and temperatures correctly determined and recorded.
 - 1.4.1 Assessor guide: observe that - Pressures and temperatures are correctly determined and recorded in accordance with standard operating procedures.
 - 1.4.2 Assessor guide: confirm that - The tests to be undertaken can be identified. The equipment and techniques to be used to determine pressures and temperatures can be identified. The procedures for recording refrigeration system test results can be

- given.
- 1.5 Faults are correctly isolated to component level and appropriate corrective action determined.
 - 1.5.1 Assessor guide: observe that - The refrigeration system components are checked for correct operation in accordance with standard operating procedures.
 - 1.5.2 Assessor guide: confirm that - The specifications of the refrigeration system components can be identified. Faulty components can be identified. The appropriate corrective action can be identified. The reasons for proposing the identified corrective action can be given.
 - 1.6 The refrigeration system is checked for leaks.
 - 1.6.1 Assessor guide: observe that - The refrigeration system is checked for leaks safely using appropriate tools, techniques and equipment in accordance with standard operating procedures.
 - 1.6.2 Assessor guide: confirm that - The procedures for checking refrigeration systems for leaks can be given. The types of leak detection equipment/techniques and their applications can be given. The method(s) of leak detection to be used for a given refrigeration system can be identified. The reasons for selecting the chosen method(s) can be explained. The safety precautions to be taken when leak testing refrigeration systems can be identified.
 - 1.7 The refrigeration system is checked for contamination.
 - 1.7.1 Assessor guide: observe that - The refrigeration system is checked for contamination in accordance with standard operating procedures.
 - 1.7.2 Assessor guide: confirm that - The causes of contamination in refrigeration systems can be identified. The procedures, tools and equipment to be used to clean up contaminated systems can be identified. The effects of contaminants on refrigeration system performance can be explained.

- 2. Reclaim refrigerant and system evacuation
 - 2.1 The refrigeration system is evacuated in accordance with standard operating procedures, codes and regulations.
 - 2.1.1 Assessor guide: observe that - The appropriate tools, techniques and equipment are used to evacuate the refrigeration system in accordance with standard operating procedures, codes and regulations.
 - 2.1.2 Assessor guide: confirm that - The procedures for evacuating refrigeration systems can be identified. The tools, techniques and equipment required to carry out evacuation procedures can be identified. The appropriate evacuation procedure for a given refrigeration system can be identified. The reasons for selecting the chosen evacuation procedure can be explained.
 - 2.2 The refrigerant evacuated from the refrigeration system is contained/disposed of in accordance with the relevant codes and regulations.
 - 2.2.1 Assessor guide: observe that - The evacuated refrigerant is contained/disposed of in accordance with standard operating procedures and the relevant codes and regulations. The quantities of refrigerant reclaimed from refrigeration systems are recorded/reported in accordance with standard operating procedures, codes and regulations. Where appropriate, the quantities of any refrigerant released into the atmosphere are recorded/reported in accordance with standard operating procedures, codes and regulations.
 - 2.2.2 Assessor guide: confirm that - The reasons for containing reclaimed refrigerant can be explained. The procedures for storing/disposing of reclaimed refrigerant can be given. The procedures for recording/reporting quantities of refrigerant reclaimed from refrigeration systems can be given. The procedures for recording/reporting quantities of refrigerant released into the atmosphere can be given. The consequences of releasing quantities of refrigerant into the atmosphere can be given.

3. Charge the refrigeration system
- 3.1 The refrigeration system is charged with the correct refrigerant in accordance with standard operating procedures.
- 3.1.1 Assessor guide: observe that - The refrigeration system is safely charged with the correct refrigerant in accordance with standard operating procedures and all relevant legislative and regulatory requirements.
- 3.1.2 Assessor guide: confirm that - The procedures for charging refrigeration systems can be given. The correct refrigerant for a range of given applications can be identified. The tools, techniques and equipment required to charge a refrigeration system with refrigerant can be given. The precautions to be taken when charging refrigeration systems with refrigerant can be given.
- 3.2 The appropriate lubricating oil is added to the refrigeration system in accordance with standard operating procedures.
- 3.2.1 Assessor guide: observe that - The correct lubricating oil for the given application is added to the refrigeration system in accordance with standard operating procedures and all relevant legislation and regulations.
- 3.2.2 Assessor guide: confirm that - The procedures for adding lubricating oil to refrigeration systems can be given. The properties of refrigeration oil can be identified. The appropriate refrigeration oil for a range of given applications can be identified. The reasons for selecting the chosen refrigeration oil can be explained. The function of the refrigeration oil in the refrigeration system can be explained.
- 3.3 The refrigeration system is checked for leaks.
- 3.3.1 Assessor guide: observe that - The refrigeration system is checked for leaks safely, using appropriate tools, techniques and equipment in accordance with standard operating procedures.
- 3.3.2 Assessor guide: confirm that - The procedures for checking refrigeration systems for leaks can be given.

RANGE STATEMENT

Range Description

Work is undertaken autonomously or in a team environment using predetermined standards of safety, quality and workshop procedures. Refrigeration systems may be associated with refrigeration and air conditioning applications including commercial, industrial and transport. All work is to be undertaken in accordance with all relevant state or territory legislation and regulatory requirements. Refrigerants include CFCs, HFCs, ammonia, etc.

EVIDENCE GUIDE

Assessment context	This unit may be assessed on the job, off the job, or a combination of on and off the job. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. Assessment should be conducted in an environment that the individual is familiar with.
Assessment conditions	The candidate will have access to: - All tools, equipment, materials and documentation required. The candidate will be permitted to refer to the following documents: - Any relevant workplace procedures. - Any relevant product and manufacturing specifications. - Any relevant data sheets, catalogues, circuit diagrams and engineering drawings. The candidate will be required to: - Orally, or by methods of communication, answer questions put by the assessor. - Identify colleagues who can be approached for the collection of competency evidence where appropriate. - Present evidence of credit for any off-job training related to this unit. Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.
Critical aspects	This unit could be assessed in conjunction with other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the testing, evacuating and charging of refrigeration systems or other competencies requiring the exercise of the skills and knowledge covered by this unit.
Special notes	During assessment, the individual will: - demonstrate safe working practices at all times; - communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment; - take responsibility for the quality of their own work; - plan tasks in all situations and review task requirements as appropriate; - perform all tasks in accordance with standard operating procedures; - perform all tasks to specification; - use accepted engineering techniques, practices, processes and workplace procedures. Tasks involved will be completed within reasonable timeframes relating to typical workplace activities.
Pre-Requisites	Pre-requisite units - Path1 2.5C11 Measure with graduated devices 9.2A Interpret technical drawing 18.1A Use hand tools 18.2A Use power tools/hand held operations 18.55A Dismantle, replace and assemble engineering components

MEM549AA

Unit Descriptor

Perform routine gas tungsten arc welding

This unit covers the competencies required for identifying welding requirements from instructions, preparing the materials and carrying out routine GTAW . This unit applies in a maintenance or manufacturing environment where the welding is not required to meet the Australian Standard 1554 General Purpose. The materials used would typically be low carbon and mild steels.

Unit Sector No sector assigned

ELEMENT

PERFORMANCE CRITERIA

- | | |
|----------------------------------|---|
| 1. Identify weld requirements | <ul style="list-style-type: none"> 1.1 Weld requirements are identified from job instructions. 1.2 Assessor to observe appropriate instructions, specifications and drawings are obtained and weld requirements identified in accordance with work site procedures. 1.3 Assessor to confirm the weld requirements for performing routine GTAW can be given. 1.4 Location of welds are identified in accordance with standard operating procedures and job specifications. 1.5 Assessor to observe location of required weld/s identified for given tasks. 1.6 Assessor to confirm location of weld can be determined from standard operating procedures and job specifications |
| 2. Prepare materials for welding | <ul style="list-style-type: none"> 2.1 Materials are cleaned and prepared ready for welding. 2.2 Assessor to observe the materials to be welded are cleaned and prepared using appropriate tools and techniques. 2.3 Assessor to confirm the materials preparation required prior to welding can be identified. The tools and techniques appropriate to the preparation of materials to be welded can be identified. |
| 3. Prepare equipment for welding | <ul style="list-style-type: none"> 3.1 Welding equipment is set up correctly. 3.2 Assessor to observe the welding leads, gas regulators and hoses are correctly attached. Clean and correct liner and contact tip selected. 3.3 Assessor to confirm different liners and tips can be given to suit typical situations. Machine controls and their functions can be identified and explained. 3.4 Settings and consumables are selected to suit application. 3.5 Assessor to observe correct gas flow rate is set. The welding machine is set for the electrode wire diameter to produce the weld required. The range of variables is appropriate for the weld required. Appropriate current and voltage range for the weld required are set. 3.6 Assessor to confirm different current & voltage settings, gas flow rates wire diameters and other variables can be given to suit typical situations. |

4. Perform routine welding using GTAW
- 4.1 Safe welding practices are applied.
 - 4.2 Assessor to observe all welds are performed in a safe manner with regard to the operator and other personnel. Precautions are taken to protect the welder and other personnel from hazards associated with welding process.
 - 4.3 Assessor to confirm safe welding practices and precautions can be given. Typical hazards can be identified.
 - 4.4 Materials are welded to job requirements.
 - 4.5 Assessor to observe welds are produced with a minimum number of major defects. Appropriate action taken to report defects. Cause of major defects identified and required adjustments to settings/ welding technique identified.
 - 4.6 Assessor to confirm major defects and their causes relating to GTAW can be given.
 - 4.7 Welds cleaned in accordance with standard operating procedures.
 - 4.8 Assessor to observe all welds are cleaned to specification. Standard operating procedures are followed, where applicable.
 - 4.9 Assessor to confirm the weld cleaning requirements can be identified. The appropriate tools/equipment for cleaning welds can be identified

KEY COMPETENCIES

Key Competency	Performance Level
Communicating ideas and information	-
Collecting analysing and organising information	-
Planning and organising activities	-
Working with others and in teams	-
Using mathematical ideas and techniques	-
Solving problems	-
Using technology	-

RANGE STATEMENT

Range Description

Routine GTAW in this unit is intended to apply in a manufacturing or maintenance environment where welding is not required to meet Australian Standards or other welding codes, Occupational Health and Safety regulations relating to certificated/coded welding and/or licensing requirements. Fillet and butt welds in all positions would typically be performed on low carbon/mild steels. Weld preparation would be minimal and generally restricted to cleaning, using files and grinders. In circumstances where welding is required to meet Australian Standard 1554 General Purpose or equivalent codes, Occupational Health and Safety regulations and/or licensing requirements Unit 5.19A (Weld using gas tungsten arc welding process) should be selected.

EVIDENCE GUIDE

Conditions

- The candidate will have access to: - All tools, equipment, materials and documentation required. The candidate will be permitted to refer to the following documents: - Any relevant workplace procedures. - Any relevant product and manufacturing specifications. - Any relevant codes, standards, manuals and reference manuals. The candidate will be required to: - Orally, or by other methods of communication, answer questions put by the assessor. - Identify colleagues who can be approached for the collection of competency evidence where appropriate. - Present evidence of credit for any off-job training related to this unit. Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Context

- This unit may be assessed on the job, off the job or a combination of both on and off the job. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

Critical Aspects

- This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with routine gas tungsten arc welding or other units requiring the exercise of the skills and knowledge covered by this unit. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Special Notes

- During assessment the individual will: - demonstrate safe working practices at all times; - communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment; - take responsibility for the quality of their own work; - plan tasks in all situations and review task requirements as appropriate; - perform all tasks in accordance with standard operating procedures; - perform all tasks to specification; - use accepted engineering techniques, practices, processes and workplace procedures. Tasks involved will be completed within reasonable time frames relating to typical workplace activities.

MEM550AA

Unit Descriptor

Perform routine gas metal arc welding

Band: Specialisation band A

Unit Weight: 2

Unit Sector

Fabrication

ELEMENT

PERFORMANCE CRITERIA

- | | |
|----------------------------------|---|
| 1. Identify weld requirements | <p>1.1 Weld requirements are identified from job instructions.</p> <p>1.1.1 Assessor guide: observe that - Appropriate instructions, specifications and drawings are obtained and weld requirements identified in accordance with work site procedures.</p> <p>1.1.2 Assessor guide: confirm that - The weld requirements for performing routine GMAW can be given.</p> <p>1.2 Location of welds are identified in accordance with standard operating procedures and job specifications.</p> <p>1.2.1 Assessor guide: observe that - Location of required weld/s identified for given tasks.</p> <p>1.2.2 Assessor guide: confirm that - Location of weld can be determined from standard operating procedures and job specifications.</p> |
| 2. Prepare materials for welding | <p>2.1 Materials are cleaned and prepared ready for welding.</p> <p>2.1.1 Assessor guide: observe that - The materials to be welded are cleaned and prepared using appropriate tools and techniques.</p> <p>2.1.2 Assessor guide: confirm that - The materials preparation required prior to welding can be identified. The tools and techniques appropriate to the preparation of materials to be welded can be identified.</p> |
| 3. Prepare equipment for welding | <p>3.1 Welding equipment is set up correctly.</p> <p>3.1.1 Assessor guide: observe that - The welding leads, gas regulators and hoses are correctly attached. Clean and correct liner and contact tip selected.</p> <p>3.1.2 Assessor guide: confirm that - Different liners and tips can be given to suit typical situations. Machine controls and their functions can be identified and explained.</p> <p>3.2 Settings and consumables are selected to suit</p> <p>3.2.1 Assessor guide: observe that - Correct gas flow rate is set. The welding machine is set for the electrode wire diameter to produce the weld required. The range of variables is appropriate for the weld required. Appropriate current and voltage range for the weld required are set.</p> <p>3.2.2 Assessor guide: confirm that - Different current & voltage settings, gas flow rates wire diameters and other variables can be given to suit typical situations.</p> |

4. Perform routine welding using GMAW
- 4.1 Safe welding practices are applied.
 - 4.1.1 Assessor guide: observe that - All welds are performed in a safe manner with regard to the operator and other personnel. Precautions are taken to protect the welder and other personnel from hazards associated with welding process.
 - 4.1.2 Assessor guide: confirm that - Safe welding practices and precautions can be given. Typical hazards can be identified.
 - 4.2 Materials are welded to job requirements.
 - 4.2.1 Assessor guide: observe that - Welds are produced with a minimum number of major defects. Appropriate action taken to report defects. Cause of major defects identified and required adjustments to settings/ welding technique identified.
 - 4.2.2 Assessor guide: confirm that - Major defects and their causes relating to GMAW can be given.
 - 4.3 Welds cleaned in accordance with standard operating procedures.
 - 4.3.1 Assessor guide: observe that - All welds are cleaned to specification. Standard operating procedures are followed, where applicable.
 - 4.3.2 Assessor guide: confirm that - The weld cleaning requirements can be identified. The appropriate tools/equipment for cleaning welds can be identified.

RANGE STATEMENT

Range Description

Routine GMAW in this unit is intended to apply in a manufacturing or maintenance environment where welding is not required to meet Australian Standards or other welding codes, Occupational Health and Safety regulations relating to certificated/coded welding and/or licensing requirements. Fillet and butt welds in all positions would typically be performed on low carbon/mild steels. Weld preparation would be minimal and generally restricted to cleaning, using files and grinders. In circumstances where welding is required to meet Australian Standard 1554 General Purpose or equivalent codes, Occupational Health and Safety regulations and/or licensing requirements Unit 5.17A (Weld using gas metal arc welding process) should be selected.

EVIDENCE GUIDE

Assessment context

This unit may be assessed on the job, off the job or a combination of both on and off the job. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

Assessment conditions

The candidate will have access to: - All tools, equipment, materials and documentation required. The candidate will be permitted to refer to the following documents: - Any relevant workplace procedures. - Any relevant product and manufacturing specifications. - Any relevant codes, standards, manuals and reference manuals. The candidate will be required to: - Orally, or by other methods of communication, answer questions put by the assessor. - Identify colleagues who can be approached for the collection of competency evidence where appropriate. - Present evidence of credit for any off-job training related to this unit. Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge.

Critical aspects

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with routine gas metal arc welding or other units requiring the exercise of the skills and knowledge covered by this unit. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Special notes

During assessment the individual will: - demonstrate safe working practices at all times; - communicate information about processes, events or tasks being undertaken to ensure a safe and efficient working environment; - take responsibility for the quality of their own work; - plan tasks in all situations and review task requirements as appropriate; - perform all tasks in accordance with standard operating procedures; - perform all tasks to specification; - use accepted engineering techniques, practices, processes and workplace procedures. Tasks involved will be completed within reasonable time frames relating to typical workplace activities.

RTE3605A

Unit Descriptor

Troubleshoot irrigation systems

This competency standard covers the process of troubleshooting faults and blockages in irrigation systems. It requires the ability to read and apply system specifications, technical manuals and supply/spare parts inventories, operate, maintain and repair irrigation systems, and record and report maintenance activities. Troubleshooting faults and blockages in irrigation systems requires knowledge of characteristics and operation of replaceable components of irrigation systems, system malfunctions and their likely causes, isolation procedures and OHS and environmental guidelines.

Unit Sector

No sector assigned

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--|--|
| 1. Locate and identify faulty components and blockages | <p>1.1 Irrigation system and component function is determined by reference to system specifications and technical manuals.</p> <p>1.2 Monitoring and maintenance records are checked and reviewed.</p> <p>1.3 Operational tests are carried out in accordance with system specifications, technical manuals and OHS requirements.</p> <p>1.4 Faulty components and blockages are identified and documented according to enterprise policy and procedures.</p> |
| 2. Shut down/isolate component | <p>2.1 Shut down sequence and isolation procedures are applied as required according to system specifications and technical manuals.</p> <p>2.2 Safe shut down or isolation is verified.</p> <p>2.3 Safety/security lock off devices and signage is installed according to enterprise policy and procedures.</p> |
| 3. Replace faulty components and clear blockages | <p>3.1 Access to faulty components and blockages is arranged.</p> <p>3.2 Faulty components are removed from the system, according to system specifications and technical manuals, and repaired or disposed of in an environmentally responsible way.</p> <p>3.3 Replaceable components are selected from manufacturers catalogues and procured using enterprise procedures.</p> <p>3.4 Replacement components are installed to meet system specifications according to technical manuals.</p> <p>3.5 Replace faulty components and clear blockages are carried out without unnecessary damage to surrounding site and structures.</p> <p>3.6 Blockages are cleared or blocked sections are replaced according to enterprise, environmental and OHS procedures.</p> |

RTE3605A Troubleshoot irrigation systems

4. Return system to normal operating status
- 4.1 Isolated or shut down components are returned to service.
 - 4.2 Operational tests are carried out according to system specifications, technical manuals and OHS requirements.
 - 4.3 System is returned to normal operational set up.
 - 4.4 Repair activities are reported and recorded according to enterprise policy and procedures

KEY COMPETENCIES

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the key competencies, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Order replaceable components from suppliers.	2
Collecting analysing and organising information	Collecting and assessing system performance data.	2
Planning and organising activities	Organising shut down and repair activities.	2
Working with others and in teams	Checking and reviewing monitoring and maintenance records completed by others.	2
Using mathematical ideas and techniques	Interpreting system performance data and purchasing parts within budget.	2
Solving problems	Identifying and replacing faulty components.	2
Using technology	Using computerised irrigation systems.	2

RANGE STATEMENT

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What irrigation systems might be relevant to this standard?

These may be pressurised irrigation systems such as micro-irrigation, spray irrigation or gravity fed irrigation systems.

Micro-irrigation systems include mains pressure, low pressure, below or above ground, sprays systems, drip emitter trickle, t-tape, mini-sprinklers, capillary, ebb and flow, and flood systems.

Spray irrigation systems include travelling irrigators (soft hose, hard hose boom type) centre pivot, linear move, powered side roll hand shift permanent (installed), and bike shift/easy shift.

Gravity fed irrigation systems include border check, contour irrigation, furrow irrigation, hillside flooding and basin irrigation. Border check systems may be either permanent or temporary earth, plastic or concrete devices for insertion in a drain for reticulating water, contour banks used to collect and distribute water along the perimeter of an irrigation plot, contour banks within a plot to collect/distribute water or larger scale systems to stop water exiting one area to another.

Irrigation systems may range from manual operation and monitoring to fully automated with computer control and monitoring.

What faulty components or system parts might need to be replaced?

These may vary according to brand and supplier and may include, but not be limited to, injectors, pumps, tensiometers, probe tubes, flow meter, pressure gauge, controllers, solenoid valves, wiring, quick coupling valves (QCV), computer and/or other scheduling devices, pipes, jets, micro jets, laterals, sprinklers, emitters, integrated dripline "thin wall", seals, outlets and gears.

What operational tests of the system may be conducted?

These may include pressures, flow rates, sprinkler performance, calculation of co-efficient of uniformity and distribution uniformity.

What might be the OHS requirements for maintenance activities?

Requirements may include systems and procedures for safe manual handling, outdoor work (including protection from solar radiation, dust and noise), selection, use and maintenance of relevant personal protective clothing and equipment, selection, care and safe use of hand tools and safe systems for the prevention of electrical injury.

What may be involved in gaining access to faulty components or blockages?

Gaining access may require specific approvals from property owners/managers and may involve excavation work.

How might faulty components be disposed of?

Disposal of faulty components must occur in an environmentally responsible way. For example, metal and plastic components may be recycled, returned to the manufacturer, or disposed of in accordance with enterprise procedures.

EVIDENCE GUIDE

What evidence is required to demonstrate competence for this standard as a whole?

Competence in troubleshooting faulty components and blockages in irrigation systems requires evidence that a person can locate, isolate and replace faulty components and blockages and return the system to normal operating status.

The skills and knowledge required to troubleshooting faulty components and blockages in irrigation systems must be transferable to a different work environment. For example, this could include different systems, components, enterprise procedures and access difficulties.

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

- identification, characteristics and operation of replaceable components of irrigation systems
- system malfunctions and their likely causes
- environmental impacts of irrigation, using water from any ground or underground source
- purchasing procedures
- isolation procedures
- enterprise policies and procedures
- irrigation OHS and environmental guidelines.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- read and apply system specifications, technical manuals and supply/spare parts inventories
- record and report maintenance activities
- identify adverse environmental impacts of irrigation activities and appropriate remedial action
- operate, maintain and repair irrigation systems
- implement and follow relevant enterprise OHS and environmental policies and procedures.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

Essential Assessment Information

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet**.

TAADEL404A

Unit Descriptor

Application of the Unit

Facilitate work-based learning

This unit specifies the outcomes required to use work effectively as a learning process.

Learning through work is an ongoing and everyday reality of being in work. However, the effectiveness of that learning can be shaped by interventions and actions that modify, direct and provide support to the workplace learner. This guided learning ensures a planned approach to learning through work activities, effective strategies to support the learning and appropriate monitoring and safeguards.

- This unit addresses the processes, skills and knowledge involved in using the work process and the work environment as the basis for learning in the workplace.
- Learning through work may contribute to an educational outcome, such as a qualification or Statement of Attainment; and/or a work outcome, such as learning how to use a new piece of equipment; and/or a personal outcome, such as extending an individual's self-esteem.
- Providing a guided approach to work-based learning is an essential component of any apprenticeship or traineeship arrangement and also has application in induction processes, change management processes and ongoing employee development.
- The competency specified in this unit is typically required by trainers/facilitators, teachers, workplace supervisors, team leaders, human resource or industrial relations managers, consultants and any employee responsible for guiding learning through work.

Unit Sector

No sector assigned

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---|--|
| 1. Establish an effective work environment for learning | <p>1.1 The <i>purpose or objectives of the work-based learning</i> are established and agreed with appropriate personnel</p> <p>1.2 The <i>areas of work</i> encompassed by the work-based learning are defined and documented</p> <p>1.3 <i>Work practices and routines</i> are analysed to determine their effectiveness in meeting the work-based learning objectives</p> <p>1.4 Changes are proposed to work practices, routines and the work environment to support more effective learning, where appropriate, and discussed with <i>relevant persons</i></p> <p>1.5 <i>Occupational health and safety (OHS)</i> and <i>industrial relations implications</i> of using work as the basis for learning are identified and addressed</p> |
|---|--|

- | | |
|---|--|
| 2. Develop a work-based learning pathway | <ul style="list-style-type: none"> 2.1 The documented work areas are analysed to determine an <i>effective work-based learning pathway</i> 2.2 <i>Organisational strategies</i> to support the work-based learning are proposed 2.3 <i>Any contractual requirements and responsibilities</i> for learning at work are addressed 2.4 Connections are made with the training and/or assessment organisation to integrate and monitor the <i>external learning activities</i> with the work-based learning pathway where relevant 2.5 The proposed work-based learning pathway is evaluated against <i>appropriate criteria</i> 2.6 Agreement is obtained from relevant personnel to implement the work-based learning pathway |
| 3. Implement the work-based learning pathway | <ul style="list-style-type: none"> 3.1 The <i>learners' profile and characteristics</i> are evaluated to determine <i>possible requirements for support</i> 3.2 The purposes/objectives for undertaking work-based learning and the processes involved are clearly explained to the learners 3.3 The introduction of workplace tasks, activities and processes is sequenced to reflect the agreed work-based learning pathway 3.4 Agreed organisational strategies are put into effect 3.5 Relations with other work personnel affected by the work-based learning pathway are managed to ensure effective implementation 3.6 <i>Appropriate communication and interpersonal skills</i> are used to develop a collaborative relationship with learners |
| 4. Monitor learning and address barriers to effective participation | <ul style="list-style-type: none"> 4.1 <i>Access and equity considerations</i> are addressed, where appropriate 4.2 The readiness of the worker to participate in and/or take on new tasks and responsibilities is effectively monitored 4.3 Work performances are observed and alternative approaches suggested where needed 4.4 Learners are encouraged to take responsibility for learning and to self-reflect 4.5 Techniques for learners to demonstrate transferability of skills and knowledge are developed 4.6 <i>OHS requirements</i> are monitored to ensure health, safety and welfare 4.7 <i>Feedback</i> is provided to learners about work performance and success is communicated and acknowledged |

5. Review the effectiveness of the work-based learning pathway
- 5.1 Work performance and learning achievement are documented and recorded in accordance with legal/organisational requirements
 - 5.2 Learners are encouraged to provide critical feedback on their learning experiences
 - 5.3 The effectiveness of the work-based pathway is evaluated against the objectives, processes and models used
 - 5.4 The effectiveness of any integration of work-based learning and external learning activities is assessed
 - 5.5 Improvements and changes to work-based practice are recommended in light of the review process

KEY COMPETENCIES

Key Competency	Example of Application	Performance Level
Communicating ideas and information	reporting issues that require attention providing feedback	3
Collecting analysing and organising information	monitoring individual needs analysing work for learning opportunities	3
Planning and organising activities	planning learning around work organising opportunities for learning around work processes	3
Working with others and in teams	redefining individual and/or team requirements around work-based learning briefing and monitoring the team	3
Using mathematical ideas and techniques	not applicable	-
Solving problems	matching work tasks to learning needs addressing workplace issues as appropriate	2
Using technology	using appropriate technology to communicate and to provide feedback	1

RANGE STATEMENT

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. The Range Statement establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions. The specific aspects which require elaboration are identified by the use of italics in the Performance Criteria.

The purpose or objectives of the work-based learning may include:

- introduction of new technology
- new product / service
- new organisational direction/workplace change
- new position or job roles
- addressing identified skills gap/deficit
- OHS requirements
- quality improvements
- competency achievement
- part of traineeship/apprenticeship

Appropriate personnel may include:

- workplace supervisor/frontline manager
- training/human resources/industrial relations manager
- trainer/facilitator/assessor
- learner
- training and/or assessment organisation personnel
- group training company personnel

Areas of work may include:

- work or job tasks
- work activities
- processes to carry out work
- use/operation of equipment to carry out work
- projects
- team-based or individual work

Work practices and routines may include:

- work schedules
- work timelines
- work performance expectations
- work organisation/organisational change
- work models/multi-skilling
- work structures and systems
- operational/organisational guidelines
- OHS guidelines, systems and safeguards
- work demarcations and industrial relations concerns
- English language, literacy and numeracy (LLN) requirements

Relevant persons may include:

- workplace supervisor/frontline manager
- training/human resources/industrial relations manager
- union representatives/delegates
- workers whose own jobs may be affected by the proposed changes

OHS implications may include:

- OHS legal obligations
- workplace OHS policies and procedures
- ensuring work practices, routines and proposed changes do not pose a risk to the learner and others

Industrial relations implications may include:

- work demarcations created through changes to work practices
- ensuring compliance with an award or enterprise bargaining agreement
- licensing requirements

An effective work-based learning pathway may include:

- identifying specific goals for work-based learning
- identifying job tasks or activities to be included in the learning process
- appropriate sequencing of job tasks/activities to reflect learner incremental development
- direct guidance and modelling from experienced co-workers and experts
- opportunities for practice

Organisational strategies may include:

- appropriate supervision during learning
- appropriate time to observe and talk to others in work
- use of co-workers to model or demonstrate tasks and activities or to teach technical terminology and language of the workplace
- use of internal work experts/mentors/coaches with whom the learner is comfortable
- sufficient time for practice
- job rotation

Contractual requirements and responsibilities may include:

- training plans under apprenticeships/traineeships
- Workplace English Language and Literacy (WELL) or other government funded training program requirements

External learning activities may include:

- external courses e.g. institution-based
- off-the-job components of apprenticeship/traineeship
- equipment supplier training
- online learning
- conferences/seminars/workshops
- self-directed learning

Appropriate criteria may include:

- breadth and depth
- inclusion of a range of routine and non-routine work tasks/activities
- appropriate sequencing of work tasks/activities
- sufficient learning and practice time
- capacity to address learning that underpins knowledge within the work tasks/activities
- identified relationship/synthesis with learning provided by other sources

Learners' profiles and characteristics may include:

- language, literacy and numeracy needs
- specific needs
- employment status
- past learning experiences
- work roles
- level of maturity
- culture

Possible requirements for support may include:

- referral to an external agency for assistance with language, literacy and numeracy
- use of interpreters
- mentor/coach
- peer support
- physical support needs
- other support mechanisms

Appropriate communication skills may include:

- using icebreakers as appropriate
- building rapport with the learner/s
- using effective verbal and body language
- demonstrating a capacity to communicate clearly to facilitate the individual/s learning
- using critical listening and questioning techniques
- giving constructive and supportive feedback
- accurately interpreting verbal messages
- assisting learners to paraphrase advice/instructions back to the trainer/facilitator
- providing clear and concrete options/advice
- using appropriate terminology and language of the industry/profession
- ensuring language, literacy and numeracy (LLN) used is appropriate to learner/s

Interpersonal skills may include:

- showing respect for the expertise and background of learner/s
- demonstrating sensitivity to diversity, disability, culture, gender and ethnic backgrounds
- modelling facilitation and learning behaviours
- engaging in two-way interaction
- encouraging the expression of diverse views and opinions
- negotiating complex discussions by establishing a supportive environment
- using language and concepts appropriate to cultural differences
- accurately interpreting non-verbal messages

Access and equity considerations may include:

- minimising physical barriers
- identifying and addressing direct and indirect barriers to learning
- building on learner strengths
- providing access to a range of resources and/or equipment
- making referrals to a range of relevant agencies

Techniques for learner/s to demonstrate transferability may include:

- problem solving
- situated learning
- hypothetical questioning
- opportunities for learner/s to demonstrate autonomy in learning
- opportunities for learner/s to apply the knowledge and skills in different contexts

OHS requirements may include:

- reporting procedures
- emergency procedures

Feedback may include:

- performance reviews
- formal or informal group or individual discussions

EVIDENCE GUIDE

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of assessment followed by identification of specific aspects of evidence that will need to be addressed in determining competency. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

Assessment must reflect the endorsed Assessment Guidelines of the TAA04 Training and Assessment Training Package.

To demonstrate competency against this unit candidates must be able to provide evidence that they have developed work-based learning pathways that integrate learning through work.

This includes identifying learning needs, analysing work practices, the environment and work tasks; organising and allocating work in a way that reflects the learning needs and provides effective learning opportunities, and monitoring the effectiveness of the selection of work-based learning pathway.

Required knowledge includes:

- work organisation systems, processes, practices within the organisation where work-based learning is taking place
- operational demands of the work and impact of changes on work roles
- organisational work culture including industrial relations environment
- systems for identifying skill needs, for example:
 - performance reviews
 - training needs analysis
 - identifying additional training needs of learners
- learning principles, for example:
 - learning and experience are connected for meaning
 - adults need to know why they are learning
 - adults can self-evaluate
 - adults learn in different ways
- individual facilitation techniques to support and guide learning
- change processes, for example:
 - how people work through change
 - behaviours associated with change
- introductory knowledge of different learning styles and how to encourage learning in each, for example:
 - visual learners
 - audio learners
 - kinaesthetic learners
 - theoretical learners
- relevant policy, legislation, codes of practice and national standards including Commonwealth and state/territory legislation, for example:
 - industrial awards
 - enterprise bargaining agreements
 - licensing requirements
 - industry/workplace requirements
 - duty of care under common law
 - information and confidentiality requirements
 - anti-discrimination including equal opportunity, racial vilification and disability discrimination

- workplace relations
- National Reporting System
- OHS relating to the work role, including:
 - hazards relating to the industry and specific workplace
 - reporting requirements for hazards and incidents
 - specific procedures for work tasks
 - safe use and maintenance of relevant equipment
 - emergency procedures
 - sources of OHS information
- organisational strategies that provide support to the workplace learning

Required skills and attributes include:

- communication skills to:
 - identify needs
 - communicate suggestions
 - give feedback constructively
 - ask open-ended questions to tease out required knowledge and information
 - evaluate learner profiles and characteristics
 - coach learners
- literacy skills to:
 - read and interpret organisational documents, legal documents and contracts
 - complete and maintain documentation
- monitor and manage work environment and individual dynamics, for example:
 - assess the climate of the group
 - facilitate employee acceptance
 - ensure each individual feels valued
- organisational skills to:
 - allocate and reorganise work
 - organise changes with relevant persons
 - provide guidance and feedback to individuals
- cognitive skills to:
 - set learning outcomes through work
 - interpret and analyse competency standards and/or other performance specifications to actual work processes
 - design a learning process through work

Products that could be used as evidence include:

- redesigned individual/group work plans
- documented individual work-based learning pathways
- training gap identification materials
- documented reviews of work-based learning pathways
- performance management feedback

Processes that could be used as evidence include:

- how learning needs were identified and why
- how learning opportunities were matched to work
- how work was organised/reorganised to reflect learning needs
- how learning was promoted

Resource implications for assessment include:

- work opportunities
- learning opportunities in work
- time to support learner needs e.g. organised time for learner to watch work and talk with work colleagues and trainer/facilitator and reflect on learning

The collection of quality evidence requires that:

- assessment must address the scope of this unit and reflect all components of the unit i.e. the Elements, Performance Criteria, Range Statement, Evidence Requirements and Key Competencies
- a range of appropriate assessment methods/evidence gathering techniques is used to determine competency
- evidence must be gathered in the workplace whenever possible. Where no workplace is available, a simulated workplace must be provided
- the evidence collected must relate to a number of performances assessed at different points in time and in a learning and assessment pathway these must be separated by further learning and practice
- assessment meets the rules of evidence
- a judgement of competency should only be made when the assessor is confident that the required outcomes of the unit have been achieved and that consistent performance has been demonstrated

Specific evidence requirements must include:

- a minimum of two examples of developing work-based learning pathways, that includes:
 - identifying needs for learning
 - analysing work practices, work environment and work activities
 - organising and allocating work in a way that reflects the learning needs and which provides effective learning opportunities through work processes

Integrated assessment means that:

- this unit can be assessed alone or as part of an integrated assessment activity involving other relevant units in the TAA04 Training and Assessment Training Package. Suggested units include but are not limited to:
 - TAADEL403A Facilitate individual learning
 - TAADES401A Use Training Packages to meet client needs.



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