APT Qualification

Certificate III in Permaculture 30868QLD

Course Information & Units of Competency – Amended Sept 2011

General Information

Copyright owner of the course

Permaculture International Limited

Copyright acknowledgement

Licensing and franchise

Contact the Copyright owner for information in relation to licensing arrangements:

Permaculture International Limited P. O. Box 500, St Ives, NSW 2075

OR email APT admin info@permaculture.com.au

Course accrediting body: Training and Employment Recognition Council (TERC)

AVETMISS information – refer to general accreditation document for details

Period of accreditation: *18/11/2009 to 17/11/2014 - 5 years*

NB for imported units please go to training.gov.au

Vocational or educational outcomes of the course

Certificate III in Permaculture will provide 'trade' equivalent skills training in permaculture where a person is able to operate in a skilled and independent manner. Outcomes include employment in permaculture, agriculture, horticulture or land management industries.

They will take responsibility for own outputs in work and learning and take limited responsibility for others. They will be able to apply a range of well developed permaculture skills and use theoretical knowledge to apply solutions to problems.

30868QLD Certificate III in Permaculture

Packaging to gain the qualification

Apart from the listed elective options, students may select up to three (3) elective units from national Training Packages so long as the selected units:

- *do not replicate other units undertaken as part of the current qualification*
- *align with other electives to make an appropriate job-related or enterprise-required set of skills and knowledge*
- *are taken from AQF levels 2,3 or 4*

Core	Complete 6 units in the Core Group including one of *QLD843DES07C or *QLD843DES08C. *(The other may be chosen as an Elective)*
Elective	Complete at least 9 units in the Elective Group of which at least 6 must be Accredited Permaculture Training units. *A unit taken from the Core Group cannot be repeated as an Elective.*
Total number of units of competency	**15 units**

Code	Unit of Competency	Pre-requisite	Nominal Hours
Core Group			
QLD843PPP01C	Research and communicate information on permaculture principles & practices	nil	40
QLD843IPA02B	Develop recommendations for integrated plant and animal systems	nil	40
QLD843IPA03C	Maintain integrated plant and animal systems	nil	40
*QLD843DES07C ***One** *as Core*	Establish a rural permaculture system	nil	60
*QLD843DES08C ***One** *as Core*	Establish an urban permaculture system	nil	60
QLD843IPA12B	Plan organic garden and orchard systems	nil	40
AHCWRK311A	Conduct site inspections	nil	80
		Nominal Hours	**360**
Elective units			
QLD843IPA04B	Carry out animal care, maintenance and treatment programs in a permaculture system	nil	40

QLD843IPA05B	Implement crop maintenance and harvesting programs for permaculture systems	nil	40
QLD843IPA06B	Use weedy plants in a permaculture system	nil	30
QLD843DES07C ***If not taken as a Core Unit***	Establish a rural permaculture system	nil	60
QLD843DES08C ***If not taken as a Core Unit***	Establish an urban permaculture system	nil	60
QLD843WAT09C	Install and maintain permaculture water systems	nil	40
QLD843BUI10C	Install structures for permaculture systems	nil	30
QLD843IPA11C	Kill and dress small livestock for domestic consumption	nil	30
QLD843RES13B	Co-ordinate preparation and storage of permaculture products	nil	30
QLD843DES14B	Read and interpret property maps and plans	nil	20
QLD843COM15B	Co-ordinate community projects	nil	40
AHCSAW302A	Implement erosion and sediment control measures	nil	
AHCINF301A	Implement property improvement, construction and repair	nil	70
AHCNAR301A	Maintain natural areas	nil	
AHCPMG302A	Control plant pests, diseases and disorders	nil	80
AHCILM304A	Follow cultural protocols	nil	
AHCNSY306A	Implement a propagation plan	nil	
AHCWRK302A	Monitor weather conditions	nil	24
AHCLPW306A	Undertake sampling and testing of water	nil	70
AHCSOL401A	Sample soils and interpret results	nil	35
		Nominal Hours	**254-465**

Employability Skills

Qualification Title: Certificate III in Permaculture

The following table contains a summary of the employability skills as identified by the course proponent for this qualification. The employability skills facets described here are broad industry

requirements that may vary depending on qualification packaging options and job role requirements.

Employability skill	Industry requirements for this qualification include the following facets:
Communication:	Listening and understanding Speaking clearly and directly Writing to the needs of the audience Negotiating responsively Reading independently Empathising Using numeracy effectively Understanding the needs of internal and external clients Sharing information
Teamwork:	Working with people of different ages, gender, race, religion, or political persuasion Working as individual and as a member of team Knowing how to define a role as part of a team Applying teamwork skills to a range of solutions e.g. futures planning, crisis problem solving Identifying the strengths of team members Coaching, mentoring and giving feedback
Problem solving:	Developing creative, innovative solutions Developing practical solutions Showing independence and initiative in identifying problems and solving them 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 Resolving customer concerns in relation to project issues
Initiative and enterprise:	Adapting to new situations Translating ideas into action Generating a range of options Initiating innovative solutions Identifying opportunities not obvious to others
Planning and organising:	Managing time and priorities – setting timelines, co-ordinating tasks for self and with others Adapting resource allocations to cope with contingencies Allocating people and other resources to tasks Planning the use of resources including time management Participating in continuous improvement and planning processes Collecting, analysing and organising information Understanding basic business systems and other relationships Taking initiative and making decisions Allocating people and other resources to tasks
Self management:	Having a personal vision and goals Taking responsibility for own work outputs
Learning:	Being willing to learn in any setting on and off the job Contributing to the learning community at the workplace Being prepared to invest time and effort in learning new skills Being open to new ideas and techniques
Technology:	Having a range of basic IT skills Using IT to organise data

Units of Competency

QLD843PPP01C Research and communicate information on permaculture principles and practices

Unit Descriptor

This unit provides the skills and knowledge to research permaculture principles and practices, develop research techniques to gather general information on permaculture and non-permaculture systems, and appropriately communicate information within culturally diverse groups.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills.

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of coordinator within community programs.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the required performance needed to demonstrate achievement of the element. Where* **bold italicised text** *is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.*
1 Research general information on permaculture	1.1 Identify ***sources of information*** about permaculture
	1.2 Interpret written sources of information accurately and extract the required information.
	1.3 Access and investigate information from ***other than written sources***.
	1.4 Interpret information from non-written sources accurately and extract the required information
2 Document application of permaculture principles to a site	2.1 Identify an ***appropriate site*** to study
	2.2 Research site, using ***primary data sources*** and ***secondary data sources***
	2.3 Document examples of how permaculture principles have been practically applied on the site
3 Compare permaculture design approach and practices with those of other *food production systems*	3.1 Identify a range of food production systems

		3.2 Identify key characteristics of each system in relation to management of soil, energy, water, nutrient flow, crop rotation and harvesting
		3.3 Compare permaculture practices with those of other systems
4	Communicate general information with others on permaculture	4.1 Discuss and share knowledge with colleagues to ***increase awareness*** of permaculture principles and practices.
		4.2 Prepare and deliver permaculture information to ***small groups.***
		4.3 Respond to questions about permaculture within a small group.
		4.4 Communicate responses in a ***culturally appropriate*** manner.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture principles and practices
- Similarities and differences between other land use and management practices and permaculture
- Culturally appropriate speech and behaviour
- Basic research techniques
- Communication techniques

Essential skills:

Ability to:

- Research general information on permaculture
- Identify differences between permaculture and other land management/use practices
- Share general information with others on permaculture

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. 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.

Sources of information may include:	• books • reports • journals • magazines • Internet • newsletters and publications • permaculture sites
Other than written sources may include:	• oral history • anecdotes and verbal advice • DVD • video • film
Appropriate site must include:	• site must be able to be physically visited by the researcher in order to gather primary data
Appropriate site may include:	• identified permaculture demonstration site • permaculture demonstration site under development • organic farm • urban, peri-urban or rural site • researcher's own property
Primary data sources must include:	• original data gathered by the researcher
Primary data sources may include:	• measurements, • photographs • maps or sketches • soil tests • observations of light, shade, sun angle • flora and fauna present at the site • slope and contour information • observation of site and adjoining landscape features (e.g. sector analysis) • weather observations
Secondary data sources may include:	• data provided by government departments and agencies, local groups (e.g. Landcare) or individuals (e.g. neighbours) • survey documents, maps and plans • official weather data • photographs (e.g. Google Earth)

Food production systems may include:	• conventional broad-acre farming • battery chicken farms • intensive meat production facilities (e.g. feedlots, piggeries) • fish farming • biodynamic agriculture • organic mixed farms
Increasing awareness may include but is not limited to:	• creating visual displays or audio-visual products on permaculture principles and practices • creating information sheets or articles for print on permaculture principles and practices • demonstrating or orally presenting information on permaculture principles and practices
Small groups may include:	• tour groups • information stalls • visitor enquiries • community groups • radio station audiences • class presentations
Culturally appropriate may include but is not limited to:	• dealing with people in indigenous communities • dealing with those of different ethnic backgrounds • others with belief systems or social values and practices in a way that respects difference and honours beliefs or customs.

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	▪ The assessee must provide evidence of specified essential knowledge as well as skills. ▪ Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. ▪ Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.

Context/s of Assessment and specific resources

- 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:

- access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
- access to relevant Permaculture texts and audio-visual material
- access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work
- All workers should develop their ability to work in a culturally diverse environment

QLD843IPA02B Develop recommendations for integrated plant and animal systems

Unit Descriptor

This unit provides the skills and knowledge of developing recommendations for integrated plant and animal systems and requires the application of sound knowledge of permaculture and a broad range of plant-related and animal-related skills.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Identify scope of integrated plant and animal system required	1.1 Contact the ***client***, when appropriate, according to ***enterprise work procedures***.
	1.2 Identify client ***needs*** and the nature of the job by gathering all relevant ***information*** from the client
	1.3 Assist client to understand the concept of an ***integrated plant and animal system.***
	1.4 Define client needs using ***research and experiential awareness.***
2 Develop options for preferred solution/s	2.1 Identify Options and/or devise strategies according to research and experiential awareness, ***permaculture principles*** and enterprise work procedures.
	2.2 Examine Options and/or evaluate strategies according to sound ***problem-solving techniques***.
	2.3 Determine the options based on appropriate evidence, availability of ***resources***, ***energy***, sound ***cultural principles***, ***permaculture practices***, and enterprise work procedures.
3 Recommend the preferred solution	3.1 Recommend the integrated plant and animal method of establishment and probable outcomes to the client.
	3.2 Refer to the origin of the plant/animal species and their cultural requirements in an integrated system where necessary.

3.3 Respond to client requests for clarification or expansion appropriately.

3.4 Prepare ***drawings and tables*** to show how the systems integrate to increase ***yields***, reduce work and eliminate waste.

3.5 Record recommendations and ***report*** to client according to enterprise work procedures.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture principles and ethics
- Methods of design
- Pattern Understanding
- Basic animal and plant physiology
- Plant identification
- Ecological principles
- Climatic Factors
- Plants in integrated systems
- Animals in integrated systems
- Water
- Soils
- Earthworks
- Aquaculture
- Basic understanding of different appropriate technologies that can be used
- Species selection
- Integrated Pest Management
- Pest and disease symptoms, basic physiology and life cycle of pests and diseases, vulnerable plant growth stages, treatment thresholds, treatment products, effective application of organic procedures and environmental implications
- Local plant suppliers, animal suppliers, consultants, services, products and contractors and availability of local resources
- Awareness of duty of care in provision of advice and recommendations to retail, commercial and private clients.

Essential skills:

Ability to:

- Communicate with clients, work team members, supervisors, suppliers, contractors and consultants.
- Interpret information sheets, labels, relevant literature, specifications and design symbols
- Read and interpret maps.

- Identify plants
- Provide information on the characteristics, needs and functions of plants and animals in integrated systems
- Prepare garden plans on base plan with simple translations of contour lines where available.
- Estimate treatment and product requirements, material sizes and quantities.
- Interpret site designs, ground plans and specifications.
- Calculate ratios, proportions and application rates.
- Co-ordinate own work activities to gain knowledge of plant and animal systems.

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. 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.

Client may include:

- general public
- customers
- business associates
- community groups
- staff members
- industry counterparts

Enterprise work procedures may include:

- procedures based on sound permaculture practices
- carrying out supervisor's/client's oral or written instructions
- developing enterprise policy and guidelines
- enterprise Standard Operating Procedures (SOP)
- specifications
- producing routine maintenance schedules
- work notes
- product labels
- Material Safety Data Sheets (MSDS)
- manufacturers service specifications and operators' manuals
- waste, recycling and re-use guidelines
- OHS procedures

Needs may include:

- Meeting Lifestyle needs (special dietary requirements, chemical sensitivities, work/job creation
- Ensuring food security
- Reducing the negative effects of floods and drought
- Minimising vulnerability to and damage from fire
- Reducing the energy use in home and in food production.
- Establishing/maintaining areas of native vegetation
- Weeds, pest and disease control measures
- Selection and use of plant materials
- Basic permaculture design and maintenance
- Integration of animals into garden and farm design
- Soils, irrigation, plant nutrition
- Products and services
- Local geographical variables
- Habitat conservation and bush restoration
- Other plant cultural information.

Information may include:	• Methods of design • Pattern Understanding • Climatic Factors • Basic animal and plant physiology • Plant identification • Animal identification • Ecological principles • The needs and functions of plants in integrated systems • The needs and functions of animals in integrated systems • Water • Soils • Earthworks • Aquaculture • Alternative energy: Buildings and structures • Species selection
Integrated plant and animal system may include:	• balanced ecosystems where the needs of all species are met in an attempt to mimic nature • chicken-orchard systems • duck-rice systems • aquaponics systems • poultry used as tractor, fertiliser and pest control • frogs, birds and other wild creatures attracted to the garden to maintain ecological balance • patterns seen in nature, such as stacking and layering of plants in a forest, used in deliberate design
Research and experiential awareness may include:	• knowledge of the species design elements and their culture • drawing on experience of colleagues and others such as team members, supervisor and self • local historical information • supplier information • reference books and magazines • permaculture-related websites • permaculture consultants • permaculture designed properties • experts in local area or industry sector
Permaculture principles must include:	• Principles as defined by David Holmgren in *Permaculture Principles and Pathways beyond Sustainability* and/or Bill Mollison *Permaculture: A Designers Manual*
Problem-solving techniques may include:	• Active listening • Attentive listening and questioning • Patience • Ability to consider other opinions

Resources may include:	• financial resources • building and landscaping supplies • materials for re-use from existing or other sources • plants and animals
Energy may include:	• human energy • animal and/or plant energy • solar, wind or water energy • conventional forms of energy to power machines if/when required
Cultural principles may include:	• climatic needs of plants or animals • soil needs of plants or animals • water, food or nutrient needs of plants or animals • yields obtained from plants or animals • size or dimensions of plants or animals • habit or behaviour of plants or animals
Permaculture practices may include:	• minimising effort for maximum effect • multiple uses for each element in the system • more than one way of providing important functions • re-using and valuing resources and energy • encouraging productivity of the system • seeing solutions not problems • using vertical space and other edges and connections • preventing waste and loss of resources from the system
Drawings and tables may include:	• plans • diagrams • photographs • illustrations • flow charts • maps • statistical data • species information • labels • instructions for use of equipment
Yields may include:	• products from plants and animals in a garden or food-production system • waste products re-used in the system (such as twigs for mulch, weeds and fallen fruit for poultry feed, prunings as fodder) • wild harvest incidental to the system (bee forage, ecosystem services, wildlife and biodiversity) • water harvested from the system (collected, redirected, stored in soil, re-used or borrowed on its way to other systems)

Report may include:	• verbal or written • design presentation • records of meetings • information collected and collated for the client • species lists and details of cultural requirements • equipment instructions or specifications

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.
Context/s of Assessment and specific resources	• 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment • Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level • The learner and trainer should have access to appropriate documentation and resources normally used in the workplace • Resources for the assessment include: o access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.

- access to relevant Permaculture texts and audio-visual material.
- access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843IPA03C Maintain integrated plant and animal systems

Unit Descriptor

This unit provides the skills and knowledge to maintain integrated plant and animal systems, undertake maintenance, and maintain records of activities. Maintaining integrated plant and animal systems requires a knowledge of permaculture activities appropriate to climate and soil types, plants and animals commonly found on permaculture properties, permaculture principles and practices and typical permaculture solutions for water catchment and storage and soil maintenance and improvement for plant and animal systems.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work-site co-ordination and involves the application of skills and knowledge at the specialist tradesperson level or at the level of farm supervisor or co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Plan maintenance activities for integrated plant and animal systems	1.1 Assess ***maintenance requirements*** for the ***integrated plant and animal system***.
	1.2 Identify relevant legislative requirements, Codes of Practice and ***enterprise work procedures***.
	1.3 Consult ***stakeholders*** about maintenance activities where required.
	1.4 Determine and source the required equipment, machinery and materials for maintenance activities.
	1.5 Read and interpret ***permaculture design specifications*** for the property and follow any specific directions on maintenance approaches and strategies.
	1.6 Plan movement through the production areas to minimise ***disturbance and degradation*** during maintenance activities.
2 Undertake maintenance activities	2.1 Maintain a ***clean and safe work area*** throughout maintenance activities.
	2.2 Take relevant ***protective measures*** to avoid degradation and disturbance to soil, plants, animals and other parts of

		the ecosystem during maintenance activities.
		2.3 Monitor activities of personnel and visitors to reduce risks to the productive systems undergoing maintenance.
3	Complete maintenance activities	3.1 Make good site on completion of maintenance activities.
		3.2 Clean and store equipment and machinery on completion of maintenance activities according to enterprise work procedures.
		3.3 Remove or store ***excess materials*** in an environmentally aware and safe manner according to enterprise work procedures.
		3.4 Maintain records of maintenance activities according to legislative requirements and enterprise work procedures.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture activities appropriate to climate and soil types
- Plants and animals commonly found on permaculture properties
- Plant groups and vegetation structures
- Permaculture maintenance principles and practices
- Soil maintenance and improvement techniques
- The role of animals in improving soil, recycling nutrients, managing 'weedy' plants and controlling pests and diseases
- Plants as soil indicators and dynamic accumulators
- Typical permaculture solutions to water catchment and storage for integrated plant and animal systems.
- Recycling of materials and waste.

Essential skills:

Ability to:

- Plan maintenance activities for integrated plant and animal systems
- Undertake maintenance, including improving soil, protecting and supporting young plants, watering, fertilising, controlling weeds and pests and ensuring animal safety, comfort, watering and feeding
- Recording and reporting on completion of activities.

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. 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.

Maintenance requirements may include but are not limited to:	• mulching • weeding • feeding • watering or directing water to plants/animals • planting cover crops • mulching • compost making • encouraging natural pest balance • moving or rotating stock through paddocks • moving chicken, rabbit, guinea pig or other tractor systems • periodic (daily, weekly or other) inspection of components of systems to ensure they are functioning well
Integrated plant and animal systems may include:	• Gardens, orchards, organic farms, woodlots and forests that include animals in free range or rotational systems • balanced ecosystems where the needs of all species are met in an attempt to mimic nature • chicken-orchard systems • duck-rice systems • aquaponics systems • poultry used as tractor, fertiliser and pest control • frogs, birds and other wild creatures attracted to the garden to maintain ecological balance • patterns seen in nature, such as stacking and layering of plants in a forest, used in deliberate design

Enterprise work procedures may include:	• procedures based on sound horticultural and permacultural principles and practices • permaculture work procedures or routines • rotational grazing system • spreadsheet of planting, watering, feeding times • supervisors oral or written instructions • maintenance program • enterprise standard operating procedures (SOP) • routine maintenance schedules • work notes • product labels • Material Safety Data Sheets (MSDS) • manufacturers service specifications and operators manuals • waste disposal policies • recycling and re-use guidelines • OHS procedures
Stakeholders may include:	• clients • colleagues • workers or employees • family members
Permaculture design specifications may include:	• permaculture site plan • components of integrated plant and animal systems • accepted maintenance practices (such as composting of weeds, pluck and drop practices, feeding weeds to animals) • soil support and enhancement strategies • animal husbandry strategies
Disturbance and degradation may include:	• stepping on growing areas or garden beds • allowing animals into inappropriate areas • allowing pests or diseases to destroy or damage productive areas
Clean and safe work area may include:	• disabling tools, equipment and machinery no longer required and storing neatly out of the way of maintenance activities • safely storing materials on site • using signage and safety barriers during and removing after maintenance activities are completed • efficiently storing, removing or processing debris and waste from the work area

Protective measures may include:	• control of run-off • protection from drying effects of sun and wind • mulching • protection from compaction by avoiding foot-fall • fencing or barriers to keep animals off where required • screening, guarding and support structures for plants • control of seeding weeds • non-chemical protection from pests such as slugs and snails • use of plants, organic treatments and mechanical devices to help maintain eco-system balance, such as plants to attract predator insects, organic pest control or pheromone treatments, collars and cages to keep pests away from seedlings
Excess materials may include:	• waste or surplus from maintenance activities • over-supply of resources such as gravel or sand • components removed that have potential to be re-used or recycled

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.
Context/s of Assessment and specific resources	• 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment • Assessment should reinforce the integration of the key competencies and the common competencies for

the particular AQF level

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
  - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
  - access to relevant Permaculture texts and audio-visual material.
  - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843IPA04B Carry out animal care, maintenance and treatment programs in a permaculture system

Unit Descriptor

This unit provides the skills and knowledge to carry out animal care, maintenance and treatment programs in a permaculture system and to accurately diagnose the type and scope of animal needs, administer appropriate treatments and work with the legislative requirements associated with animal care.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Prepare for care, maintenance and treatment of animals	1.1 Identify the optimum system required for the care, maintenance or ***treatment*** of ***animals***, and determine the type and scope of care.
	1.2 Identify, prepare and maintain ***equipment and materials*** required for the care, maintenance and treatment of animals, according to manufacturers specifications and ***enterprise work requirements***.
	1.3 ***OHS hazards*** are identified, risks assessed, controls implemented and appropriate action taken.
2 Carry out animal care, maintenance and treatment programs	2.1 Adjust ***animal care, maintenance and treatment programs***, where needed, to provide optimum conditions for the animals.
	2.2 Identify and treat sick or injured animals according to ***permaculture practices***
	2.3 Safely handle and restrain animals to minimise harm or risk to animal or handler.
	2.4 Administer treatment according to manufacturers specifications, and supporting husbandry, OHS and industry Codes of Practice.
	2.5 Observe withholding periods and isolate treated animals from non-treated animals where appropriate.

3	Complete animal care, maintenance and treatment program	3.1 Monitor animal health and condition post-treatment and report any abnormalities according to enterprise work requirements.
		3.2 Identify, address and control ***environmental implications*** associated with the care, maintenance and treatment of animals according to enterprise work requirements.
		3.3 Maintain a clean and safe work area throughout animal care, maintenance and treatment programs.
		3.4 Remove or dispose of waste material from the site in an environmentally aware and safe manner according to enterprise work requirements.
		3.4 ***Store*** health treatments to manufacturers recommendations, industry and enterprise work requirements.
		3.5 Document ***Relevant information*** according to industry and enterprise work requirements

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture design principles
- Requirements for animal housing, enclosures and fencing, covering hygiene and welfare
- Animal health and nutritional requirements
- Suitable forage, fodder and supplementary feedstuffs
- Stocking rates, ranging and rotation schedules and integration of animal ranging and maintenance with permaculture plant systems
- Methods for harvesting, sourcing and handling useable products (e.g. milking, collecting eggs)
- Animal handling and restraint techniques to reduce stress
- Types of parasite infestation, their symptoms and seasonal incidence.
- Types of health preparation treatments, including allowable organic methods
- Application procedures and effects of veterinary chemicals
- Relevant Codes of Practice with regard to the safe use and handling of hazardous substances
- Withholding periods for treated animals
- OHS legislative requirements
- Relevant Codes of Practice with regard to environmental protection.

Essential skills:

Ability to:

- Monitor animal housing, enclosures and fencing and act to ensure good care and hygiene
- Assess and provide appropriate nutritional, feeding, pasturage, stocking rate and

rotational requirements

- Harvest usable products safely, humanely and hygienically
- Manage and reuse manures and other animal ‘wastes’ safely and hygienically
- Diagnose parasitic infestations, diseases and injuries
- Quarantine infected animals
- Select and apply appropriate means, including chemicals allowable under Organic Certification, to treat parasites, diseases and injuries
- Demonstrate safe and environmentally responsible workplace practices
- Provide due care and humane animal handling and restraint techniques
- Return treated animals to prepared and clean environments
- Read and interpret chemical and veterinary health labels, manufacturers specifications and MSDS

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. 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.

Treatment may include:

- assessing the requirements of the particular animals for shelter, enclosure, rotation, food and medicinal plants
- dosage and rates of treatments appropriate to the identified type of animal, its body weight and severity of infestation, infection or injury
- homoeopathic remedy administration techniques

Animals may include but are not limited to*:*

- poultry such as chickens, ducks, geese, turkeys, quail, guinea fowl
- other birds such as ostrich and emu, pigeons, pheasant
- sheep
- goats
- deer
- horses
- donkeys
- camels
- water buffalo
- dogs
- alpacas and llamas
- rabbits
- guinea pigs
- cattle
- pigs
- kangaroos
- bees
- worms
- fish
- crustaceans

Equipment and materials may include:	• rotational shelters • fencing • food and water dispensers • medicinal plants • medicines • drench guns • yards • scales • races • gates • backpacks • faeces collection bags • sample jars • preparation may include the calibration of equipment to check accuracy of dose rates
Enterprise work requirements may include:	• animal welfare standards • product labels • manufacturers specifications • MSDS • enterprise policies and procedures including waste disposal, recycling and re-use and reporting requirements
OHS hazards may include:	• movement and handling of difficult animals • hazardous materials • noise • infectious animal excretions • dust • solar radiation • injury hazard (e.g. crushing) • veterinary chemicals

Animal care, maintenance and treatment programs may include:	• Maintenance of animal housing, enclosures and fencing, covering hygiene and welfare • Ensuring availability of suitable forage, fodder and supplementary feedstuffs, and adjusting stocking rates, ranging and rotation schedules to suit • Coordinating integration of animal ranging and maintenance with plant production systems (e.g. ranging in orchard to manure trees, reduce weeds, pests, eat windfall fruit, tractoring systems, compost manures and housing litter, maintain firebreaks) • Researching, assessing, sourcing and preparing supplementary stock feed requirements, feeding quantities & schedules • Researching and applying organic alternatives for treating stock in compliance with organic certification authorities, these may include herbal and homoeopathic treatments, mineral and vitamin supplements, permitted medications • Developing appropriate handling procedures to reduce stress • Harvesting, sourcing and handling useable products (e.g. milking, collecting eggs)
Permaculture practices may include:	• minimising effort for maximum effect • multiple uses for each element in the system • more than one way of providing important functions • re-using and valuing resources and energy • encouraging productivity of the system • seeing solutions not problems • preventing waste and loss of resources from the system
Environmental implications *may include:*	• Care and maintenance of animals in a permaculture system should contribute to the improved health, diversity and productivity of the site and the surrounding environment. • Potential negative environmental impacts that need to be foreseen and prevented include escaping animals damaging vegetation and stream banks, uncontrolled disposal or leakage of manures and other animal 'wastes', and unsafe use and disposal of veterinary chemicals and any consequent residual chemicals, for example, in excreta.
Store may include:	• safety • access • warning signs • temperature control • security for spillage

Relevant information to be recorded and reported may include:	• stocking rates • rotation schedules • pasture condition • feeding details • harvest records • details of equipment and materials used • the performance of equipment, faults and malfunctions • number of treated livestock and details of treatment • any testing carried out and results • expiry of withholding periods • evaluation of treatment effectiveness • observed abnormalities or behaviour in livestock

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.
Context/s of Assessment and specific resources	• 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment • Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level • The learner and trainer should have access to appropriate documentation and resources normally used in the workplace • Resources for the assessment include: o access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes. o access to relevant Permaculture texts and audio-

visual material.

- access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843IPA05C Implement crop maintenance and harvesting programs for permaculture systems

Unit Descriptor

This unit provides the skills and knowledge to implement crop maintenance and harvesting programs for permaculture systems. Crop maintenance methods may include, thinning, spacing, selective harvesting, training, summer and winter pruning, hedging, skirting, topping and trimming. Crop harvesting methods may include manual and machine-assisted harvesting.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Plan for maintenance and harvesting of permaculture crops	1.1 Identify ***requirements of the site*** and ***crop maintenance program*** according to the site plan and ***enterprise work procedures.***
	1.2 Select ***materials***, ***tools, equipment and machinery*** according to enterprise work procedures.
	1.3 Carry out pre-operational and safety checks on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
	1.4 ***OHS hazards*** are identified, risks assessed, controls implemented and appropriate action taken.
	1.5 Select, use and maintain suitable ***safety*** and ***personal protective equipment*** (PPE).
2 Maintain permaculture crops	2.1 Implement maintenance tasks in sequence according to the crop maintenance program.
	2.2 Personnel or work team members are given clear instructions to undertake required maintenance operations.
	2.3 Tasks are undertaken according to ***OHS requirements*** and with due consideration of the ***environmental considerations.***
	2.4 Monitor maintenance of crop and take corrective action to ensure required standards are met.

		2.5	Maintain a ***clean and safe work area*** throughout maintenance operations.
3	Harvest permaculture crops	3.1	Implement harvesting tasks in sequence according to the crop maintenance program.
		3.2	Personnel or work team members are given clear instructions to undertake required harvesting operations.
		3.3	Tasks are undertaken according to OHS requirements and environmental considerations***.***
		3.4	Monitor harvesting of crop and take corrective action to ensure required standards are met.
		3.5	Maintain a clean and safe work area throughout harvesting operations.
4	Complete maintenance and harvesting activities	4.1	Remove or dispose of ***waste material*** from the site in an environmentally aware and safe manner according to enterprise work procedures.
		4.2	Clean, maintain and store tools, equipment and machinery according to enterprise work procedures.
		4.3	Record and report harvesting outcomes, if appropriate.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture principles and practices related to obtaining a yield
- Principles of maintaining crops and the methods used to maximise crop yields
- Harvesting techniques for a range of crops
- Maturity or ripeness properties of a range of crops when ready for harvest
- Effects on plant growth, habit and production levels of maintenance operations
- Maintenance of soil health and impact on production
- Enterprise quality procedures and characteristics of a crop relative to varying market requirements.

Essential skills:

Ability to:

- Interpret site plans and crop maintenance and harvesting specifications
- Manually thin, selectively harvest, train, summer and winter prune, hedge, skirt, top and trim, pick, bag and attach plants to trellises
- Measure quantities, calculate material requirements, area, volume, ratios and application rates, and calibrate machinery
- Harvest different crops correctly and without damaging produce
- Coordinate work group, contractors and own activities
- Monitor enterprise plants for quality

- Minimise noise, dust, high activity vehicle traffic and water run-off to prevent nuisance-level environmental disturbance.
- implement appropriate OHS procedures

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. 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.

Requirements of the site may include but are not limited to:

- location of underground or overhead services
- access
- fencing
- aspect (shade, sun, wind and other influences)
- slope
- location of plants to be maintained and harvested
- relative location of other facilities, tools, equipment and resources

Crop maintenance program may include:

- manual thinning
- selective harvesting
- training
- summer and winter pruning
- hedging
- skirting
- topping
- trimming
- picking
- bagging
- trellising

Enterprise work procedures may include:

- procedures based on sound horticultural and permacultural principles and practices
- supervisors oral or written instructions
- crop maintenance program
- enterprise standard operating procedures (SOP)
- specifications
- routine maintenance schedules
- work notes
- product labels
- Material Safety Data Sheets (MSDS)
- manufacturers service specifications and operators manuals
- waste disposal
- recycling and re-use guidelines
- OHS procedures

Materials may include:

- fencing materials
- nets
- treatments (e.g. pruning paint)
- labels
- stakes and guards
- ties
- mulches
- protective coverings against weather
- crates and boxes
- trellising
- specialised training systems

Tools, equipment and machinery may include:

- Pruning tools
- knives
- handsaws
- sharpening stone and strop
- hand and battery-powered secateurs
- pneumatic snips and compressor
- hedge trimmers both manual and powered
- small chainsaws
- specialised mechanical pruning machinery
- chippers
- ladders
- picking platforms
- powered ladders and scissor lifts
- backpack and hand-pump spray equipment
- tractors and trailed or 3 point linkage spray equipment, pumps and pump fittings

OHS hazards may include:

- disturbance or interruption of services
- solar radiation, dust, noise, soil- and air-borne micro-organisms
- some chemicals in treatments
- sharp hand tools and equipment
- manual handling
- moving vehicles, machinery and machinery parts
- uneven surfaces
- flying objects

Safety may include:

- signage and barriers
- guards on machinery
- roll-bars on tractors
- ladder locking devices
- lifting equipment

Personal protective equipment may include:	• hat • boots • overalls • gloves • spray clothing • goggles • respirator or face mask • face guard • hearing protection • sunscreen lotion • hard hat
OHS requirements may include:	• identifying hazards • assessing risks • implementing controls • cleaning, maintaining and storing tools, equipment and machinery • appropriate use of PPE including sun protection • safe operation of tools, equipment and machinery • safe handling, use and storage of treatments • correct manual handling • basic first aid • personal hygiene • reporting problems to supervisors
Environmental considerations may include:	• safe disposal of residues • air, water and soil quality • noise pollution • responsible disposal of unwanted seed from harvesting operations
Clean and safe work area may include:	• disabling tools, equipment and machinery no longer required and storing neatly out of the way of crop regulation activities • safely storing materials on site • using signage and safety barriers during and removing after crop regulation activities are completed • efficiently storing, removing or processing debris and waste from the work area
Waste material may include:	• plant debris, litter and broken components • Plant-based material may be mulched or composted • plastic, metal, paper-based materials may be recycled, re-used, returned to the manufacturer or disposed of according to enterprise work procedures

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- The assessee must provide evidence of specified essential knowledge as well as skills.
- Consistency of performance should be demonstrated over the required range of situations relevant to the workplace.
- Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.

Context/s of Assessment and specific resources

- 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
  - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
  - access to relevant Permaculture texts and audio-visual material.
  - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction

- Recorded evidence
- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843IPA06B Use weedy plants in a permaculture system

Unit Descriptor

This unit provides the skills and knowledge to control and make use of weedy plants in a permaculture system. It also includes permaculture design methods, such as use of succession in a permaculture system and the use of harvest as a means of control.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Assess the implications of weedy plants in the system	1.1 Assess the scope and size of the ***weedy plant*** population.
	1.2 Investigate the soil properties, water availability and terrain of the affected areas.
	1.3 Investigate the history of the previous land use and management strategies of the site.
	1.4 Identify weedy plants and ***beneficial organisms*** and record in ***field notes***
	1.5 Identify weedy plant populations tolerated by the client, market or environment according to the ***permaculture management plan***.
	1.6 Identify weedy plant population levels above which plant health or growth objectives are compromised.
	1.7 Obtain professional advice as required according to permaculture management plan.
2 Plan the implementation of control measures	2.1 Select ***control measures*** suitable for the infestation according to the permaculture management plan.
	2.2 Select ***tools, equipment and machinery,*** and other control measures for each part of the control work, according to the permaculture management plan.
	2.3 ***OHS hazards*** are identified, risks assessed, controls

		implemented and ***appropriate action*** taken.
		2.4 Select, use and maintain suitable ***safety equipment*** and ***personal protective equipment*** (PPE).
3	Implement control measures	3.1 Co-ordinate the ***enterprise work team***, contractors and product suppliers in a sequential, timely and effective manner in consultation with ***other stakeholders***.
		3.2 Implement control measures according to the permaculture management plan.
		3.3 Undertake control of weedy plants according to ***OHS requirements*** and in full consideration of ***environmental implications***.
		3.4 Maintain a ***clean and safe work area*** throughout and on completion of each work activity.
		3.5 Maintain ***records*** as required by legislation and enterprise work procedures.
4	Monitor control methods	4.1 Monitor control methods to identify side effects to other plants, animals or the environment.
		4.2 Assess effectiveness of control methods in reference to the permaculture management plan.
		4.3 Adjust control methods where necessary to meet expectations of the permaculture management plan.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture principles and ethics
- Weedy plant recognition.
- Economic, aesthetic or environmental thresholds for a range of weeds.
- Organic chemical, biological and cultural control methods and treatments available to the enterprise within the parameters of a control program.
- Range and use of tools, equipment and machinery available to the enterprise for implementing the control measures.
- Range of animal systems to use the weed as a food source.
- Range of plants and planting strategies to out-compete weed or to be used as a follow up to successful treatment.
- Range of site monitoring and analysis techniques that may be used to implement a control program.
- Association of control methods with site limitations, environmental implications, end market and horticultural objectives for the site.
- OHS issues and legislative requirements associated with hazardous substances, materials and treatments which may be hazardous to human and animal health.
- OHS responsibilities of employers and employees.

- Correct wearing/fit of personal protective equipment.

Essential skills:

Ability to:

- Recognise a range of weedy plants and beneficial organisms within a particular enterprise.
- Communicate with work team members, supervisors, contractors and consultants.
- Interpret and apply control program spatial and logistical specifications.
- Interpret and apply test results and calculate the quantities and applications rates of control materials.
- Coordinate work group, contractors and own activities to sequentially and effectively complete control activities in a timely and cost effective manner.

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. 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.

Weedy plants may include:	• plants that have the potential to be a threat to the permaculture system or to the natural environment • plants that present a potential risk for the enterprise, industry or environment • plants that grow in great abundance and may need to be controlled • plants that reduce the target yields of the permaculture designed system • plants that are notifiable to authorities • plants that are part of a local, regional, State or national control strategy
Beneficial organisms may include:	• volunteer or cultivated plants that out-compete the weed, insects and other non-vertebrates, and micro-organisms that attack the weed • weedy plants may be reassessed as a source of food or fibre source for other animals (goats, cattle, pigs, chickens) and, in some cases for humans, as part of an integrated designed system
Field notes may include:	• records of treatments and results • notes in a perpetual diary in order to compare weedy plant occurrences at the same time of year • journal or diary of observations and actions • chart or spreadsheet of observations and actions
Permaculture management plan may include:	• integrated permaculture design for the property • strategies for control of weedy plants appropriate to the location and the species identified • Integrated Pest Management strategies provided they do not use broad-spectrum chemicals or other organo-toxins • Integrated plant and animal strategies for controlling persistent plants without the use of chemicals (such as goats in blackberries)

Control measures may include:	• the application of non-chemical controls including sprays with organic or natural ingredients • controlled release of predatory organisms • the application of cultural control methods • removal and disposal of weeds • incorporating an animal system to control the undesired plants e.g.: use of chicken or pig tractors • cell grazing • cows followed by pigs, followed by chickens and re seeded • shading out infested areas by tree crops or forest • performing earthworks to create changed conditions not beneficial to the targeted weed • biodynamic treatments and control measures • composting • worm farming • selected plant species as competitors (such as cover crops, sub-terranean clover) • follow-up strategies to be used after weed removal
Tools, equipment and machinery may include:	• Standard horticultural tools such as gardening implements, • mechanised and manually operated spray applicators • cultivators • tractors and trailed or mounted equipment • insect traps • soil, fertiliser and plant tissue test kits and sampling equipment • steam treatment outfit • flamethrower • animal enclosures both fixed and moveable • earthmoving equipment
OHS hazards may include:	• materials or treatments hazardous to human or animal health including chemicals • manual handling • operating machinery tools and equipment • noise • dust • solar radiation • falls and tripping
Appropriate action may include:	• elimination, mitigation or minimisation of risks • reporting to a supervisor • documenting according to organisational, risk management, quality assurance or continuous improvement policies and procedures

Safety equipment may include:	• barriers • guards • warning signs
Personal protective equipment may include:	• hat • boots • overalls • gloves • goggles • respirator or face mask • hearing protection • sunscreen lotion
Enterprise work team may include:	• employees • students • WWOOFers (Willing Workers On Organic Farms) • family • friends
Other stakeholders may include:	• neighbours • colleagues • supervisor • owner, client or manager
OHS requirements may include:	• identifying hazards, assessing risks and implementing controls • cleaning, maintaining and storing tools, equipment and machinery • appropriate use, maintenance and storage of PPE including sun protection • safe operation of tools, equipment and machinery • safe handling, use and storage of treatments and organically based materials which may be hazardous to human or animal health • correct manual handling • basic first aid • safety procedures for protection of others • personal hygiene • reporting problems to supervisors

Environmental implications may include:

Beneficial environmental impacts:

- reduced and informed targeting of organic chemicals
- soil improvement
- recycling within the system
- minimal escape of contaminants to the external environment
- improved production
- healthier ecosystems
- more efficient water and nutrient utilisation
- reduced weed numbers
- the minerals accumulated by the weeds can be returned to the soil

Detrimental environmental impacts:

- excess noise, dust or water
- seed dispersal during and after mechanical removal of weeds
- systems do not function effectively because of inadequate implementation techniques and/or poor design
- weed removal may lead to the destabilisation of land on a slope or across which water will flow in heavy rain
- weedy plants, if killed and left without correct follow-up strategies, may be a fire hazard

Clean and safe work area may include:

- disabling unused tools, equipment and machinery
- storing tools, equipment and machinery neatly out
- correct storage of personal protective equipment
- safely storing materials on site
- efficiently removing and processing debris and waste material not for immediate use
- disposal of the weeds in a manner that uses the nutrient in the system on site and prevents any nutrient moving beyond the system to other properties, natural bushland or waterways

Records may include:

- types of weeds and beneficial organisms present
- numbers of weeds and beneficial organisms present
- treatments applied
- date of application
- application rates
- effectiveness of treatments
- economic thresholds
- species to compete
- time of growth to point of competition
- number of animals required to control the undesired plant

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- The assessee must provide evidence of specified essential knowledge as well as skills.
- Consistency of performance should be demonstrated over the required range of situations relevant to the workplace.
- Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.

Context/s of Assessment and specific resources

- 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
    - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
    - access to relevant Permaculture texts and audio-visual material.
    - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  ~ through appropriately realistically simulated activities at the RTO, and/or

  ~ in an appropriate range of situations in the workplace

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843DES07C Establish a rural permaculture system

Unit Descriptor

This unit provides the skills and knowledge to establish a rural permaculture system from a permaculture design, as well as knowledge of a broad range of integrated plant and animal systems, earth shaping skills, soil improvement, water harvesting and work site co-ordination skills.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Prepare to establish a rural permaculture system	1.1 Read and interpret the ***design*** for the ***permaculture system***.
	1.2 Identify the site, ***planting methods*** and ***system features*** according to the permaculture design and ***enterprise work procedures***.
	1.3 Select ***materials, tools, equipment and machinery*** according to the design requirements and enterprise work procedures.
	1.4 ***OHS hazards*** are identified, risks assessed, controls implemented and ***appropriate action*** taken.
	1.5 Select, use and maintain suitable ***safety*** and ***personal protective equipment*** (PPE)
2 Co-ordinate establishment of the rural permaculture system	2.1 Co-ordinate work tasks in a sequential, timely and effective manner according to enterprise work procedures.
	2.2 Establish the permaculture system according to ***OHS requirements*** and with due consideration of the ***environmental implications***.
	2.3 Maintain a ***clean and safe work area*** throughout and on completion of work.
3 Prepare the area	3.1 Undertake ***earthworks*** according to enterprise work procedures if appropriate.

		3.2 Select and apply ***additives*** to the soil as required according to ***site conditions*** and enterprise work procedures.
		3.3 Mark out ***patterns*** or positions of ***elements*** on site according to the permaculture design.
4	Undertake positioning of elements in the rural permaculture system	4.1 Inspect elements prior to planting, introduction or installation and remove plants with ***major defects*** according to enterprise work procedures.
		4.2 Trim or treat plants with ***minor defects*** to maintain health and vigour according to enterprise work procedures.
		4.3 Position elements to enable them to develop their full potential according to ***zone and sector analysis***, pattern understanding and/or enterprise work procedures and the permaculture design.
		4.4 Provide elements with ***post-installation care*** according to enterprise work procedures.
5	Monitor establishment of the rural permaculture system	5.1 Monitor the system and take corrective action to ensure required standards are met according to enterprise work procedures.
		5.2 Identify situations which will prevent elements from reaching their full potential according to enterprise work procedures.
6	Complete establishment of the rural permaculture system	6.1 Complete works for the permaculture design according to enterprise work procedures.
		6.2 Remove or dispose of ***waste material*** from the site in an environmentally aware and safe manner according to enterprise work procedures.
		6.3 Clean, maintain and store tools, equipment and machinery according to OHS and enterprise work procedures.
		6.4 Record or report work outcomes if appropriate.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Principles of permaculture and practices in a rural context
- The objectives of the plant system establishment program, including finished plant

system forms, site appearance, end use and time constraints

- The interactions between plants and animals and how to maximise the benefits
- A range of plant and animal species and their cultivars or breeds and what they contribute to the system.
- Cultural requirements, planting procedures and follow up care for plants.
- Environment and habitat requirements of animal species
- The identification of pests, diseases, parasites, and deficiencies that are likely to affect plants and animals and the use of appropriate treatments
- Soils and appropriate soil amelioration techniques
- The ecology of the native species, and their value in a Permaculture system.
- OHS legislative requirements and codes of practice, OHS procedures, OHS employee and employer responsibilities and hazard identification, assessment and control.

Essential skills:

Ability to:

- Communicate orally and in writing with work team members, supervisors, contractors and consultants
- Utilise recording, reporting, analysis and work procedure documents
- Interpret site plans, plant establishment specifications and test results
- Measure quantities, calculate material requirements, area, volume, ratios and application rates
- Coordinate work group, contractors and own work activities.

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. 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.

Design may include, but is not limited to:	• permaculture plan • planting guilds • companion planting associations • planting patterns • charts and maps drawn up to assist with organisation of elements in the permaculture system
Permaculture system may include:	• Permaculture design including charts, maps and plans of water component installations • Keyline design • Contour survey where permaculture principles have been adhered to •
Planting methods may include:	• tube planting • hand or machine assisted planting of seedlings • planting of divisions • direct seeding • transplanting • laying • rolling • chaffing • sprigging
System features may include but are not limited to:	• Chicken, rabbit, guinea pig or other tractor systems • aquaculture systems • pig tractor systems • duck and rice systems and other integrated systems appropriate to a rural permaculture system which utilise an animal, fish or bird species to generate a yield in association with plant species.

Enterprise work procedures may include:	• procedures based on sound permacultural and horticultural principles and practices • supervisor's oral or written instructions • plant establishment program • enterprise standard operating procedures (SOPs) • specifications • routine maintenance schedules • work notes • product labels • Material Safety Data Sheets (MSDSs) • manufacturers' service specifications and operator's manuals • waste disposal • recycling and re-use guidelines • OHS procedures
Materials may include:	• soil additives and ameliorants • approved fertilisers • materials for protecting plants • weed, pest and disease control treatments and materials
Tools, equipment and machinery may include:	• hand tools • trailed, 3-point linkage and motorised machinery for excavation, planting and post-planting care operations • irrigation and drainage systems and components
OHS hazards may include:	• disturbance or interruption of services • solar radiation • dust • noise • soil-, water- and air-borne micro-organisms • chemicals and substances hazardous to animal or human health • sharp hand tools and equipment • manual handling • moving vehicles, machinery and machinery parts • spider and insect bites • uneven surfaces • flying objects
Appropriate action may include:	• elimination, mitigation or minimisation of risks • reporting to a supervisor • documenting according to organisational, risk management, quality assurance or continuous improvement policies and procedures

Safety may include:	• first aid kit • high visibility vests • spray jacket or suit • reversing alarms on mobile equipment • signage • barriers
Personal protective equipment (PPE) may include:	• hat • boots • overalls • gloves • goggles • respirator or face mask • face guard • spray jacket or suit • hearing protection • sunscreen lotion • hard hat
OHS requirements may include:	• identifying hazards, assessing risks and implementing controls • cleaning, maintaining and storing tools, equipment and machinery • appropriate use, maintenance and storage of PPE including sun protection • safe operation of tools, equipment and machinery • safe handling, use and storage of treatments and organically based materials which may be hazardous to human or animal health • correct manual handling • basic first aid • safety procedures for protection of others • personal hygiene • reporting problems to supervisors

Environmental implications may include:	Beneficial environmental impacts: • soil improvement • recycling within the system • minimal escape of contaminants to the external environment • improved production • healthier ecosystems • more efficient water and nutrient utilisation • reduced weed numbers • the minerals accumulated by plants and animals can be returned to the soil Detrimental environmental impacts: • excess noise, dust or water • seed dispersal during and after mechanical removal of weeds • systems do not function effectively because of inadequate implementation techniques and/or poor design • Pollutants such as animal excreta or other wastes could enter the system.
Maintaining a ***clean and safe work area*** may include:	• disabling unused tools, equipment and machinery and storing neatly • safely storing materials on site • using signage and safety barriers during and removing after activities are completed • efficiently removing and processing debris and waste from the work area
Earthworks may include:	• cultivating the area to be planted • constructing soil profiles • installing irrigation and drainage systems including swales, terraces and contour banks • establishing integrated plant and animal systems • aquaculture ponds • chinampas and other land-modification systems • collection and storage of nutrients or water for forage or irrigation
Additives may include:	• lime • gypsum • emollients • fertilisers • manures • organic materials • fungal and disease control agents

Site conditions may include:	• soil moisture content, pH levels, salinity, texture, compaction • aspect • pollutants or toxic residue • climate • buildings and building works • roads and access
Patterns may include:	• Patterns in space, such as planting patterns, naturally occurring patterns in nature (radial and bilateral symmetry, spirals, circles, dendritic and mandala patterns etc.) • Patterns in time, such as succession planting, breeding cycles, seasonality • Patterns in human culture such as gardening systems • Nature as the model for design, such as stacking or layering as with a natural forest • Gravity as a force for design, such as using contours in design • Nutrient, water and energy capture, storage and re-use according to the inputs, outputs and intrinsic features of the system
Elements must include:	• Species chosen for their functions in the system including plants, animals and objects (built or existing) • together form a system • elements are chosen for mutual benefit • each important function (energy, water, food, fuel etc.) is supported by many elements • elements support the needs of the system within the overall design
Major defects may include:	• any condition that will prevent the plant from reaching its full potential, including wilt, stunted growth, root damage and severely root-bound seedlings
Minor defects may include:	• any condition that may be repaired such as damage or breaks sustained by plants that can be trimmed or treated so that the plants can still reach their desired potential
Zone and sector analysis must include:	• Consideration of the frequency of use and intensity of need of elements in the system • Consideration of the spacial requirements of elements in the system • Mutual benefit and connections between zones • Consideration of the specific needs of the location of the system in terms of climate; access; slope; potential for wild fire, flood, tsunami or other catastrophic force; • Consideration of the neighbouring or local environment, its need, products and intrinsic features.

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Post-installation care may include:	• watering • fertilising • feeding • controlling pests and diseases • weeding • labelling • mowing • mulching • pruning • protecting • staking • trellising • monitoring health • checking predator protection • nutrient run-offs • water quality factors for an integrated animal system
Waste material may include:	• specified noxious or toxic materials (such as weed seed heads, noxious weeds and chemical treatments which may affect human or animal health) • recyclable materials (such as paper, plastic and metal-based litter) • composting waste (such as soft plant materials) • reusable materials (such as cloths and containers for washing, woody waste) • returnable materials (such as oils and chemical containers) • waste may be removed to designated areas for recycling, reuse, return to the manufacturer for disposal

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.

Context/s of Assessment and specific resources

- 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
  - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
  - access to relevant Permaculture texts and audio-visual material.
  - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

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- Written evidence
- Verbal evidence
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  - ~ through appropriately realistically simulated activities at the RTO, and/or
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workplace

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843DES08C Establish an urban permaculture system

Unit Descriptor

This unit provides the skills and knowledge to establish an urban permaculture system from a permaculture design, as well as knowledge of a broad range of integrated plant and animal systems, urban retrofitting skills, soil improvement, water harvesting and work site co-ordination skills.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Prepare to establish an urban permaculture system	1.1 Read and interpret the ***design*** for the ***permaculture system***.
	1.2 Identify the site, ***planting methods*** and ***system features*** according to the permaculture design and ***enterprise work procedures***.
	1.3 Select ***materials, tools, equipment and machinery*** according to the design requirements and enterprise work procedures.
	1.4 ***OHS hazards*** are identified, risks assessed, controls implemented and ***appropriate action*** taken.
	1.5 Select, use and maintain suitable ***safety*** and ***personal protective equipment (PPE)***
2 Co-ordinate establishment of the urban permaculture system	2.1 Co-ordinate work tasks in a sequential, timely and effective manner according to enterprise work procedures.
	2.2 Establish the permaculture system according to ***OHS requirements*** and with due consideration of the ***environmental implications***.
	2.3 Maintain a ***clean and safe work area*** throughout and on completion of work.
3 Prepare the area	3.1 Undertake ***site retrofitting*** according to enterprise work procedures if appropriate.

		3.2 Select and apply ***additives*** to the soil as required according to ***site conditions*** and enterprise work procedures.
		3.3 Mark out ***patterns*** or positions of ***elements*** on site according to the permaculture design.
4	Undertake positioning of elements in the urban permaculture system	4.1 Inspect elements prior to planting, introduction or installation and remove plants with ***major defects*** according to enterprise work procedures.
		4.2 Trim or treat plants with ***minor defects*** to maintain health and vigour according to enterprise work procedures.
		4.3 Position elements to enable them to develop their full potential according to ***zone and sector analysis***, pattern understanding and/or enterprise work procedures and the permaculture design.
		4.4 Provide elements with ***post-installation care*** according to enterprise work procedures.
5	Monitor establishment of the urban permaculture system	5.1 Monitor the system and take corrective action to ensure required standards are met according to enterprise work procedures.
		5.2 Identify situations which will prevent elements from reaching their full potential according to enterprise work procedures.
6	Complete establishment of the urban permaculture system	6.1 Complete works for the permaculture design according to enterprise work procedures.
		6.2 Remove or dispose of ***waste material*** from the site in an environmentally aware and safe manner according to enterprise work procedures.
		6.3 Clean, maintain and store tools, equipment and machinery according to OHS and enterprise work procedures.
		6.4 Record or report work outcomes if appropriate.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Principles of permaculture and practices in an urban context
- The objectives of the plant system establishment program, including finished plant system forms, site appearance, end use and time constraints

- The interactions between plants and animals and how to maximise the benefits
- A range of plant and animal species and their cultivars or breeds and what they contribute to the system.
- Cultural requirements, planting procedures and follow up care for plants.
- Environment and habitat requirements of animal species
- The identification of pests, diseases, parasites, and deficiencies that are likely to affect plants and animals and the use of appropriate treatments
- Soils and appropriate soil amelioration techniques
- The ecology of the native species, and their value in a Permaculture system.
- OHS legislative requirements and codes of practice, OHS procedures, OHS employee and employer responsibilities and hazard identification, assessment and control.

Essential skills:

Ability to:

- Communicate orally and in writing with work team members, supervisors, contractors and consultants
- Utilise recording, reporting, analysis and work procedure documents
- Interpret site plans, plant establishment specifications and test results
- Measure quantities, calculate material requirements, area, volume, ratios and application rates
- Coordinate work group, contractors and own work activities.

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. 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.

Design may include, but is not limited to:

- permaculture plan
- planting guilds
- companion planting associations
- planting patterns
- charts and maps drawn up to assist with organisation of elements in the permaculture system

Permaculture system may include:

- house and garden where permaculture is practiced
- farm or small holding where permaculture is practiced
- community garden or city farm where permaculture is practiced
- school garden where permaculture is practiced

Planting methods may include:

- tube planting
- hand or machine assisted planting of seedlings
- planting of divisions
- direct seeding
- transplanting
- laying
- rolling
- chaffing
- sprigging

System features may include but are not limited to:

- Chicken, rabbit, guinea pig or other tractor systems
- continuous worm farm systems
- chicken dome pattern systems
- tyre pond and mandala aquaculture systems appropriate to an urban permaculture system
- aquaponics systems
- duck and rice systems and other integrated systems appropriate to an urban permaculture system which utilise an animal, fish or bird species to generate a yield in association with plant species.

Enterprise work procedures may include:	• procedures based on sound permacultural and horticultural principles and practices • supervisor's oral or written instructions • plant establishment program • enterprise standard operating procedures (SOPs) • specifications • routine maintenance schedules • work notes • product labels • Material Safety Data Sheets (MSDSs) • manufacturers' service specifications and operator's manuals • waste disposal • recycling and re-use guidelines • OHS procedures
Materials may include:	• soil additives and ameliorants • approved fertilisers • materials for protecting plants • weed, pest and disease control treatments and materials
Tools, equipment and machinery may include:	• hand tools • small machinery and equipment such as brush cutters, mowers, hedgers and mulchers • irrigation and drainage systems and components
OHS hazards may include:	• disturbance or interruption of services • solar radiation • dust • noise • soil-, water- and air-borne micro-organisms • chemicals and substances hazardous to animal or human health • sharp hand tools and equipment • manual handling • moving vehicles, machinery and machinery parts • spider and insect bites • uneven surfaces • flying objects
Appropriate action may include:	• elimination, mitigation or minimisation of risks • reporting to a supervisor • documenting according to organisational, risk management, quality assurance or continuous improvement policies and procedures

Safety may include:	• first aid kit • high visibility vests • spray jacket or suit • reversing alarms on mobile equipment • signage • barriers.
Personal protective equipment (PPE) may include:	• hat • boots • overalls • gloves • goggles • respirator or face mask • face guard • spray jacket or suit • hearing protection • sunscreen lotion • hard hat
OHS requirements may include:	• identifying hazards, assessing risks and implementing controls • cleaning, maintaining and storing tools, equipment and machinery • appropriate use, maintenance and storage of PPE including sun protection • safe operation of tools, equipment and machinery • safe handling, use and storage of treatments and organically based materials which may be hazardous to human or animal health • correct manual handling • basic first aid • safety procedures for protection of others • personal hygiene • reporting problems to supervisors

Environmental implications may include:	Beneficial environmental impacts: • soil improvement • recycling within the system • minimal escape of contaminants to the external environment • improved production • healthier ecosystems • more efficient water and nutrient utilisation • reduced weed numbers • the minerals accumulated by plants and animals can be returned to the soil Detrimental environmental impacts: • excess noise, dust or water • seed dispersal during and after mechanical removal of weeds • systems do not function effectively because of inadequate implementation techniques and/or poor design • Pollutants such as animal excreta or other wastes could enter the system.
Clean and safe work area may include:	• disabling unused tools, equipment and machinery and storing neatly • safely storing materials on site • using signage and safety barriers during and removing after activities are completed • efficiently removing and processing debris and waste from the work area
Site retrofitting may include but is not limited to:	• cultivating the area to be planted • constructing soil retainers • installing irrigation and drainage systems including swales, diversion drains, mulch-pit paths • establishing integrated plant and animal systems • collection and storage of nutrients or water • solar passive modifications to structures
Additives may include:	• lime • gypsum • emollients • fertilisers • manures • organic materials • fungal and disease control agents

Site conditions may include:	• soil moisture content, pH levels, salinity, texture, compaction • aspect • pollutants or toxic residue • climate • buildings and building works • roads and access
Patterns may include:	• Patterns in space, such as planting patterns, naturally occurring patterns in nature (radial and bilateral symmetry, spirals, circles, dendritic and mandala patterns etc.) • Patterns in time, such as succession planting, breeding cycles, seasonality • Patterns in human culture such as gardening systems • Nature as the model for design, such as stacking or layering as with a natural forest • Gravity as a force for design, such as using contours in design • Nutrient, water and energy capture, storage and re-use according to the inputs, outputs and intrinsic features of the system
Element must include:	• Species chosen for their functions in the system including plants, animals and objects (built or existing) • together form a system • elements are chosen for mutual benefit • each important function (energy, water, food, fuel etc.) is supported by many elements • elements support the needs of the system within the overall design
Major defects may include:	• any condition that will prevent the plant from reaching its full potential, including wilt, stunted growth, root damage and severely root-bound seedlings
Minor defects may include:	• any condition that may be repaired such as damage or breaks sustained by plants that can be trimmed or treated so that the plants can still reach their desired potential
Zone and sector analysis must include:	• Consideration of the frequency of use and intensity of need of elements in the system • Consideration of the spacial requirements of elements in the system • Mutual benefit and connections between zones • Consideration of the specific needs of the location of the system in terms of climate; access; slope; potential for wild fire, flood, tsunami or other catastrophic force; • Consideration of the neighbouring or local environment, its need, products and intrinsic features

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Post-installation care may include:	• watering • fertilising • feeding • controlling pests and diseases • weeding • labelling • mowing • mulching • pruning • protecting • staking • trellising • monitoring health • checking predator protection • nutrient run-offs • water quality factors for an integrated animal system
Waste material may include:	• specified noxious or toxic materials (such as weed seed heads, noxious weeds and chemical treatments which may affect human or animal health) • recyclable materials (such as paper, plastic and metal-based litter) • composting waste (such as soft plant materials) • reusable materials (such as cloths and containers for washing, woody waste) • returnable materials (such as oils and chemical containers) • waste may be removed to designated areas for recycling, reuse, return to the manufacturer for disposal

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.

Context/s of Assessment and specific resources

- 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
    - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
    - access to relevant Permaculture texts and audio-visual material.
    - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
    - ~ through appropriately realistically simulated activities at the RTO, and/or
    - ~ in an appropriate range of situations in the

workplace

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843WAT09C Install and maintain permaculture water systems

Unit Descriptor

This unit provides the skills and knowledge to install and maintain permaculture water systems, organise resources for installation work, set out and prepare site, install water system components, complete installation work, commission water system systems and communicate with work team members, supervisors, contractors and consultants.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Organise resources for installation work	1.1 Identify the construction site and construction method for the ***permaculture water system*** according to the ***permaculture plan*** and ***enterprise work procedures***.
	1.2 Select ***materials***, ***tools, equipment and machinery*** according to permaculture water storage, movement and filtering systems design requirements and enterprise work procedures.
	1.3 Check parts and equipment delivered to site according to system drawings and specifications on permaculture plan.
	1.4 Carry out pre-operational and safety checks on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
	1.5 ***OHS hazards*** are identified, risks assessed, controls implemented and ***appropriate action*** taken.
	1.6 Select, use and maintain suitable ***safety*** and ***personal protective equipment (PPE)***.
	1.7 Check ***water supply*** to ensure that it is compatible with system specifications.
2 Set out and prepare site	2.1 Measure and mark-out permaculture water system lines or lay out in accordance with the permaculture plan.

		2.2 Dig trenches, where required, at the specified depth without damage to services, facilities, features and established plants.
		2.3 Equipment operation and work practices conform with enterprise and legislative ***OHS requirements***.
		2.4 Observe any ***regulations and legislative requirements*** relevant to the situation.
		2.5 Consider the needs of other stakeholders while setting out and preparing the site for permaculture water systems.
3	Install permaculture water systems	3.1 Interpret the permaculture plan and, where applicable, and supervise and monitor work by contractor.
		3.2 Assemble and connect parts of irrigation systems, where used, according to manufacturer's specifications and the permaculture plan.
		3.3 Install and adjust pump fittings and valves, where used according to manufacturer's specifications and the permaculture plan.
		3.4 Maintain a ***clean and safe work area*** while installation work is carried out.
4	Complete installation work	4.1 Finish off earthworks to permaculture plan specifications and enterprise work procedures.
		4.2 Check the system configuration and capacity matches the installation plan.
		4.3 Remove or dispose of ***waste material*** from the site, and restore site to original state in an environmentally aware and safe manner according to enterprise work procedures.
		4.4 Clean, maintain and store tools, equipment and machinery according to enterprise work procedures.
5	Commission permaculture water systems	5.1 Start up and flush irrigation and pump systems, where installed, in accordance with the operation manual.
		5.2 Identify and correct any operating faults identified according to operations manual.
		5.3 ***Test***, calibrate and monitor equipment, where used, according to manufacturers specifications.
		5.4 Record or report work outcomes, where appropriate.
6	Monitor and maintain permaculture water systems	6.1 Regularly check permaculture water systems and monitor for optimum performance.
		6.2 Carry out routine maintenance procedures on permaculture water systems.
		6.3 Carry out repairs on permaculture water systems as required.
		6.4 Install erosion and sediment control measures, if required, in accordance with manufacturers recommendation and the

permaculture plan.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture practices regarding water
- Contour understanding
- Methods and techniques of permaculture water systems
- Components of permaculture water systems
- Characteristics and operation of joints, valves and sprinkler components
- Operation of pumps and water flow rates
- Behaviour of water on varying terrain and soil types
- Soil water retention testing techniques
- Water quality and water filtration techniques
- Calculations for installing permaculture water systems
- Soil characteristics
- Enterprise OHS procedures.

Essential skills:

Ability to:

- Organise resources for installation work
- Set out and prepare site
- Install permaculture water systems materials and components
- Complete installation work
- Commission permaculture water systems
- Communicate with work team members, supervisors, contractors and consultants
- Implement and follow relevant enterprise OHS and environmental policies and procedures.

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. 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.

Permaculture water system may include:	• swales • contour banks • terraces • mulch-pit paths • diversion channels and other passive installations • mains pressure systems • low pressure/gravity systems • below ground systems • above ground systems • spray, dripper, and capillary irrigation systems • water tanks • guttering and first-flush diversion system
Permaculture plan may include:	• Permaculture design including charts, maps and plans of water component installations • Keyline design • Contour survey where permaculture principles have been adhered to
Enterprise work procedures may include:	• supervisor's oral or written instructions • plant establishment program • enterprise standard operating procedures (SOPs) • specifications • routine maintenance schedules • work notes • product labels • Material Safety Data Sheets (MSDSs) • manufacturers' service specifications and operator's manuals • waste disposal • recycling and re-use guidelines • OHS procedures
Materials may include:	• water systems components • glues • welds • construction and backfill materials

Tools, equipment and machinery may include:

- automatic level
- laser level
- dumpy level
- Cowley level
- staff
- boning rods
- pegs
- rake,
- shovel
- spade
- rollers
- wheelbarrow
- hoses and hose fittings
- bobcat
- ditch witch
- backhoe
- front-end loader
- grader
- mechanical roller
- vehicle for towing equipment
- hydraulic trailer
- tractor
- 3-point linkage equipment
- pumps and pump fittings
- irrigation parts and fittings
- gabion boxes
- erosion control measures
- drainage components
- fitting and welding tools appropriate to the permaculture water system
- pumps
- motors
- meters
- delivery equipment
- pipe work
- system controllers
- injectors
- tensiometers
- probe tubes
- flow meter
- pressure gauge
- computer and/or other scheduling devices
- water recycling equipment
- spray equipment

OHS hazards may include:	• disturbance or interruption of services • solar radiation • dust • noise • soil-, water- and air-borne micro-organisms • chemicals and substances hazardous to animal or human health • sharp hand tools and equipment • manual handling • moving vehicles, machinery and machinery parts • spider and insect bites • uneven surfaces • flying objects and falling objects
Safety equipment may include:	• signage • first aid kit • high visibility clothing • reversing alarm on moving equipment • barriers
Personal protective equipment (PPE) may include:	• hat • boots • overalls • gloves • goggles • respirator or face mask • face guard • hearing protection • sunscreen lotion • hard hat
Water supply may include:	• mains • dam • bore • windmill • tank • channel

OHS requirements may include:	• identifying hazards, assessing risks and implementing controls • cleaning, maintaining and storing tools, equipment and machinery • appropriate use, maintenance and storage of PPE including sun protection • safe operation of tools, equipment and machinery • safe handling, use and storage of treatments and organically based materials which may be hazardous to human or animal health • correct manual handling • basic first aid • safety procedures for protection of others • personal hygiene • reporting problems to supervisors
Regulations and legislative requirements may include:	• permits for pruning or removal of large trees • connecting to water systems • licences for operating specialised machinery (e.g., chainsaws, skid steer loaders, forklifts) • setting up traffic and pedestrian barriers • digging near services (phone, gas, power, water, sewerage and drains) • installing dams or diverting water in catchments • installing tanks
Other stakeholders may include:	• neighbours • other occupants of the land or locality • local community (e.g. cultural appropriateness)
Clean and safe work area may include:	• disabling unused tools, equipment and machinery and storing neatly out of the way of installation activities • safely storing materials on site • using signage and safety barriers during and removing after construction activities are completed • swiftly and efficiently removing and processing debris and waste material not for immediate use from the work area

Waste material may include:

- unused construction and excavated materials
- plant debris
- litter
- broken components
- plant-based material may be mulched or composted
- plastic, metal, paper-based materials may be recycled, re-used, returned to the manufacturer or disposed of according to enterprise work procedures
- waste may be removed to designated areas for recycling, reuse, return to the manufacturer for disposal

Testing equipment may include:

- pressure gauges
- flow meters
- bucket and stop-watch

OHS hazards may include:

- disturbance or interruption of services
- solar radiation
- dust
- noise
- soil-, water- and air-borne micro-organisms
- chemicals and substances hazardous to animal or human health
- sharp hand tools and equipment
- manual handling
- moving vehicles, machinery and machinery parts
- spider and insect bites
- uneven surfaces
- flying objects

Appropriate action may include:

- elimination, mitigation or minimisation of risks
- reporting to a supervisor
- documenting according to organisational, risk management, quality assurance or continuous improvement policies and procedures

Safety may include:

- first aid kit
- high visibility vests
- spray jacket or suit
- reversing alarms on mobile equipment
- signage
- barriers.

Personal protective equipment (PPE) may include:	• hat • boots • overalls • gloves • goggles • respirator or face mask • face guard • spray jacket or suit • hearing protection • sunscreen lotion • hard hat
OHS requirements may include:	• identifying hazards, assessing risks and implementing controls • cleaning, maintaining and storing tools, equipment and machinery • appropriate use, maintenance and storage of PPE including sun protection • safe operation of tools, equipment and machinery • safe handling, use and storage of treatments and organically based materials which may be hazardous to human or animal health • correct manual handling • basic first aid • safety procedures for protection of others • personal hygiene • reporting problems to supervisors
Regulations and legislative requirements may include:	• planning acts and codes • earth movement and digging guidelines and legislation • environmental legislation • land-restoration codes • water conservation guidelines and legislation • soil movement regulations • habitat and wildlife protection legislation
Clean and safe work area may include:	• disabling unused tools, equipment and machinery and storing neatly • safely storing materials on site • using signage and safety barriers during and removing after activities are completed • efficiently removing and processing debris and waste from the work area
Waste material may include:	• surplus sub-soil or rock to be used elsewhere as clean fill • topsoil moved and re-used elsewhere • building rubble or off-cuts from installation works recycled or re-used where possible or responsibly disposed of • hazardous material disposed of in the appropriate way • plant debris or combustible material removed to alleviate danger of bushfire

Test may include:	• pre-start and safety checks • commissioning tests for new equipment • routine annual or seasonal checks on equipment used seasonally • checks after repairs • checks where conditions are extreme

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.
Context/s of Assessment and specific resources	• 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment • Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level • The learner and trainer should have access to appropriate documentation and resources normally used in the workplace • Resources for the assessment include: o access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes. o access to relevant Permaculture texts and audio-visual material. o access to a working permaculture site for practical study purposes.
Method of assessment	• While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated

situations. It also needs to be assessed on a number of occasions.

- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843BUI10C Install structures for permaculture systems

Unit Descriptor

This unit provides the skills and knowledge to install permaculture structures and features. These structures and features may include fences, trellises, animal housing, sheds, pergolas, appropriate technologies and other constructed features.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Plan and prepare for structural work	1.1 Interpret plans and clarify specifications with the supervisor, client or owner, if appropriate.
	1.2 Check the quantity and quality of materials to ensure they conform to ***permaculture design drawings*** and specifications.
	1.3 Select and check ***Tools and equipment*** for serviceability according to ***enterprise work procedures***.
	1.4 ***OHS hazards*** are identified, risks assessed, ***controls*** implemented and ***appropriate action*** taken.
	1.5 Identify ***environmental implications*** of installing ***permaculture structures***.
2 Set out the site for the structure	2.1 Determine the location of ***services*** from site plans and from ***local knowledge***.
	2.2 Mark out the position of the structure or feature according to permaculture design drawings and specifications.
	2.3 Excavate and prepare any ***footings*** or post holes according to the type of structure to be installed.
3 Prepare and cut materials	3.1 Lay out ***materials*** ready for assembly to the requirements contained in the permaculture design drawings and specifications.
	3.2 Mark out the length of materials and the positions of joins according to designated specifications in the permaculture design drawings.

		3.3 Select, use and maintain ***cutting*** and other tools according to manufacturers recommendations and ***OHS specifications.***
		3.4 Cut and join materials in preparation for assembly.
4	Assemble and erect structure	4.1 Assemble materials into position and ***fix*** into place according to permaculture design drawings and specifications.
		4.2 ***Finish*** structure to ensure all materials are secure and complete.
		4.3 Apply any ***coatings*** required according to specifications, manufacturers recommendations and ***OHS guidelines.***
5	Check quality of work and clean up site	5.1 Inspect quality of finished works to ensure the standard of the finished structure or feature is in accordance with the permaculture design drawings and specifications.
		5.2 Clean up debris from structure and site according to enterprise work procedures.
		5.3 Dispose of waste material in an environmentally responsible manner.
		5.4 Store or recycle unused materials for future re-use according to enterprise work procedures.
		5.5 Clean and store tools and equipment according to enterprise work procedures.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture principles regarding structures and the built environment
- Measuring principles and techniques
- Typical permaculture structures and construction techniques
- The correct use of hand and power tools and other OHS requirements associated with installing structures and features
- Comparative environmental implications associated with excavation and construction activity

Essential skills:

Ability to:

- Interpret permaculture design drawings and specifications
- Measure and mark lengths of materials accurately
- Join and cut materials using different techniques and methods
- Use tools and equipment safely

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. 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.

Permaculture design drawings may include:	• Permaculture design including construction detail drawings • measured drawing of structure in accordance with permaculture principles
Tools and equipment may include:	• levelling equipment • string line • tape measure • marking gauge • spade • shovel • crow bar • hammer • spanner • file • saw • angle grinder • electric saw
Enterprise work procedures may include:	• supervisor's oral or written instructions • plant establishment program • enterprise standard operating procedures (SOPs) • specifications • routine maintenance schedules • work notes • product labels • Material Safety Data Sheets (MSDSs) • manufacturers' service specifications and operator's manuals • waste disposal • recycling and re-use guidelines • OHS procedures
OHS hazards may include:	• manual lifting • use of power tools • use of sharp hand tools • dust • sun exposure

Controls may include:	• safe lifting and transporting techniques, the • appropriate use of personal protective clothing and equipment such as overalls, boots, face shield, hat, • installation of safety signs and barriers • disabling and disconnecting of soldering, thermal cutting equipment and other powered tools when not in use • identification of site access points • safe storage of materials on site • drinking of fluids • basic first aid
Appropriate action may include:	• elimination, mitigation or minimisation of risks • reporting to a supervisor • documenting according to organisational, risk management, quality assurance or continuous improvement policies and procedures
Environmental implications may include:	• soil disturbance • excess dust or noise • alteration to water flow during and after construction
Permaculture structures may include but are not limited to:	• garden structures and features • fences and trellising • animal housing and shelters • netting structures and protective devices for plants • paving and landscaping • composting and worm-farming structures • retaining walls (observe all regulatory conditions) • sheds or small outbuildings (observe all regulatory conditions) • components of houses or other buildings (observe all regulatory conditions)
Services may include:	• power, gas, water, stormwater, sewerage or septic connections, phone and optical cables
Local knowledge may include:	• landholder, client or contractor knowledge • council records • information in the public domain

Footings may include:

- concrete or in some cases rammed earth
- timber
- steel
- ant caps/other mechanisms for termite control
- depth of footings
- timing of footing installation

Materials may include:

- timber
- metal
- panels
- sheets
- posts
- bars
- rails
- lattice
- wire or wire mesh
- bamboo
- straw bales
- soil suitable for mud brick, cob, or rammed earth
- materials commonly used in simple appropriate technologies

Cutting may include:

- hand saws
- angle grinders
- electric saws with metal blades
- thermal cutting equipment (oxy acetylene set)

OHS specifications may include:

- pre start checks of blades, torches, irons, nuts, bolts, and switches
- operating the equipment according to manufacturers recommendations
- correct handling
- wearing of protective clothing and eye protection
- regular servicing
- safe storage when not in use

Fix may include but are not limited to:

- brackets
- galvanised plates
- saddles
- nails
- bolts
- coach screws
- masonry bolt
- ties
- mortar

Finish may include but is not limited to:	• cutting off overhangs • burring angles and edges • any other cosmetic work that may be required
Coatings may include but are not limited to:	• lime washes • natural paints • primers • paints • oils • stains • varnish • mosaic or tiling
OHS guidelines	• identifying hazards, assessing risks and implementing controls • cleaning, maintaining and storing tools, equipment and machinery • appropriate use, maintenance and storage of PPE including sun protection • safe operation of tools, equipment and machinery • safe handling, use and storage of treatments and organically based materials which may be hazardous to human or animal health • correct manual handling • basic first aid • safety procedures for protection of others • personal hygiene reporting problems to supervisors

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.
Context/s of Assessment and	• Competency is demonstrated by performance of all

specific resources

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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
  - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
  - access to relevant Permaculture texts and audio-visual material.
  - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace
- The learner and trainer should have access to appropriate documentation and resources normally

used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843IPA11C Kill and dress small livestock for domestic consumption

Unit Descriptor

This unit provides the skills and knowledge require to identify and select small livestock for slaughter, preparing killing equipment, conducting safe and humane slaughter of small livestock, dressing and protecting meat, appropriately storing meat and ensuring meat is appropriate to end-use requirements. Competency also requires the application of skills and knowledge to hygienically clean equipment and slaughter areas and dispose of waste materials appropriately. All work in this area needs to be conducted in a way that ensures that slaughter and post-slaughter processes are conducted according to animal welfare, health and occupational health and safety requirements.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of farm supervisor or co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Prepare for slaughter operation	1.1 Identify ***reasons*** for slaughter.
	1.2 Prepare ***equipment*** and transport to slaughter area.
	1.3 ***Small livestock*** to be slaughtered are ***selected*** and ***prepared*** for slaughter according to ***enterprise, regulatory and animal welfare requirements***.
	1.4 Determine ***slaughter method*** and prepare ***slaughter area***.
2 Slaughter animal	2.1 Slaughter is conducted humanely, with a minimum of stress to the animal and according to ***OHS requirements***.
	2.2 ***Dress, hang and protect carcass***.
	2.3 Follow all relevant enterprise OHS, regulatory and animal welfare requirements during slaughter operations.
3 Complete slaughter	3.1 Dispose of waste products in an environmentally responsible manner and according to state/territory and

operations	local authority health standard.
	3.2 ***Usable offal*** is ***hygienically and safely handled*** immediately. ***Other useable products*** are separated and prepared as appropriate.
	3.3 Separate and prepare other useable products as appropriate.
	3.4 Identify intended ***end-use*** of meat.
	3.5 Prepare meat for end-use and ***store*** or ***treat*** appropriately.
	3.6 Hygienically clean equipment and store for re-use.
	3.7 Hygienically ***clean slaughter area*** to enterprise standards.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- The health restrictions and laws applying to the slaughter of livestock for sale (*small livestock slaughtered for domestic consumption should not be offered for sale except where these laws are well understood and adhered to*)
- Relevant legislative health and OHS requirements especially as they relate to livestock and slaughter, animal handling, and safe livestock handling techniques
- Enterprise and industry policies and codes of practice with regard to livestock slaughter, licensing and recording and reporting requirements
- Animal welfare legislation and withholding periods
- Offal disposal regulations
- Human health and hygiene
- Health issues affecting both humans and small livestock
- Poultry and small animal carcase hanging methods

Essential skills:

Ability to:

- Humanely and hygienically kill small livestock
- Dress and butcher small livestock carcasses
- Correctly use equipment for slaughter and butchering
- Clean and sterilise facilities and equipment
- Store meat
- Disposal of wastes from slaughter
- Package cuts
- Identify and select small animals for slaughter

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. 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.

Reasons may include:

- need to supply meat for domestic human or animal consumption
- need to cull pest animals (e.g. rabbits)
- need to cull animals in excess
- need to destroy old or sick small livestock

Equipment may include:

- knives (boning and skinning)
- meat cleaver
- axe
- guns *(licensed operators only)*
- bags and labels
- brooms and mops
- water urn
- hooks
- cover for carcass
- meat containers

Small livestock may include:

- poultry
- rabbits
- cavy (guinea pigs)
- fish and crustaceans

Selected animals may include:

- selected for human consumption on basis of:
  - age
  - body weight
  - health of small livestock
  - fat cover
  - coat condition
  - sex

Prepared may include*:*

- separation from the group
- emptying out
- observing withholding periods

Enterprise, regulatory and animal welfare requirements may include:	• meat industry health and safety guidelines • Australian standard for hygienic production of meat for human consumption • ANZFA food standards code • State and Territory regulation regarding meat slaughter handling and consumption • industry and enterprise quality assurance standards • withholding periods • animal welfare legislation • disease control legislation and requirements.
Slaughter methods may include:	• knife • axe • neck-break • other humane methods that result in the least possible pain or distress being inflicted upon the small livestock • rifle, bolt-gun (for wild rabbits) *Note: Where firearms are used, appropriate licences must be held and permits for culling issued*
Slaughter area may include:	• hygienically clean and well-ventilated area • outside area provided provision for protecting meat is made • area that can be easily cleaned and maintained in a clean state and where slaughter operations can be completed safely
OHS requirements may include	• safe livestock handling systems and procedures • safe use of rifles and other firearms if used • safe use of knives and axes • national meat industry safety guidelines, • safe manual handling systems and procedures • safe systems and procedures for outdoor work including protection from solar radiation and dust • the appropriate selection, use and maintenance of personal protective equipment
Dress, hang and protect carcass may include:	• dressed to avoid cuts to carcass or pelt • skin is prepared for drying, storage or disposal • protected from dust, heat, flies or wild birds/animals with appropriate gauze or bags or shelters until process is complete • cold room or cool room • refrigerator or freezer
Usable offal may include:	• select cuts, such as poultry offal or rabbit kidneys that are fit for human consumption

Hygienically and safely handled may include:	• handling offal safely and hygienically involves processing it quickly, cleanly in a cool and covered area
Other useable products may include but are not limited to:	• feathers • skins • chicken feet and combs
End-use may include:	• meat for human consumption • disposal of culled old or sick small livestock • maximise useful meat cuts and selections
Store or treat may include:	• cool rooms, refrigerators and freezers • smoke-houses or curing facilities • salting barrels • cauldrons or large boilers for cook treatments • containers for storage
Clean slaughter area may include:	• removal of blood and blood-affected materials (sawdust, paper etc) • removal of feathers, skins, un-usable offal and other bi-products of slaughter to be utilised or disposed of safely and hygienically • cleaning of area used to kill and dress small livestock to enterprise standards • steam sterilisation may be required in certain circumstances (such as where contamination or disease are likely)

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.

Context/s of Assessment and specific resources

- 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
  - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
  - access to relevant Permaculture texts and audio-visual material.
  - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the

workplace

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843IPA12B Plan organic garden and orchard systems

Unit Descriptor

This unit provides the skills and knowledge to plan organic garden and orchard systems and requires the application of horticultural and permaculture knowledge including permaculture principles, plant types, conditions and requirements to establish orchards for optimum production.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Assess site for organic garden and orchard system	1.1 Inspect site of ***organic garden and orchard system*** for ***environmental and physical attributes.***
	1.2 Research site characteristics using ***available sources***.
	1.3 Test soil and analyse the results
	1.4 Identify site ***constraints and opportunities***.
	1.5 Define location of existing structures and services.
	1.6 Prepare ***site plan*** and ***zone and sector plan*** of site with information collected on site visit.
2 Select plants for organic garden and orchard system	2.1 Select ***suitable plant varieties and types*** according to enterprise specifications.
	2.2 Determine preferred type of ***plant materials*** for planting.
	2.3 Determine number and size of plants/plant materials.
3 Develop planting plan for organic garden and orchard system	3.1 Identify zone and sector details from the site plan.
	3.2 Identify and place plants to be installed in the organic garden and orchard system.

3.3 Note actions, timelines and ***specific information*** on the plan.

3.4 Investigate availability of plants, materials and services for the organic garden and orchard system.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture principles and ethics
- Zone and sector planning
- Basic design process.
- Soil structure, types and function, including soil tests for agricultural purposes
- Soil maintenance and improvement techniques
- Aim and purpose of building organic garden and orchard systems.
- Design principles for organic garden and orchard systems.
- Features and characteristics of a range of plants used in organic garden and orchard systems.
- Growing requirements of a range of plants used in organic garden and orchard systems.

Essential skills:

Ability to:

- Assess site for planting
- Test soil and analyse the results
- Formulate a soil maintenance and improvement plan
- Select plants
- Develop planting plan
- Identify zones and sectors of site.

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. 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.

Organic garden and orchard systems must include:	• an orchard with 10 or more assorted fruit trees • integrated plant and animal systems • consideration of and design for plant ecosystem relationships
Environmental and physical attributes may include:	• zone and sector attributes • sun or light levels and angles • humidity, rainfall or other climate-related information • soil characteristics • frost and snow occurrences • vulnerability to fire or flood • water availability and location • access to and around site • pest problems or threats
Available sources may include but are not limited to:	• Local knowledge (e.g. neighbours) • books • magazines • articles • Internet
Constraints and opportunities may include:	• Slope • Soil characteristics • views • location of services (power, water etc.) • planning conditions or regulations • neighbourhood amenity • agricultural limitations (e.g. exclusion zones) • declared noxious weeds/pest animals • protected species
Site plan must include:	• boundaries of site drawn at an appropriate scale • direction of North (or sunward) • location of plants • other information relevant to the garden and orchard system drawn in clear and accurate graphic style • planting schedules and timelines including Gantt charts

Zone and sector plan may include:	• Zones for garden and orchard systems (Zones 1 & 2) • Sector information such as prevailing winds, fire aspect, winter and summer sun angles • Zone and sector plans may be drawn as overlays to the site plan
Suitable plant varieties and types may include:	• suitable for soil and climate of the site • compatible with each other and the local bioregion • open pollinated or non-hybrid varieties • heirloom or locally developed varieties
Plant materials may include:	• containerised plants • bare rooted plants • seedlings • stem or root cuttings • divisions • seed • bulbs, corms, rhizomes, tubers and marcots
Specific information may include:	• who is responsible for jobs/actions • maintenance requirements of plants or systems • construction detail or materials specified

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.
Context/s of Assessment and specific resources	• 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment • Assessment should reinforce the integration of the

key competencies and the common competencies for the particular AQF level

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
  - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
  - access to relevant Permaculture texts and audio-visual material.
  - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843RES13B Co-ordinate preparation and storage of permaculture products

Unit Descriptor

This unit provides the skills and knowledge of permaculture product preservation techniques; planning for the preparation of permaculture products; handling and storage requirements of permaculture products and their treatment, storage and presentation requirements.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Plan for preparation of permaculture products	1.1 Identify ***permaculture products*** to be prepared according to ***enterprise work procedures.***
	1.2 Select ***Materials, tools, equipment and machinery*** according to enterprise work procedures.
	1.3 Carry out pre-operational and safety checks on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
	1.4 ***OHS hazards*** are identified, risks assessed, controls implemented and ***appropriate action*** taken
	1.5 Select, use and maintain suitable ***safety*** and ***personal protective equipment*** (PPE).
2 Co-ordinate preparation of permaculture products	2.1 Implement in sequence according to the ***product preparation plan***.
	2.2 Tasks are undertaken according to ***OHS requirements*** and ***environmental considerations.***
	2.3 Maintain ***clean, safe and hygienic work area*** throughout and on completion of work.
3 Treat permaculture products	3.1 Products are graded and labelled according to the product preparation plan and enterprise work procedures.
	3.2 Identify and disposed of products that do not meet

		specifications and enterprise standards according to ***enterprise environmental procedures***.
		3.3 Select ***treatments*** according to product requirements, and the product preparation plan.
		3.4 Permaculture products are treated in an economical, methodical, and efficient manner that ***minimises damage to products.***
4	Pack and present permaculture products	4.1 Implement ***packing and presentation requirements*** as specified in the product preparation plan and enterprise work procedures.
		4.2 Monitor packing and presentation of product and take corrective action to ensure that packing and presentation meet required standard.
5	Store permaculture products	5.1 Adhere to ***storage requirements*** specified in the product preparation plan and enterprise work procedures.
		5.2 Monitor storage processes and facilities and take corrective action, when required, to maintain product quality.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Permaculture principles and ethics
- Seasonal availability cycles
- Products suitable for storage
- Storage methods appropriate to particular products
- Client expectations regarding certain products
- The importance of maintaining the quality of products including handling and storage requirements
- Correct storage conditions for a range of products
- Hygiene issues in the handling and storage of biological products.

Essential skills:

Ability to:

- Interpret and confirm chemical labels, MSDS, work instructions and enterprise work procedures
- Processing and preservation techniques
- Packaging and storage processes
- Count and calculate quantities, treatment application rates and storage requirements
- Correctly dispose of waste materials to minimise environmental impact
- Implement appropriate OHS procedures.

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. 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.

Permaculture products may include:

Plant products include:

- fruits
- vegetables
- seeds
- herbs
- flowers
- foliage
- grains
- bulbs
- tubers
- nuts
- mushrooms
- wild harvest plants
- oils
- firewood
- bamboo
- timber
- legumes and pulses
- mulch
- straw
- hay
- sawdust
- sap

Animal products include:

- meat
- eggs
- milk & dairy products
- honey & bee products
- young animals
- fish fingerlings
- feathers
- wool
- manure
- bones

Enterprise work procedures may include:

- procedures based on sound permaculture principles and practices
- preservation techniques
- product storage and handling techniques
- enterprise standard operating procedures (SOP)
- specifications
- routine maintenance schedules
- work notes
- product labels
- Materials Safety Data Sheets (MSDS)
- manufacturers service specifications and operators manuals
- waste disposal
- recycling and re-use guidelines
- OHS procedures

Materials, tools, equipment and machinery may include but are not limited to:

- bottling outfit
- dehydrator
- corers, peelers and slicers
- mincer
- cultures and preservatives
- labels
- tractors
- trailers
- light trucks
- forklifts
- snips
- knives
- gloves
- containers
- seals, lids & clips
- sieves and funnels
- moulds and frames
- chain saw
- washers
- brushes
- dryers
- labelling devices
- packing tools
- scales
- pallets
- hand trolleys
- lifting aids
- cool rooms
- storage facilities
- cellar
- root cellar
- grading machinery
- saw bench

OHS hazards may include but are not limited to:

- wet working environment
- solar radiation
- dust
- pollen
- soil-borne micro-organisms
- noise
- hazardous substances
- confined spaces
- sharp hand tools and equipment
- manual handling
- slippery or uneven surfaces
- moving equipment, machinery and vehicles

Appropriate action may include:

- elimination, mitigation or minimisation of risks
- reporting to a supervisor
- documenting according to organisational, risk management, quality assurance or continuous improvement policies and procedures

Safety may include:

- barriers
- guards
- kill-switches
- signage

Personal protective equipment may include:	• hat • boots, • overalls • gloves • apron • waterproof clothing • spray clothing • goggles • face mask • face guard • hearing protection • sunscreen lotion • hard hat • bee-keeping apparel
Product preparation plan may include but is not limited to:	• storage requirements • application methods • processing methods • record keeping • labelling requirements • marketing plan • food preserving or larder lists • quantity calculations for the needs of the enterprise or organisation • advance order calculations and plan for products for sale
OHS requirements may include:	• identifying hazards, assessing risks and implementing controls • cleaning, maintaining and storing tools, equipment and machinery • appropriate use, maintenance and storage of PPE • safe operation of tools, equipment and machinery • ensuring operational safety exits from cool rooms and gassing chambers • confined spaces policy and procedures • safe handling, use and storage of hazardous substances • correct manual handling • basic first aid • safety procedures for protection of others • personal hygiene • reporting problems to supervisors or co-workers

Environmental considerations may include:	• safe disposal of residues • air, water and soil quality (such as effects of adding nutrients or dust) • noise pollution • responsible disposal of unwanted seed from harvested products • potential for contamination, disease spread or harbouring of pests
Clean, safe and hygienic work area may include:	• disabling tools, equipment and machinery no longer required and storing neatly after activities • safely storing materials • using signage and safety barriers during and removing after activities are completed • cleaning or sterilising equipment and storage facilities • efficiently removing or processing debris from the work area
Enterprise environmental procedures may include but are not limited to:	• procedures for the treatment of out-of-standard products • value adding and recycling residual and 'waste' materials
Treatments may include:	• removal of dirt and foreign material • stripping excess leaves and/or trimming • brushing • washing/hydration • drying • applying preservatives • dipping • observing quarantine requirements • storing in a controlled environment • comply with organic standards, if appropriate
Minimise damage to products may include:	• wearing gloves • maintaining sharp tools • placing rather than dropping products into containers • cutting fingernails • observing fill heights • arrangement of products • packing instructions for containers • correctly stacking containers on transport
Packing and presentation requirements may include:	• specifications for packaging materials and containers • filling techniques • arrangement of products within the container • labelling

Storage requirements may include:	• specifications for storage facilities • environmental conditions such as temperature, humidity and light • length of storage • position in the storage facility • cleaning processes to ensure a level of hygiene that protects the quality and health status of the stored products

EVIDENCE GUIDE

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Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.
Context/s of Assessment and specific resources	• 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment • Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level • The learner and trainer should have access to appropriate documentation and resources normally used in the workplace • Resources for the assessment include: o access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes. o access to relevant Permaculture texts and audio-visual material. o access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
  - ~ through appropriately realistically simulated activities at the RTO, and/or
  - ~ in an appropriate range of situations in the workplace
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843DES14B Read and interpret property maps and plans

Unit Descriptor

This unit provides the skills and knowledge to read and interpret property maps and plans, take-off information from maps and use maps in field situations.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to work at the co-ordination level and involves the application of skills and knowledge at the specialist tradesperson level or at the level of farm supervisor or co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Recognise maps and plans	1.1 Define different types and uses of ***maps and plans***
	1.2 Recognise features and characteristics of different maps and plans.
	1.3 Identify scale and north point location techniques.
	1.4 Recognise mapping conventions and common symbols.
2 Take-off information from maps	2.1 Determine distances and areas from map and plans.
	2.2 Identify topographic features from maps and plans.
	2.3 Recognise site boundaries and site structures from maps and plans.
3 Use maps in field situations	3.1 ***Locate current position in the field*** using landmarks and key geographical features.
	3.2 Recognise hazards and potential hazards in traversing from location to destination and interpret these from maps or plans, field observations, and local knowledge.
	3.3 Check accuracy of map or plan content against site features and check curved plane on a flat surface distortions.
	3.4 Set out contour lines on site from maps or plans.
	3.5 Locate ***keyline and key point*** on map and in the field.
	3.6 Set out ***zones*** or property boundaries using grid system

from maps or plans.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Uses of a range of maps and plans, models, sections and elevations, and photographs
- Mapping conventions including symbolisation, distance and scale, direction, co-ordinate systems, line and area symbols.
- Land survey systems, map projections, colour and symbol systems
- Contours, slopes and slope profiles.
- Topographic features.

Essential skills:

Ability to:

- Recognise maps and plans
- Take-off information from maps
- Use maps in field situations.

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. 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.

Maps and plans may include:	• paper • electronic • 3D models of sites including sand-box models • contour models • elevations and cross-sections
Locate current position in the field may include:	• Use of GPS equipment • Use of other low-tech methods such as the sun, moon and stars • Use of maps and plans • Compass barings
Keyline and key point must include:	• As described in *Water For Every Farm* by P.J. Yeomans
Zones may include:	• defined use areas in permaculture designs where the boundaries between one zone and another can be plotted on a plan. • areas defined by intensity of use, space needed by elements in a system, and time spent attending to elements in a system

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment environment should represent realistic workplace conditions as closely as possible.

Context/s of Assessment and specific resources

- 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
    - access to SKOPE sheets developed for this unit to reinforce complete understanding in aid of achieving the most positive outcomes.
    - access to relevant Permaculture texts and audio-visual material.
    - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
    - ~ through appropriately realistically simulated activities at the RTO, and/or
    - ~ in an appropriate range of situations in the

workplace

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.

QLD843COM15B Co-ordinate community projects

Unit Descriptor

This unit provides the skills and knowledge to co-ordinate small-scale community projects and small groups of people working on a permaculture-related project.

Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills

The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements

Application of the Unit

This unit applies to permaculture work site co-ordination work and involves the application of skills and knowledge at the specialist level or at the level of co-ordinator within community programs. It is likely to involve the supervision of others and interactions with clients.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
1 Prepare for community project	1.1 Clarify requirements of the ***community project*** after community consultation and design.
	1.2 Identify personnel, equipment and material resource requirements according to the scope of the project.
	1.3 Identify resources including on-site, off-site, purchased, traded or scavenged.
	1.4 Identify and document the order of activities and time allocation.
	1.5 Identify the ***environmental implications*** of the proposed community projects and assess the likely outcomes.
	1.6 ***OHS hazards*** are identified, risks assessed, controls implemented and appropriate action taken.
	1.7 Select, use and maintain ***personal protective equipment*** (PPE) according to the type of community project to be undertaken.
2 Organise resources	2.1 Acquire ***materials*** and ***equipment/machinery*** as required for community project and the ***project plan***.
	2.2 Apply for ***external agency permits*** in the correct order where required.
	2.3 ***Notify affected parties*** of works to be undertaken where required.
	2.4 Organise delivery of materials and equipment/machinery to site according to the project plan.
	2.5 Organise personnel to be on site when they are required.

3	Co-ordinate and report on activities	3.1 Co-ordinate all resources to suit the scope of the project and the project plan.
		3.2 Direct personnel in activities for each period of work.
		3.3 Monitor personnel, activities, timelines and resource usage and ***document*** according to the project plan.
		3.4 Recognise ***contingency situations*** and take corrective action according to the project plan.
		3.5 Select and train teams to take over the running of the project to ensure the long-term survival of the project and the maximum benefit to the community.
		3.6 Write a simple ***project report*** to inform community and other stakeholders.

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Essential knowledge:

- Environmental awareness associated with undertaking project works to ensure the impact on the environment is minimal.
- Work schedule programming.
- Hiring and subcontracting of labour and attracting volunteers.
- Possible causes of disruption to work activities and their effect on quality and time schedules.
- Responsibilities and requirements for obtaining external agency permits as necessary.
- The range, use and availability of materials, equipment and machinery that may be required for the project.
- OHS issues, legislative requirements and Codes of Practice.
- Community consultation.
- Project coordination principles.
- Meeting and committee protocols.

Essential skills:

Ability to:

- Read and interpret documentation associated with community development projects.
- Read maps and plans
- Calculate material and resource requirements.
- Co-ordinate a team to achieve optimum performance.
- Communicate with personnel at all levels.
- Document results clearly and concisely.
- Perform an OHS risk assessment.

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. 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.

Community project may include:	• small or short-term projects • part of a larger projects • organising field staff or volunteers • organising facilities • organising materials, tools or equipment • organising community meetings relating to the project • supporting community committees • arranging social events • seeking fundraising and sponsorship • representing the community group or project • presenting reports to meetings
Resource requirements may include:	• Goods that will be consumed by the project (e.g. plants, stakes and mulch in a planting program, fences, shelters and stock for animal systems) • Equipment and machinery (e.g. hand tools, tractors, vehicles, watering equipment and personal protective equipment) • Human resources (e.g. Personnel from within an enterprise, staff "borrowed" from another enterprise, hired personnel or volunteers including WWOOFers).
Environmental implications may include:	• threats to flora and fauna • risk of contamination of soils, water or to and from the adjoining property through drains and water sources • Land used for a planting program for example may have chemical residues in the soil, be subject to spray drift, contaminated run-off water, run off from over-watering, diseased plant material, waste plant material, and physical damage such as soil compaction from machinery. • Where new sites are established the interruption of native corridors and degradation of the ecosystem edge may compromise existing native ecosystems. • If the project involves construction activities, this may impact on the environment due to excess noise, dust or water. • Legislation may address management requirements for water, natural heritage, vegetation clearance and waste.

OHS hazards may include:	• disturbance or interruption of services • solar radiation • dust • noise • through traffic • uneven surfaces and holes • moving machinery and machinery parts • powered equipment and hand tools • confined spaces • overhead hazards including powerlines
Personal protective equipment may include:	• boots • gloves • overalls • sun hat and sunscreen lotion • safety harness • hard hat • hearing or eye protection • respirator or face mask
Materials may include:	• Materials to be consumed by the activity may be available through the enterprise as a stockpile or stored goods, or it may be purchased for the job. • Materials are often available through supply companies. • The enterprise may have purchasing policies and procedures and existing accounts with some suppliers.
Equipment/machinery may include:	• Equipment and machinery to be used for the activity may be available through the enterprise, or hired or "borrowed" for the job. • There are many commercial places that hire machinery on a daily charge out rate, or some enterprises may lend specialist equipment or machinery as part of a reciprocating arrangement.
External agency permits may include but are not limited to:	permits for: • pruning or removal of large trees • connecting to water systems • application and disposal of chemical residues and polluted waters • operating specialised machinery (e.g., chainsaws, skid steer loaders, forklifts) • working outside normal hours • setting up traffic and pedestrian barriers • digging near services (phone, gas, power, water, sewerage and drains)

Notify affected parties may include:	• Notifying neighbours • Notifying council or other authorities • Notifying other occupants of land or area • Advertising intent in local paper • Putting up signs or bills as required
Documentation may include:	• plan for the project • progress reports to supervisors/clients • plan for delivery and storage of materials • plan for hiring of equipment or machinery • costs and time estimates • permits obtained • files and records of the project • maps, plans and models • electronic records of the project • personnel records
Contingency situations may include:	• delay in delivery and/or breakdowns with equipment and machinery • poor weather conditions • poor quality materials • unforseen problems • provision for providing other work on the site, or away from the site while the problem is fixed • delaying the project if possible and necessary
Project report may include:	• the project name • authors name and date • project description • progress of activities • promotions and publicity • major issues • OHS issues • expenditure • any future activities that may need to be planned

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 this Training Course.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The assessee must provide evidence of specified essential knowledge as well as skills. • Consistency of performance should be demonstrated over the required range of situations relevant to the workplace. • Where for reasons of safety, safety space or access to equipment and resource, assessment takes place away from the workplace the assessment

environment should represent realistic workplace conditions as closely as possible.

Context/s of Assessment and specific resources

- 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 of performance requirements in this unit should be undertaken in an actual workplace or in a realistically simulated environment
- Assessment should reinforce the integration of the key competencies and the common competencies for the particular AQF level
- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace
- Resources for the assessment include:
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    - access to relevant Permaculture texts and audio-visual material.
    - access to a working permaculture site for practical study purposes.

Method of assessment

- While the knowledge can be tested in written and oral assignments, performance evidence needs to be collected in actual or realistic simulated situations. It also needs to be assessed on a number of occasions.
- This unit is best undertaken in a workplace or in a realistically simulated workplace situation.

And must include (verbal and /or written) to address essential knowledge as outlined in this unit

- Written evidence
- Verbal evidence
- Group interaction
- Recorded evidence

- 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
- Assessment if this unit will be undertaken by a registered training organisation
- Assessment of knowledge must be conducted through appropriate written/oral examination
- Practical assessment must occur:
    - ~ through appropriately realistically simulated activities at the RTO, and/or

~ in an appropriate range of situations in the workplace

- The learner and trainer should have access to appropriate documentation and resources normally used in the workplace

Access and Equity Considerations

- All workers in this industry should be aware of access and equity issues in relation to their own area of work.
- All workers should develop their ability to work in a culturally diverse environment.