FINAL REPORT

PROJECT NUMBER – VG05095

PATHWAYS TO PRODUCTION

(A Skilling Initiative of the Australian Protected Cropping Industry)

31ˢᵗ October 2008

Graeme Smith

President – Australian Hydroponic & Greenhouse Association

VG05095 – *Pathways to Production, a skilling initiative of the Australian protected cropping industry)*

Project Leader: Graeme Smith

President – Australian Hydroponic & Greenhouse Association
PO Box 538 NARRABEEN NSW 2101
Phone/Fax +61 (02) 9939 5993
Mobile 0414 333 996
administrator@ahga.org.au
www.ahga.org.au

Purpose: The projects aim is to address a significant market failure in the Australian protected cropping industry by developing a comprehensive training program for delivery to all growers. Even though we operate in a global economy and therefore compete against imported horticultural produce, we do not enjoy equal access to training opportunities that has the capacity to significantly lift our productivity and quality. 'Pathways to Production' has been developed to meet the commercial growers need to up-skill and improve their farms viability.

Collaborating Institutions:
Australian Hydroponic & Greenhouse Association (AHGA), Graeme Smith Consulting, Goulburn Ovens Institute of TAFE, NSW DPI, Virginia Horticulture Centre

Date of Report: **31ˢᵗ October 2008**

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Appendices (all attached as PDF Files)

Summary

A common theme running though the protected cropping industry was a lack of training and skilling options for all levels of participants. A 2005 review of the industry performed by the Australian Hydroponic & Greenhouse Association explored market failures and constraints to industry development with the main industry representatives in all Australian states. This review resulted in identification of around 19 issues that urgently require attention, with the number 1 common issue identified as a lack of skills training opportunities.

There is currently no schools to industry pathways (to encourage horticultural students to pursue careers in our industry), industry career pathways or specific hydroponic production modules (units & competencies) within the national curriculum framework, but rather some limited sub-modules within other horticultural production modules and it was identified that this failure would only be rectified with industry support.

It should be noted that our industry has received some support in the past for important industry issues (such as IPM, Minor Use Registration, etc), however there has never been any support for grower skilling that has the capacity to lift the entire industry.

This project consulted industry participants via a series of national workshops to perform a needs and gap analysis and then develop the programme, research and produce the training units & competencies. (The actual delivery of training will be the subject of a future VC application to AusVeg & HAL.)

A compelling argument for adoption of this project is that without basic skills training in specialised horticultural subjects (eg plant physiology, environmental management, etc), then no amount of new or existing technology, chemical or fertilizer regimes, integrated pest management strategies or new varieties or cultivars, etc will change or enhance the growers productivity or viability.
Skills training at all levels was seen as necessary to underpin industry development & growth.

Currently growers are required to travel to overseas training institutions (most notably in the Netherlands) to receive tuition in this specialised area, and at significant cost and additionally our growers operate in a global economy with fierce competition from exporting nations that have access to full training programs at all levels.

The project has successfully delivered a total of 63 base units and competencies covering certificate's II – VI (see appendix a., 5 x PDF).
These units are being aligned with the Australian Qualifying Framework (AQF) to facilitate national recognition that would create a new discipline within 'Production Horticulture' to be known as 'Controlled Environment Horticulture' (CEH).

Additionally, a further 12 supplementary units identified during the project by industry are to be developed. These units are not necessarily required within the base qualifications and could be delivered as a short-course to meet specific enterprise needs (see appendix b., 1 x PDF).

An outcome of the P2P project for the Australian Protected Cropping Industry was a demonstrated need for a pre-employment program to introduce intending new industry participants to a comprehensive overview and heightened awareness of Controlled Environment Horticulture (CEH). (see appendix c., 1 x PDF)

An additional output from this project was the strong potential for development of a 'National Training Centre for Controlled Environment Horticulture', based on a Dutch model that

delivers both theoretical and practical training in a purpose-built glasshouse facility. The AHGA has been approached by two colleges to enter into an MOU to deliver this to industry.

(see appendix d., 1 x PDF)

Introduction

The project aimed to address a significant market failure in the Australian protected cropping industry by developing a comprehensive training program for delivery to all greenhouse or hydroponic growers.
Even though we operate in a global economy and therefore compete against imported horticultural produce, we do not enjoy equal access to training opportunities that has the capacity to significantly lift our productivity and quality. Skills' training at all levels was considered necessary to underpin industry development & growth.
It is a national imperative that access is provided in all states to ensure that training and accreditation is developed to meet the growing needs of the protected cropping participants and the needs of their staff.

'Pathways to Production' has been developed to meet the commercial growers need to up-skill and improve their farms viability.
The current lack of formal training was addressed at all levels from Certificate 2 - 6 in horticultural production, as well as development of a pre-employment program targeted at new industry entrants.

One initiative is development of a 'Greenhouse Passport' to record grower accreditation levels that could be transferable across different workplaces or employers.

It was discovered that production and quality increases were necessary to meet the increasing demands of QA systems for both domestic and export markets. Industry skilling has the capacity to meet these needs and match the standards of the competitive imports/exports.
Improved productivity also enhances the industry to the wider horticultural community resulting in overall growth through increasingly attracting new entrants.

Some expected benefit/consequences of this work are a significant lift in grower productivity and viability with a concomitant decrease in cost of production through improved production techniques. Improved techniques should translate into enhanced production and quality that satisfies the QA requirements of both domestic & export markets leading to enhanced market opportunities.

Target audience was all growers in the Australian protected cropping industry with no or little formal horticultural training in their field (industry estimates over 90% of current growers).
Adoption strategies included trained industry facilitators surveying the growers and comparing their production levels with common practice around the world as well as assessing % of 1st v 2nd class product.
Resultant data could be used to encourage growers to lift standards necessary to meet market & QA expectations through improved education.

Project evaluation is ultimately proved by increased lift in production per m² (standard measure used worldwide to compare production systems and individual growers), as well as increased uptake of product by consumers.
Qualitative & quantitative data can also be assessed through the main grower distribution markets in all major capital cities. Grower feedback can be sought to assess pre & post production levels per m² with an industry database developed to track grower accreditation levels and production improvements.

It is proposed that regular consultation with the National Greenhouse Vegetable Working Group and AusVeg IDO's re outcomes and on-going adoption of project be conducted.

Factors considered necessary for project adoption included ensuring that the grower's needs were comprehensively surveyed, prioritised and effectively delivered. Significant production advantages were clearly articulated to all growers to overcome some reticence to sharing production data. Failure to reach the majority of industry growers would have impacted on the programmes success, therefore it was imperative to run a minimum of two workshops in each state to ensure reasonable data capture.

Methods & Activities

The principle investigator and collaborators met at the Virginia Horticulture Centre in June 2006 to develop suitable tools for use by facilitators in each state.
The facilitators conducted a skills audit of all industry participants in each state to assess their needs in terms of greenhouse skills and education and this would take form the basis of a needs & gap analysis.
In addition, the opportunity was to be taken to conduct a simple survey to allow a dimensioning of the industry by investigating grower numbers, locations, crops, technology types, etc. (see appendix e., 1 x PDF)

Tools were developed (included a PowerPoint presentation) (see appendix f., 1 x PDF) to facilitate the proposed workshops by driving group discussion and feedback.
This presentation also ensured that facilitator's were consistent in both their message and data collection.

This presentation introduced the industry project by exploring the background, advised of expected outcomes, announced the timeline, industry benefits and facilitated the workshop. The input from participants was prioritised and options for future delivery of training were considered, and finally, explored the best ways to maintain communication with each workshop group.
A detailed list of possible areas for training was then shown to participants to prompt further discussion when all ideas from the local group have dried up. This list was kept in reserve to ensure that participant most pressing needs are first met and then introduced to ensure important areas are not overlooked. (see also appendix f., 1 x PDF)

Also developed was a facilitator's toolkit as a prompt to ensure all tools were available for each workshop. (see appendix g., 1 x PDF)

The facilitators for each state were nominated as follows:
Western Australia   - Graeme Smith (Graeme Smith Consulting)
Victoria   - Graeme Smith (Graeme Smith Consulting)
                               - Leigh Taig (GOTafe Shepparton)
Tasmania   - Graeme Smith (Graeme Smith Consulting)
                               - Leigh Taig (GOTafe Shepparton)
New South Wales   - Jeremy Badgery-Parker (NSW DPI)
Queensland   - Jeremy Badgery-Parker (NSW DPI)
South Australia   - Peter de Lacy (Virginia Horticulture Centre)
Northern Territory   - Peter de Lacy (Virginia Horticulture Centre)

Industry Consultation

This involved detailed consultation with industry participants in all Australian states. Nominated facilitators surveyed each state to determine their specific requirements taking into account their geographic location and market characteristics. The Units & Competencies titles were presented, discussed and prioritised. State dimensioning was used to produce

data for individual skills audits that highlighted skills gaps and a needs analysis. Facilitators located, communicated and delivered workshops to key identified industry areas.

A total of fifteen workshops were completed:
Western Australia –   2 (Perth & Geraldton)
NSW –   4 (Windsor, Leppington, Coffs Harbour & Dareton/Mildura)
Tasmania –   2 (Hobart & Launceston)
Victoria –   3 (Shepparton, Geelong & Cranbourne)
SA -   2 (Adelaide Plains & Murray Bridge)
QLD -   2 (Brisbane & Bundaberg)

Some attendees of a grower's workshop.

Workshop Results:
From analysis of the priority lists and group discussions with participants to clarify key points, it was determined that there were five over-arching aspects of controlled environment horticulture for which growers are seeking comprehensive training and information from basic through to advanced instruction. Technology and how it is used to provide the optimal (and most economical) growing environment is the primary consideration of the industry. One of the most interesting outcomes is that the industry is looking for production systems (as well as information and skills) that enable effective management of different crops so that growers can diversify or readily change crops to reflect market conditions.

A.   Greenhouse climate control
    - selecting and operating appropriate technology to effectively manage and operate the controlled environment system with respect to crop management and crop performance

B.   Implementation of IPM
    - practical (and feasible) implementation and integration of pest and disease management decisions and tools (includes selecting and effectively operating appropriate technology)

C.   Marketing

- strategies for selling product, new crop selection and development, implementing flexible controlled environment systems that enable niche marketing and changeable crops

D.   Growing systems
- appropriate nutrient, substrate and irrigation management techniques and decision making with respect to crop management and crop performance

E.   Performance benchmarks
- financial management including costs of production, making capital purchase decisions (relates to selecting appropriate technology) and operating decisions (relating to optimising economic performance and management of crops.

The general consensus on what <u>workers</u> require is training and information in –

- Safe and effective use of chemicals

- Identification and management of pests and diseases

- Post-harvest practices – primarily improved grading and packing methods

- Farm and greenhouse hygiene – how and why

- Hydroponics – understanding and managing effectively

Specific information and training priorities:
The specific key priorities identified by <u>owners</u> were
1. nutrient management
2. training and development
3. using climate control properly to manage the greenhouse environment
4. disease identification and management
5. using heating properly to manage the greenhouse environment
6. practical application of biological control agents
7. measurement and control of EC and pH
8. crop cultural management
9. using venting properly to manage the greenhouse environment
10. hydroponic systems
11. greenhouse structures
12. chemicals and their use
13. environmental management
14. seedling production
15. finance and business funding
16. farm safety
17. using solar and thermal screens properly to manage the greenhouse environment
18. general pest and disease management
19. pest identification and management
20. marketing

The specific key priorities identified by owners for <u>employees</u> were:
1. crop cultural management
2. training and development
3. using climate control properly to manage the greenhouse environment
4. personal protective equipment
5. pest identification and management
6. equipment operation and maintenance
7. chemicals and their use
8. spray application and techniques

9. hygiene in the greenhouse
10. using thermal screens properly to manage the greenhouse environment
11. trolleys and internal transport systems
12. disease identification and management
13. measurement and control of EC and pH
14. farm safety
15. hydroponic systems
16. grading and packing systems
17. monitoring
18. post-harvest management
19. team management
20. plant nutrition

Survey results: (see appendix e., 1 x PDF)
A basic questionnaire was also conducted with participants. The information is low quality and incomplete and therefore should not be used to make extrapolations on a wider basis, however, it can provide some insights to the industry.

There are some conclusions that could be drawn.
- Growers do not know very much about their own industry, in terms of production area or participants
- Conventional crops – cucumbers and tomatoes – dominate production
- Most hydroponic growers use free-drainage substrate culture systems
- Effective climate control of greenhouses is generally poor, with relatively few structures heated and many not vented
- The industry wants a National Training Institute and almost all want it close to their own production area.

Full Program Development
Three of the program developers (Graeme Smith – AHGA, Jeremy Badgery-Parker – NSW DPI & Leigh Taig – GOTafe Shepparton), met in May 2007 at the Gosford Horticulture Institute, to consider and develop the next steps in the program:

1. collate all the collected workshop data (key findings)
2. analysis of training gaps (industry training priorities)
3. outline development for proposed training package (required training course topics)
4. list topics, learning outcomes & competencies
5. explore existing training courses, materials and competencies
6. ensure program is linked to national recognition & accreditation
7. develop proposal for Greenhouse Passport
8. & review budgets and milestones

As noted above, it was resolved that the units and competencies would align with the "Australian Qualifying Framework" (AQF) to facilitate national recognition, and that a new discipline (within 'Production Horticulture') be created to identify this industry training initiative to be known as "Controlled Environment Horticulture" (CEH).

The term 'Controlled Environment Horticulture' (CEH) was considered the best fit to cover the protected cropping industry, as these growers focus on controlling both the aerial environment and the root-zone environment which covers all typical growing systems. This definition would then include both indoor and outdoor hydroponic growers (i.e. lettuce/herb growers in hydroponic channel systems outdoors)

Industry Work Roles
These roles were identified for certificate levels II – VI as follows:

CEH Level	Explanatory Description	Supervision Level
• Level II	Entry Level, (Horticultural Assistant)	High
• Level III	Worker, (Horticultural Worker)	Limited
• Level IV	Supervisor	Low
• Level V	Grower/Manager (diploma)	Autonomous
• Level VI	General Manager (advanced diploma)	Autonomous

General Work Roles & competencies were also identified for levels II – VI as follows:

CEH Level	General Work Roles & Competencies
• Level II	hygiene protocols, CEA overview, OH&S, introduction to workplace environment, **Perform**: basic crop maintenance, picking & packing
• Level III	hygiene protocols, chemical users certificate, OH&S **Perform** crop & system monitoring, recording plant registration and benchmarking, P&D ID & monitoring, basic plant physiology, basic climate management, basic irrigation management, basic nutrition management, basic growing systems, internal transport systems, general equipment (crop trolleys, meters, sensors, boilers, screens, etc), basic IT (software, PC's, etc)
• Level IV	**Schedule Develop & Implement:** hygiene protocols, chemical users certificate, OH&S, crop & system monitoring, recording & reporting plant registration and benchmarking, P&D ID & monitoring, advanced plant physiology, advanced climate management, advanced irrigation management, advanced nutrition management, advanced growing systems, internal transport systems training, general equipment (crop trolleys, meters, sensors, boilers, screens, etc), advanced IT (software, PC's, etc) and staff supervision.
• Level V	**Plan & Manage:** hygiene protocols, chemical users certificate, OH&S, QA, crop & system monitoring, recording & reporting plant registration and benchmarking, P&D ID & monitoring, advanced plant physiology, advanced climate management, advanced irrigation management, advanced nutrition management, advanced growing systems, internal transport systems training, general equipment (crop trolleys, meters, sensors, boilers, screens, etc), advanced IT (software, PC's, etc) and staff management, budgets, business marketing, strategic plans, production plan, all farm planning
. • Level VI	**Manage, Develop & Review**: production systems, human resources, strategic plan, business capital, capital works, enterprise quality systems, analyse business performance, export markets, domestic markets

Units & Competencies for CEH
The final result ended in development of 63 new units & competencies for CEH over the five certificate levels.
Certificate II – CEH   - 17 units (attached as * Final draft PDF)
Certificate III – CEH   - 16 units (attached as * Final draft PDF)
Certificate IV – CEH   - 12 units (attached as * Final draft PDF)

Certificate V – CEH   - 10 units (attached as * Final draft PDF)
Certificate VI – CEH   - 8 units (attached as * Final draft PDF)

The above PDF files are composed of a total of 353 pages.

Specialty Skill Sets (see appendix b., 1 x PDF)
In addition to the above units, the project identified an initial 12 'specialist skill sets' that are unique to CEH and will require further development in the future. (attached as *.PDF). These specialty skill sets are supplementary units identified by industry, which are not necessarily required within the base qualifications.

These additional 12 units could be delivered as a short-course to meet specific enterprise needs.

(n.b. these units would result in a total of 75 developed for CEH by this project)

CEH Pre-Employment Program

An outcome of the P2P project for the Australian Protected Cropping Industry was a demonstrated need for a pre-employment program to introduce intending new industry participants to a comprehensive overview and heightened awareness of Controlled Environment Horticulture (CEH).

It is anticipated that the current 10,000 employees directly employed in the industry will climb to around 30,000 by 2015. (source: national greenhouse advisory group, 2006)

The P2P program facilitators identified a CEH Pre-Employment Program as a suitable pilot program as required under the funding requirements by HAL & AusVeg

'Flavorite' (Warragul, west Gippsland, Victoria), was identified as a suitable work location as it was a relatively large greenhouse employer with a good mix of industry technologies and employment opportunities that included, plant management, picking, packing, grading and transport.

The CEH Pre-Employment program (Pilot) consists of the following agreed elements:

1. It would be on a competency basis (i.e. competency needs to be demonstrated to attain accreditation)

2. The program would include practical elements (i.e. not just theory for accreditation)

3. It would be delivered as a Certificate Level II in Production Horticulture (CEH). (i.e. a new unit of competency to be created)

4. Whilst this pilot unit would be developed to meet the needs of Flavorite, it also will be generic to meet the needs of all national greenhouse growers

As Flavorite was recruiting in October 2008 and new crop staff expected to commence duties around November, it was resolved to run the pilot program 12th – 14th November.
(see appendix c., attached 'CEH Pre-Employment Program. PDF')

Greenhouse Passport
Another output from the project was the development of a portable 'Greenhouse Passport' that will record participant's accreditation levels. This passport can then be used to provide individual industry recognition that is transferable between employments and workplaces.

Initial discussions with AusVeg were held with a view to utilise their planned national grower database to both record individual accreditation levels and output a document suitable for use for growers to utilise as a 'greenhouse passport'.

Future liaison with the database developers will need to be performed when AusVeg are in a position to carry this national project forward.

The Greenhouse Passport will be the catalyst to facilitate industry career pathways by articulating individual achievement and show competency for each CEH level for consideration by all greenhouse enterprises.

To this end, industry is encouraged to begin using the above CEH Level terms in regular 'day to day' communication to develop familiarity and career pathways.

National Accreditation

It was resolved that the units and competencies would align with the "Australian Qualifying Framework" (AQF) to facilitate national recognition and this process is currently being facilitated by Leigh Taig of GOTafe.

This national accreditation would then allow any Registered Training Organisation (RTO) to delivery any or all of the CEH units to the appropriate standard.

This approach is considered necessary to ensure equal opportunity for all industry participants (inc workers and enterprises) to have a consistent approach to training and career options, therefore building industry capacity and cohesion.

Industry Presentations

The outcomes of the Pathways to Production project are planned to be communicated to industry at a wide-range of forums, with a particular focus on the original workshop locations around the nation. This is consistent with advice given to participants during the original workshops to ensure we report back directly to industry.

The initial targets included the state-based protected cropping grower representative bodies as well as the AHGA & AusVeg, plus a range of industry publications & periodicals.

Presentations Completed

As at time of this report, the following reports to industry have been completed:
1. VIC - Hydroponic Farmers Federation October grower meeting in Lara
2. WA – West Australian Greenhouse Growers Association September grower meeting in Perth
3. TAS – Tasmanian Association of Greenhouse Growers September grower meeting in Campbell Town
4. AHGA Web site
5. AHGA national 'Soilless Australia' magazine to all association membership

Presentations to come

1. SA – at Virginia Horticulture Centre
2. NSW – at Coffs Harbour
3. NSW - AHGA national biennial industry conference in Sydney in July 2009
4. QLD – at Bundaberg Fruit & Vegetable Growers Association
5. Practical Hydroponics & Greenhouses (national and international trade magazine)
6. AusVeg national magazine – 'Australian Vegetables'

National Training Centre for Controlled Environment Horticulture

A protected cropping industry review in 2005 found a number of market failures that were to be addressed.
The market failures detected included a lack of:
- Demonstration facilities
- Specific Hydroponic education streams
- Centralised training facilities
- EO/IDO to develop & coordinate industry
- Marketing & Promotion of Greenhouse produce
- Urban design principles to facilitate development in key areas
- Natural Gas delivery to key areas
- Bio-control Facilities
- Minor-Use Registration Program
- Model business plans
- Global radiation figures
- Dedicated R&D facilities
- Market access studies
- Appreciation for major water & energy resource efficiencies
- Field grower incentives
- Bumblebees
- Financial Institution Support
- Industry Strategic Plan

Some of the above have now been addressed by the AHGA, however a significant number could be addressed through the development of a national greenhouse training institute based on the Practical Training Centre Plus (PTC+) in Ede, The Netherlands.

- This centre in Ede (Holland) specialises in horticultural training (being close to Wageningen, the centre of horticultural research in the Netherlands).
- PTC+ has purpose built greenhouses to demonstrate technology & put into action their slogan "Learn by Doing".
- They annually train 40,000 graduates in 5 campuses, have 450 employees and annual turnover of US$28million

Each year, The AHGA facilitates a greenhouse study tour of Europe that includes a 5-day intensive training course at PTC+ on computerised environmental control, substrates, water & fertiliser management, post harvest & crop protection.
On the completion of the course, each participant is presented with a completion certificate entitled "Advanced Horticultural Course on Greenhouse Management"

PTC+ has well developed training facilities that include classrooms connected to a glasshouse (divided into 10 different compartments for 10 different crops and their unique growing technologies), that allows us to immediately put into practice the theory learnt.
The course entry level is aimed at greenhouse managers & consultants, however ample time is allocated to ensure all participants' needs are met.
The course modules covered are subject to feedback from participants and can be tailored to best meet any group's needs.
Our main instructor was Ben van Onna who comes with great credentials and was well received during his all-states visits & workshops for the 2003 & 2007 AHGA national conferences.

PTC+ is not just a training institute but also offers a number of other roles that have been identified by the Australian protected cropping industry in 2005 as constraints to industry development. These roles include:

- ▪ Centralised Training Facilities
  a location that delivers industry specific training in both theory and practical
- ▪ Demonstration Facilities
  to showcase both existing, new and emerging technology and how to integrate into growers systems
- ▪ Dedicated R&D Facilities
  to ensure our technology driven industry adapts to Australian conditions and crops
- ▪ Field Grower Incentives
  demonstrate alternative production techniques to traditional Australian farmers
- ▪ Model Business Plans
  developed using centre's growing technology for each crop
- ▪ Minor-Use Program
  a location to assist with efficacy trials on new greenhouse products
- ▪ Bio-control Facilities
  potential area to develop or trial new greenhouse bio-controls and beneficial insects
- ▪ Energy & Water Efficiencies
  centre for industry research into resource utilisation and efficiencies

A National Greenhouse Training Centre
- ▪ has capacity to lift entire industry through targeted education and research
- ▪ Can assist in overcoming grower reluctance to invest in unfamiliar (yet proven) technology
- ▪ sets industry standards and targets (both quality & production)
- ▪ demonstrates best-practice growing techniques for Australian greenhouse crops
- ▪ be a centre for Asia/Pacific education and training in greenhouse crops and technologies (targeting Malaysian, Indonesian, Chinese, New Zealand and other regional growers.)
- ▪ AHGA will enter into a partnership with PTC+ to develop & deliver specialist industry training.
- ▪ The centre to be based on PTC+ model (theory & practical)
- ▪ It would include classrooms, growing systems, structures, common technology, café, catering, admin, student accommodation, etc
- ▪ Crops targeted – tomatoes, capsicum, strawberry, cucumber, lettuce & herbs, rose, gerbera, aquaponics, etc
- ▪ It would need to be located for best industry return (TBA?)
- ▪ Potential funding sources would include: TAFE funds, industry and commercial partnerships, government, course fees from participants, produce sales, breeders trials, etc
- ▪ The expected base capital infrastructure costs are yet to be determined.

Another issue of concern to the industry is the reluctance of existing growers to adopt innovation and invest in new technologies that are crucial to keeping pace with global production and quality standards.
This proposal to establish a Centre for CEH would ultimately encourage existing growers to adopt and invest by showing them how to integrate new and emerging technologies into their own systems.

A National Greenhouse Training Centre can meet a significant number of identified industry failures and industry is urged to investigate proposals from two Victorian training institutions.
1. Goulburn Ovens TAFE (William Orr Campus, Shepparton)
2. Chisholm Institute (Cranbourne Campus)

Both colleges have approached the AHGA to enter into an MOU with a view to creating a combined management team with the AHGA to deliver this training facility. (n.b. it should be noted that we do not intend to support two centres, but partner best option to suit industry needs.)

PTC+ MOU

Graeme Smith (President AHGA) traveled to Holland this October to meet with directors of PTC+ to develop a Memorandum Of Understanding to assist us with high-level technical support and ongoing industry training. PTC+ have entered into similar partnerships to deliver training centres to both China and India.

Graeme also presented the proposed centre model to PTC+ for assessment of technical merit (see appendix d., 1 x PDF) as well as took the opportunity to attend Hortifair in Amsterdam to cost the proposed model with a number of large Dutch greenhouse design & development companies that have installed multiple systems in Australia.

We emulate Dutch growers in terms of technology and varieties, however if we aim to match their quality, efficiency & productivity, then industry up-skilling is mandatory. An institute can offer this and more.

This proposed National Training Centre for Controlled Environment Horticulture is a direct outcome of the Pathways to Production project and has received 100% support from all attendees of our national workshops

Participants of 2007 European Greenhouse Study Tour (at PTC+)

Participants of 2005 European Greenhouse Study Tour (at PTC+)

(Theory)   **(Practical)**

ACKNOWLEDGEMENTS

In my role as Project Leader, I wish to thank the participants (refer page 2) for their co-operation and technical input. Their interest in all things greenhouse and the general spirit of togetherness was most satisfying. I thank them for their friendship. I specially thank them for their contribution to the information included in this report.

Recognition and appreciation is also given to the following for their welcome contribution to ensuring a successful project:

Collaborating Institutions:

AHGA	Saskia Blanch, Australian Hydroponic & Greenhouse Association
NSW DPI	Jeremy Badgery-Parker, National Centre for Greenhouse Horticulture, Gosford NSW
GOTafe	Leigh Taig, Goulburn Ovens TAFE, Shepparton VIC
Chisholm Institute	Tony Bundock, Cranbourne Campus VIC
VHC	Peter De Lacy & Mike Redmond, Virginia Horticulture Centre SA
HFF	Gus Walta, Hydroponic Farmers Federation VIC
Flavorite Tomatoes	Chris Millis, Warragul VIC
TAGG	Anthony Brandsema & Gary Hippman, Tasmanian Association of Greenhouse Growers TAS
WAGGA	Paul Humble & Harry Trandos, West Australian Association of Greenhouse Growers WA
BFVGA	Max Horvath, Bundaberg Fruit & Vegetable Growers Association QLD
AusVeg	John Roach, Michael Badcock and Ross Ord, Melbourne VIC
HAL	Simon Drum, Melbourne VIC
Ben van Onna	Senior Trainer PTC+ Ede (The Netherlands)
Peter van den Brink	Coordinator PTC+ Ede (The Netherlands)
Dr Michiel van Mil	Director PTC+ Ede (The Netherlands)
HAL & AusVeg Protected Cropping Working Group – all group members	

Graeme Smith
Project Leader

Certificate 2 in Production Horticulture (CEH) Controlled Environment Horticulture

RTC2210A	Maintain properties and structures
RTC2301A	Undertake operational maintenance of machinery
RTC2401A	Treat weeds
RTC2404A	Treat plant pests, diseases and disorders
RTC2701A	Follow OHS procedures
RTC2702A	Observe environmental work practices
RTC2704A	Provide basic first aid
RTC2705A	Work effectively in the industry
RTC2801A	Participate in workplace communications
RTE2003A	Carry out postharvest operations
RTE2010A	Establish horticultural crops
RTE2018A	Regulate crops
RTE2021A	Support horticultural product harvesting
RTE2308A	Operate ride-on vehicles
RTE2707A	Follow site quarantine procedures
RTC3704A	Prepare and apply chemicals
RTC3705A	Transport, handle and store chemicals

RTC2210A   Maintain properties and structures

This competency standard covers the functions required to maintain and repair properties and structures in a situation that does not require the specialist skills of another trade. It involves the application of basic skills and knowledge to match equipment and materials to job requirements, and select the appropriate tools to carry out repairs. The work is likely to be carried out under routine supervision with intermittent checking usually within a team environment.

Element		**Performance Criteria**	
1	Identify and confirm maintenance requirements	1.1	Visual inspections are conducted of **structures and facilities** to locate and evaluate defects, deterioration and impending defects.
		1.2	**Property infrastructure and resources** are checked for correct operation, minor maintenance needs and damage.
		1.3	**Maintenance plan** is confirmed according to supervisor's instructions and **enterprise requirements.**
2	Select and prepare tools, equipment and materials	2.1	**Tools, equipment and materials** appropriate to the job requirements are selected and checked for serviceability according to manufacturers specifications.
		2.2	Faulty or unsafe tools are identified and segregated for repair or replacement and reported according to enterprise requirements.
		2.3	Existing and potential **hazards** to health and safety are identified, assessed and reported according to **OHS** and enterprise requirements.
3	Carry out routine maintenance	3.1	Suitable **personal protective equipment** is selected, used, maintained and stored according to OHS requirements.
		3.1	**Routine maintenance** to structures and surroundings is carried out according to the maintenance plan and enterprise requirements.
		3.3	Minor repairs to building cladding, and treatments to structural finishes, are carried out as required to minimise deterioration.
4	Complete maintenance activities	4.1	Worksite, tools and materials are cleaned, returned to operating order, and stored according to OHS and enterprise requirements.

4.2	Unwanted materials and waste from maintenance activities is collected, treated and disposed or recycled according to enterprise, OHS and **environmental** requirements.
4.3	**Relevant information** is documented according to industry, enterprise requirements and OHS requirements.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work situations available.

What **structures and facilities** might be relevant to this standard?	This may include buildings, greenhouses, igloos, potting houses, shade houses, sheds, cool rooms, glass houses, staff rooms, water tanks, yards, stock handling structures, silage pits, fodder and grain storages, pergolas, poly-tunnels, insect and hail netting, park furniture, car parks, roads, pathways, work sheds, information boards, benches, landscape features and site furniture. Fences may include weld mesh, picket, post and wire, brick, and hedges.
What **property infrastructure and resources** might be relevant to this standard?	This may include drains and drainage systems, waterways and water supply systems, dams, roads, tracks, soil conservation works, car parks, vegetation, windbreaks, paths, silage pits and loading bays. Drains may include agricultural drains, spoon or swale drains and culverts. Water supply may include irrigation systems, dams and troughs.
What information may be included in a **maintenance plan**?	This may include specific intervals and procedures for maintenance procedures, designated work tasks, routine servicing procedures, instructions for pre-start and safety checks, repair requirements, current operational details, tools, parts and supplies allocated for use, instructions for cleaning and disposal of waste and contaminants, supervisors instructions, timeframe for work completion, and reporting requirements.

What **enterprise requirements** may apply to this standard?	This may include local building codes, Australian Quality Standards, Standard Operating Procedures (SOPs), industry standards, work notes, product labels, manufacturers specifications, Material Safety Data Sheets (MSDSs), operator and emergency procedures manuals, technical information, enterprise policies and procedures (waste disposal, recycling and re-use guidelines), supervisors oral or written instructions and reporting requirements.
What **tools, equipment and materials** may be used?	This may include hand or small power tools, cutting tools, and measuring equipment. Structural finishes may require paint or stains. Cladding maintenance may require corrugated iron, weatherboards, glass, shade cloth, plastic or cement sheeting. Concrete tools and equipment may also be required.
What **hazards** may be associated with maintenance activities?	Workplace hazards may include exposure to loud noise and fumes, solar radiation, heating pipes, dust and hazardous substances. It may also include oil and grease spills and electricity while using powered tools.
What **OHS** requirements may be relevant to this standard?	Systems and procedures for: • the safe operation of tools and equipment • maintenance and repair methods • identifying and reporting hazards • safe lifting, carrying and manual handling • the safe handling and storage of hazardous substances • the appropriate use of personal protective equipment • outdoor work including protection from solar radiation • working at heights, e.g., from a ladder, trolley, greenhouse gutters • working in confined spaces • protection from hazardous noise, organic and other dusts.
What **personal protective equipment** may be relevant to this standard?	This may include boots, hat/hard hat, overalls, gloves, protective eyewear, safety harness, hearing protection, respirator or facemask, and sun protection.

What may be involved in carrying out **routine maintenance**?	Routine maintenance may include assisting in the erection of simple property structures, identifying and repairing damage or applying treatments to building cladding and structural finishes, checking fences and repairing holes or other damage, checking paths, tracks and roadways for potholes, weeding and undertaking effective drainage and minor repairs. It may also include checking water supplies for correct operation and pollution, and carrying out repairs and maintenance as required.
What positive **environmental** procedures may be applied?	The safe and environmentally responsible disposal of maintenance debris and waste.
What **relevant information** may be documented?	This may include the use and performance of tools and equipment, operational faults or malfunctions, completed maintenance, repair tasks and outcomes, and hazard and incident reports.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in maintaining properties and structures requires evidence of the ability to conduct simple repairs, erect structures, apply task instruction, and maintain a clean and safe worksite. It also requires an awareness of daily work routines including the need to keenly observe and report the need for maintenance and repair. Evidence must be demonstrated in the employment of safe workplace and environmentally responsible practices. The skills and knowledge required to maintain properties and structures must be **transferable** to a different work environment. For example, this could include different properties and structures, maintenance activities and industry settings.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Characteristics, capabilities and limitations of materials, equipment and tools.
	• Operation of water taps and reticulation systems.
	• Types of building cladding and finishes, purpose and use.
	• Identification of defects and apppropriate repair methods.
	• Appropriate selection of repair materials.
	• OHS legislative requirements and Codes of Practice.
	• Relevant Codes of Practice with regard to protection of

the environment.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• Interpret and apply task instructions.
	• Operate a broad range of tools and equipment.
	• Ability to work in team environment.
	• Observe and report on the condition of structures and equipment.
	• Demonstrate safe working practices.
	• Communicate with work team and supervisor.
	• Estimate and calculate volumes and usage.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (1)** be applied?	Ideas and information with regard to equipment operation, safety procedures and their application may be discussed with work colleagues or the supervisor.
2.	How can **information be collected, analysed and organised (1)**?	Information with regard to the performance of equipment and completed repair and maintenance, may be detailed and organised by reports for analysis.
3.	How are **activities planned and organised (1)**?	Activities involving the maintenance, cleaning and storing of machinery and equipment may be planned and coordinated around work schedules or sequenced as required.
4.	How can **team work (1)** be applied?	In the application of methods and procedures to effectively complete scheduled maintenance projects within timeframes.
5.	How can the use of **mathematical ideas and techniques (1)** be applied?	Basic mathematical techniques may be applied in the estimation and calculation of materials requirements.
6.	How can **problem-solving skills (1)** be applied?	Equipment faults or malfunctions will need to be arranged for repair or replacement to minimise disruption to work schedules.

| 7. | How can the **use of technology (1)** be applied? | Technology may be used to communicate, measure and record information. |

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC2301A   Undertake operational maintenance of machinery

This competency standard covers basic maintenance procedures required to support machinery operations. It involves non-specialist skills to perform basic servicing and repairs on a range of machinery according to scheduled maintenance programs. Competency requires an awareness of workplace safety, and positive environmental practices associated with maintenance activities. The work is likely to be carried out under limited supervision with checking only related to overall progress within established enterprise routines and procedures.

Element		Performance Criteria	
1	Prepare for maintenance	1.1	**Maintenance plans** are accessed and understood prior to undertaking maintenance work.
		1.2	**Tools and supplies** are selected appropriate to job requirements and confirmed against maintenance plan.
		1.3	Tools are inspected for serviceability and **prepared** for use according to manufacturers specifications and **enterprise requirements.**
		1.4	**OHS hazards** in the workplace are identified, risk assessed and reported according to enterprise requirements.
2	Perform scheduled maintenance	2.1	Suitable **personal protective equipment** is selected, used, maintained and stored according to OHS requirements.
		2.2	Greasing, lubrication, charging batteries and other **basic servicing** of **machinery** is carried out according to manufacturers specifications and enterprise requirements.
		2.3	Equipment is adjusted according to manufacturers specifications and enterprise requirements.
		2.4	Basic diagnostic techniques are applied and **mechanical faults** are identified and rectified according to manufacturers specifications.
		2.5	More serious or complex faults are reported for referral according to enterprise requirements.
3	Complete maintenance activities	3.1	Tools are cleaned and stored according to OHS and enterprise requirements.
		3.2	Waste from maintenance activities is collected, treated and disposed or recycled according to enterprise **environmental** requirements.

3.3	Work areas are cleaned, returned to operating condition and maintained according to OHS and enterprise requirements.
3.4	**Relevant information** is documented according to industry and enterprise requirements.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work situations available.

What information may be included in a **maintenance plan?**	This may include details of scheduled maintenance and servicing requirements and procedures, tools and supplies required to undertake maintenance tasks, pre-start and safety checks for tools and machinery, mechanical diagnostic procedures, common mechanical faults and adjustment or repair procedures, current operational details, supervisors instructions and reporting requirements.
What **tools and supplies** may be required?	This may include hand tools, hand held power tools, grease guns, safety equipment, cleaning and maintenance supplies including grease, fuel, oil, chemicals, water steam, power and air.
What may be involved in the **preparation** of tools?	Preparation may include routine safety and pre-start checks, and procedures involving cleaning, lubricating, hand sharpening, priming pumps, clearing filters, basic repairs, tightening and adjustments.
What **enterprise requirements** may be applicable to this standard?	Standard Operating Procedures (SOPs), industry standards, production schedules, Material Safety Data Sheets (MSDSs), work notes and plans, product labels, manufacturers specifications, operators' manuals, enterprise policies and procedures (including waste disposal, recycling and re-use guidelines), and supervisors oral or written instructions.

What **OHS** requirements may be relevant to this standard?	Safe systems and procedures for: • operating and maintaining machinery including hydraulics and guarding of exposed moving parts • hazard and risk control • manual handling including lifting and carrying • the provision of safety decals and signage • handling, application and storage of hazardous substances • outdoor work including protection from solar radiation, dust and noise • lock out or danger tag procedures • protection of people in the workplace • the appropriate use, maintenance and storage of personal protective clothing and equipment.
What **hazards** may be associated with maintenance activities?	Workplace hazards may include exposure to loud noise and fumes, solar radiation, dust, and hazardous substances. It may also include oil and grease spills, electricity, hot water/steam, mechanical malfunctions and entanglement with machinery from exposed moving parts including hydraulics.
What **personal protective equipment** may be relevant to this standard?	This may include boots, hat/hard hat, overalls, gloves, protective eyewear, safety harness, hearing protection, respirator or facemask, and sun protection (sun hat, sunscreen).
What may be involved in **basic servicing** procedures?	This may include greasing and lubricating, carrying out checks of the cooling system, fuel, grease and oil, battery levels, inspections of tyre pressures, fan belts, leads, lines, connections, air filters, electrical, hydraulics, steering, lighting, transmission, and confirmation of safety guards, PTO stubs and shafts.
What **machinery** may be covered in this standard?	This may include motorised equipment and implements. Motorised machinery may include sprayers, tractors, mechanical pruners, harvesters, turf mowers, rotary hoes, chainsaws, hedge trimmers, winches, trolleys, conveyors, grading and sorting machinery, vehicles and motorcycles.
How might **mechanical faults** be defined in this standard?	Basic faults reasonably within the scope of a non-mechanic and may include damage, wear, malfunction or unsoundness.

What positive **environmental** practices may be relevant to maintenance activities?	This may include the reduction of excessive noise and exhaust emissions, the safe use and disposal of maintenance debris including oil containers, fuel and chemical residues. It may also include preventative measures with regard to soil disturbance, dust and increased run-off flows caused by servicing, maintenance and cleaning activities.
What **relevant information** may be documented?	This may include tool usage and operational faults or malfunctions, machinery servicing and repair procedures and outcomes, machinery performance and operational faults or malfunctions, damage details, and hazard and incident reports.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in performing operational maintenance of machinery requires evidence of the ability to select and match the correct tools and supplies to carry out scheduled servicing and minor repairs to a range of plant and equipment. It also requires the ability to apply operational safety procedures, access and interpret maintenance plans, apply basic diagnostic techniques, recognise and rectify minor mechanical faults, and maintain maintenance records. The skills and knowledge to undertake operational maintenance of machinery must be **transferable** to a different work environment. For example, this could include different machinery and equipment, and workplaces.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Types and uses of lubricants and other commonly used servicing materials.
	• Operational principles of machinery including mechanical and auto-electrical systems.
	• Servicing characteristics of plant and equipment.
	• Types, characteristics, uses and limitations of hand and power tools.
	• Functions of components of common mechanical and hydraulic systems.
	• Working principles of 2-stroke, 4-stroke, petrol and diesel engines.
	• Set-up requirements of plant and equipment, and

principles of calibration.

- Basic diagnostic processes and techniques.
- Environmental Codes of Practice with regard to maintenance activities.
- OHS legislative requirements and Codes of Practice.
- Hazard identification and assessment.
- OHS procedures.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • Select and match tools with work requirements. • Apply hand-eye coordination. • Apply basic diagnostic techniques. • Recognise and rectify common mechanical faults. • Perform scheduled maintenance including basic servicing and minor mechanical repairs. • Read and interpret maintenance plans, manufacturers specifications, safety decals and MSDS. • Effectively communicate with work team and supervisor, report faults, and maintain records. • Measure and calculate volumes, consumption and lubrication requirements.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Information with regard to complex mechanical faults may be reported and referred for repair or replacement.
2. How can **information be collected, analysed and organised (1)**?	Information with regard to machinery servicing, identified faults and repairs undertaken may be documented for reference and analysis, and organised by reports.
3. How are **activities planned and organised (1)**?	Machinery maintenance activities may be planned and coordinated with maintenance schedules and work schedules, or sequenced as required.
4. How can **team work (1)** be applied?	In the application of communication, methods and procedures to complete individual tasks to achieve

		scheduled maintenance requirements.
5.	How can the use of **mathematical ideas and techniques (1)** be applied?	Basic mathematical techniques may be applied in the calculation and measurement of volumes, weights and consumption, particularly in relation to lubrication and fuel requirements.
6.	How can **problem-solving skills (1)** be applied?	Tool faults or malfunctions will need to be repaired or replaced to complete and minimise disruption to scheduled maintenance work.
7.	How can the **use of technology (1)** be applied?	To communicate, measure and record information with regard to machinery maintenance, usage and performance.

Are there other competency standards that could be assessed with this one?
This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC2401A   Treat weeds

This competency standard covers the process of treating weeds using cultural, biological and chemical methods. Treatment will follow strict work instructions and will be under supervision. Competency involves the application of knowledge and skills in recognising common weeds, monitoring and recording the severity of the weed problem, applying a range of treatments, and recording relevant information.

Element		Performance Criteria	
1	Prepare to treat weeds	1.1	Weeds which impact on commercial crops, gardens and turf, and natural areas are recognised by common name.
		1.2	**Details** of the weed occurrence are recorded and reported to the supervisor.
		1.3	**Treatment methods** are selected in consultation with the supervisor.
		1.4	**Equipment** is selected and prepared for use according to enterprise guidelines and manufacturers specifications.
		1.5	**OHS hazards** are identified, **risks** assessed and reported to the supervisor.
2	Treat weed	2.1	Suitable **personal protective equipment** (PPE) is selected, used, maintained and stored.
		2.2	Treatments are prepared according to supervisor's instructions and manufacturers guidelines.
		2.3	Treatments are applied in such a way that non-target damage is minimised.
		2.4	Treatments are applied according to **OHS** and **regulatory requirements**.
3	Carry out post treatment operations	3.1	Equipment is shut down and cleaned with full consideration of **environmental impacts** and OHS requirements.
		3.2	Treatment waste is disposed of causing minimal environmental damage.
		3.3	**Records** are maintained according to enterprise guidelines.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work contexts.

What type of **details** about the weed might be required?	Details might include location of weeds, area covered by the weed, possibility of off target damage, and potential threats that the weed may present to surrounding areas.
What **treatments** might be applied?	Treatments may include hand weeding, herbicides, release of biological agents, cultivation, slashing, cutting, burning and ripping.
What **equipment** is appropriate for treatment application?	Equipment may include backpack sprayers, spray tanks, fertiliser spreaders, ladders, tractor drawn cultivation equipment, rippers, weedicide applicators, handsaws, chainsaws and brushcutters.
What **OHS hazards** might apply to this standard?	OHS hazards may include use of hazardous chemicals, use of tractors and machinery, solar radiation, manual handling, falls, tripping and noise.
What or who may be at **risk** from OHS hazards?	Hazard may cause risk to workers, equipment, people and animals external to the workplace (such as members of the public, wildlife, pets, bees, fish, birds), and the environment.
What **personal protective equipment (PPE)** may be required to apply treatments?	Personal protective equipment may include hat, rubber boots, chemical resistant overalls, face protection, hearing protection, gloves, goggles, respirator or facemask, sunscreen lotion.
What **OHS requirements** might apply to this standard?	OHS requirements may include identifying hazards, assessing and reporting risks, safety procedures involved in chemical handling and use, weather conditions, safety procedures for protecting others, cleaning, maintaining and storing tools and equipment, appropriate use, maintenance and storage of personal protective equipment including sun protection, drinking to avoid dehydration, safe operation of tools and equipment, personal hygiene and reporting problems to supervisors.
What **regulatory requirements** might apply to this standard?	Regulatory requirements may include the use and disposal of chemicals, record keeping, transport of chemicals, access to area, use of chainsaws, reporting accidents and dangerous goods.

What **environmental impacts** may apply to this standard?	Environmental impacts may include leaching and contamination of the water table, soil contamination, spray drift, damage to off target organisms, contaminated produce, surface run off, changes in soil structure.
What **records** need to be kept when treating weeds?	Records may include accident and dangerous occurrence reports, name of operator, treatments applied, rate, date, settings of equipment, weed numbers, numbers of beneficial organisms.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in treating weeds requires evidence that the common weeds have been recognised and appropriately treated. The skills and knowledge required to treat weeds must be **transferable** to a different work environment. For example, this could include different weed species, locations and treatment techniques.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Recognition of common weeds for a particular enterprise/situation.
	• Weed growth characteristics.
	• Different types of control measures, treatments and their principles.
	• Modes of action of different chemicals.
	• Equipment capability and limitations.
	• Legislation relation to the use of chemicals for weed control.
	• OHS responsibilities of employees.
	• OHS legislative requirements and associated hazardous substances regulations and Codes of Practice.
	• Correct wearing/fit of personal protective equipment.
	• Environmental considerations when using chemicals for weed control.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• Read and interpret chemical labels, Material Safety Data

Sheets (MSDSs), manufacturers specifications for setting up equipment, and maintain spray records.

- Prepare to treat weeds.
- Apply weed treatments.
- Carry out post treatment operations.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Ideas and information relating to applying weed treatments should be discussed with other members of the work team and the supervisor.
2. How can **information be collected, analysed and organised (1)**?	Information will be collected by inspecting the weed and the information gained will be recorded and discussed with the work team and supervisor. Enterprise work procedures and weed control programs should be consulted, interpreted and applied with clarification from the supervisor where necessary.
3. How are **activities planned and organised (1)**?	Equipment, materials and work procedures for applying treatments will need to be arranged before and between work periods, and there may be some responsibility for coordinating work with others.
4. How can **team work (1)** be applied?	The application of treatments may involve working with other members of a team to complete the program and ensuring other activities are scheduled around the application of weed treatments.
5. How can the use of **mathematical ideas and techniques (1)** be applied?	Mathematical ideas in relation to calculating rates, and areas, will be required.
6. How can **problem-solving skills (1)** be applied?	Problems solving may be demonstrated in cases of machinery malfunctions or chemical spillage.
7. How can the **use of technology (1)** be applied?	Technology may be applied in the preparation, use and maintenance of spray equipment.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other

competencies relevant to the job function.

There is critical information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC2404A   Treat plant pests, diseases and disorders

This competency standard covers the process of treating plant pests, diseases and disorders using cultural, biological and chemical methods. Treatment will follow strict work instructions and will be under supervision. Competency involves the application of knowledge and skills in recognising common plant pests, diseases and disorders, monitoring and recording the severity of the plant pest or disease problem, applying a range of treatments, and recording relevant information.

Element		Performance Criteria	
1	Prepare to treat plant pests, diseases and disorders	1.1	Plant pests, diseases and disorders which impact on commercial crops, gardens and turf, and natural areas are recognised by common name.
		1.2	**Details** of the plant pest, disease and disorder occurrence are recorded and reported to the supervisor.
		1.3	**Treatment methods** are selected in consultation with the supervisor.
		1.4	**Equipment** is selected and prepared for use according to enterprise guidelines and manufacturers specifications.
		1.5	**OHS hazards** are identified, **risks** assessed and reported to the supervisor.
2	Apply treatments to plant pests, diseases and disorders	2.1	Suitable **personal protective equipment** (PPE) is selected, used, maintained and stored.
		2.2	Treatments are prepared according to supervisor's instructions and manufacturers guidelines.
		2.3	Treatments are applied in such a way that non-target damage is minimised.
		2.4	Treatments are applied according to **OHS** and **regulatory requirements**.
3	Carry out post treatment operations	3.1	Equipment is shut down and cleaned with full consideration of **environmental impacts.**
		3.2	Treatment waste is disposed of causing minimal environmental damage.
		3.3	**Records** are maintained according to enterprise guidelines.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work contexts.

What may be included under **plant pests, diseases and disorders**?	Plant pests and diseases may include chewing, sucking and boring invertebrates, nematode, fungi, viruses, and bacteria. Disorders include toxic soil or substrate; air and water; nutrient deficiencies and toxicities; and, adverse environmental conditions.. This unit excludes vertebrate pests.
What type of **details** about the plant pest or disease might be required?	Details might include location and occurrence of plant pests, diseases and disorders, possibility of off target damage and potential threats that the plant pest or disease may present to surrounding areas.
What **treatments** might be applied?	Treatments may include use of fertilisers, foliar nutrients, insecticides, fungicides, dips, release of biological agents, pheromone traps, adjusting greenhouse climate controls, baits, hormones, cultivation, slashing, cutting, burning and ripping.
What **equipment** is appropriate for treatment application?	Equipment may include backpack sprayers, spray tanks, fertiliser spreaders, ladders, rippers, pesticide applicators and handsaws.
What **OHS hazards** might apply to this standard?	OHS hazards may include use of hazardous chemicals, use of tractors and machinery, solar radiation, and working from ladders.
What or who may be at **risk** from OHS hazards?	Hazard may cause risk to workers, equipment, people and animals external to the workplace (such as members of the public, wildlife, pets, bees, fish, birds), and the environment.
What **personal protective equipment (PPE)** may be required to apply treatments?	Personal protective equipment may include hat, rubber boots, chemical resistant overalls, gloves, goggles, respirator or facemask, sunscreen lotion.

What **OHS requirements** might apply to this standard?	OHS requirements may include identifying hazards, assessing and reporting risks, cleaning, maintaining and storing tools and equipment, appropriate use of personal protective equipment including sun protection and drinking to avoid dehydration, safe operation of tools and equipment, personal hygiene and reporting problems to supervisors, appropriate use, maintenance and storage of personal protective equipment, safety procedures in chemical handling and use, safety procedures for the protection of others.
What **regulatory requirements** might apply to this standard?	Regulatory requirements may include the use and disposal of chemicals, record keeping, transport of chemicals, and access to area.
What **environmental impacts** may apply to this standard?	Environmental impacts may include leaching and contamination of the water table, soil contamination, spray drift, damage to off target organisms, contaminated produce, surface run off, changes in soil structure.
What **records** need to be kept when treating plant pests, diseases and disorders?	Records may include name of operator, treatments applied, rate, date, settings of equipment, plant pest's numbers, numbers of beneficial organisms.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in treating plant pests, diseases and disorders requires evidence that the common plant pests, diseases and disorders have been recognised and appropriately treated. The skills and knowledge required to treat plant pests, diseases and disorders must be **transferable** to a different work environment. For example, this could include different plant pest and diseases, locations and treatment techniques.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • Recognition of common plant pests, diseases and disorders for a particular enterprise/situation. • Different types of control measures and their principles. • Modes of action of different chemicals. • Legislation relation to the use of chemicals for plant pest, disease and disordercontrol. • OHS responsibilities of employees.

- Environmental considerations when using chemicals for plant pest, disease and disorder control.
- OHS legislative requirements and Codes of Practice.
- Correct wearing/fit of personal protective equipment.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	- Detect abnormal plant growth or appearance.
	- Read and interpret chemical labels, Material Safety Sata Sheets (MSDSs), manufacturers specifications for setting up equipment, and maintain spray records.
	- Prepare to treat plant pests and diseases.
	- Apply plant pest, disease and disorder treatments.
	- Carry out post treatment operations.
	- Wear personal protective equipment appropriate to task.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Ideas and information relating to applying plant pest, disease and disorder treatments should be discussed with other members of the work team and the supervisor.
2. How can **information be collected, analysed and organised (1)**?	Information will be collected by inspecting the plant pest or disease and the information gained will be recorded and discussed with the work team and supervisor. Enterprise work procedures and control programs should be consulted, interpreted and applied with clarification from the supervisor where necessary.
3. How are **activities planned and organised (1)**?	Equipment, materials and work procedures for applying treatments will need to be arranged before and between work periods, and there may be some responsibility for coordinating work with others.
4. How can **team work (1)** be applied?	The application of treatments may involve working with other members of a team to complete the program and ensuring other activities are scheduled

	around the application of plant pest or disease treatments.
5. How can the use of **mathematical ideas and techniques (1)** be applied?	Mathematical ideas in relation to calculating rates, and areas, will be required.
6. How can **problem-solving skills (1)** be applied?	Problems solving may be demonstrated in cases of machinery malfunctions or chemical spillage.
7. How can the **use of technology (1)** be applied?	Technology may be applied in the preparation, use and maintenance of spray equipment.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is critical information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC2701A   Follow OHS procedures

This competency standard covers the process of following enterprise Occupational Health and Safety (OHS) policies and procedures. It requires the ability to comply with workplace procedures in hazard identification and risk control, observe safe practices during work operations, and participate in arrangements for maintaining health and safety of all people in the workplace. Following OHS policies and procedures requires knowledge of employee and employer responsibilities under the OHS Act, enterprise procedures relating to hazards, fires, emergencies, accidents and risk control, and OHS signs and symbols relevant to area of work.

Note: The unit is based on the national guidelines for integrating OHS competencies into national industry Competency Standards.

Element		Performance Criteria	
1	Follow workplace procedures for hazard identification and risk control	1.1	**Hazards in the workplace** are recognised and reported to designated personnel according to enterprise procedures.
		1.2	Assessment of risk associated with identified hazards is made in accordance with enterprise procedures.
		1.3	Workplace procedures and work instructions for controlling risks are followed accurately.
		1.4	Workplace procedures for dealing with accidents, fire and emergencies are followed whenever necessary within the scope of responsibilities and competencies.
		1.5	**Risks** to fellow workers, other people and animals are recognised, and action is taken to eliminate or reduce them.
		1.6	**Employee responsibilities** prescribed in OHS legislation are recognised and carried out.
		1.7	Safety **training** is undertaken as directed.
2	Observe safe practices during work operations	2.1	Work for which **protective clothing or equipmen**t is required is identified and personal protection equipment is used, maintained and stored in accordance with enterprise procedures.
		2.2	Basic safety checks on all machinery and equipment are undertaken before operation according to enterprise procedures.
		2.3	Hazards associated with handling of hazardous substances are identified and notified, and risk assessed in accordance with enterprise **procedures** and OHS requirements.
		2.4	Noise hazards are identified and notified, and risk assessed in accordance with enterprise

			procedures and OHS requirements.
		2.5	**Manual handling** job risks are assessed prior to activity and work carried out according to currently recommended safe practice.
		2.6	Information on OHS is accessed as required.
3	Participate in arrangements for maintaining health and safety of all people in the workplace	3.1	Individuals have input into on going monitoring and reporting on all aspects of workplace safety.
		3.2	OHS issues are raised with designated personnel in accordance with enterprise procedures and relevant OHS legislation.
		3.3	Contributions to **participative arrangements** in the workplace are made within organisational procedures and scope of responsibilities and competencies.
		3.4	Contributions are provided towards the development of effective solutions to control the level of risk associated with enterprise activities.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **hazards in the workplace** may be included?	Equipment and machinery operation and maintenance (including powered tools), vehicles, noise, chemicals, gases, manual handling, plants and animals, solar radiation, hot water pipes, electricity, overhead hazards including powerlines, confined spaces, working from heights, tripping hazards, water bodies, firearms, explosives, damaged or broken structures, damaged or worn equipment, sharpened tools, items blocking exits, items of equipment in areas used for access, poor surfaces, and spillages and breakages.
What **employee responsibilities** in OHS legislation may be included in this unit?	Co-operation with the employer/supervisor in any action taken to comply with OHS legislation, taking reasonable care for own health and safety; accepting responsibility for protection of the health and safety of others through avoidance of personal action which puts others at risk. This includes smoking in the workplace, use of substances which modify mood or behaviour, inappropriate behaviour, not wilfully interfering with, or misusing anything provided to protect health and safety, not wilfully placing at risk the health or safety of any person in the workplace.

What OHS **training** may be relevant?	OHS induction, specific OHS training, safe machinery operation and maintenance, hazard identification and assessment, and safe chemical use.
What may constitute **participative arrangements**?	OHS committees and team or work group meetings.
What might be included in workplace for which **protective clothing or equipment** could be required?	Noise associated with plant, machinery and animals, pesticides, dusts, work in the sun, welding and use of grinders. Personal protective equipment (PPE) may include ear, eye and chemical protection, protective clothing, sunscreen lotion, safety harness, and headgear.
What could be some of the **manual handling** hazards?	Moving, lifting, shovelling, loading materials, pulling, pushing, up-ending materials, hand tool use, storing materials at heights too high or too low, bending, repetitious tasks, and handling plants and animals.
What **risks** to people and animals might be relevant?	Drowning in waterways, run over and injury associated with vehicles and machinery, machinery entanglement, exposure to noise, splash, scalding, and drift and volatility of chemicals.
What **procedures** may be included?	Hazard policies and procedures, emergency policies and procedures, procedures for use of personal protective clothing and equipment, hazard identification and issue resolution procedures, job procedures and work instructions, reporting procedures, and the installation of workplace safety signage.
Which OHS **emergencies** may apply to this unit?	Electrocution, fire, flood, chemical spills, storms and cyclones, gases in confined spaces, gas leaks, serious injury associated with tractors, falling from heights, machinery and equipment, animals, vehicles, firearms and grain suffocation.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in following Occupational Health and Safety (OHS) procedures requires evidence that hazards have been recognised and reported, that relevant workplace procedures are complied with, and that contributions have been made to participative arrangements. The skills and knowledge required to follow (OHS) procedures must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, OHS issues, work situations and teams.

What specific	Knowledge and understanding are essential to apply this

knowledge is needed to achieve the performance criteria?	standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• Employee and employer responsibilities under the OHS Act.
	• Enterprise procedures relating to hazards, fires, emergencies, accidents, risk control.
	• OHS signs and symbols relevant to area of work.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• Follow workplace procedures for hazard identification and risk control.
	• Ability to read safety warning signs.
	• Observe safety during work operations.
	• Participate in arrangements for maintaining health and safety of all people in the workplace.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	By raising OHS issues verbally with supervisor and others.
2. How can **information be collected, analysed and organised (1)**?	By recognising hazards, keeping maintenance records and reporting accidents and dangerous occurrences.
3. How are **activities planned and organised (1)**?	Following OHS procedures requires limited planning and organising.
4. How can **team work (1)** be applied?	Following OHS procedures will require participation with others in a team.
5. How can the use of **mathematical ideas and techniques (1)** be applied?	To determine liquids and weights used in the workplace.
6. How can **problem-solving skills (1)** be applied?	To determine appropriate action in emergency.

7. How can the **use of technology (1)** be applied?	By the use of communication equipment to raise OHS issues.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC2702A   Observe environmental work practices

This competency standard covers the process of observing and contributing to positive environmental work practices. It requires the ability to follow workplace directions and instructions, recognise basic environmental hazards and threats and communicate accurately with supervisors and workplace colleagues, and keep simple records. Observing environmental work practices requires awareness of relevant environmental legislation, policies and workplace/industry practices, approaches to improving environmental performance, and environmental issues (especially in regard to water catchments, air, noise, ecosystems, habitat, efficient use of resources, sustainability and waste minimisation).

Element		Performance Criteria	
1	Follow environmental workplace practices	1.1	**Workplace practices and work instructions** relating to potential environmental impacts are **recognised and followed**, and clarification is sought where necessary.
		1.2	Changes to work practices and procedures are responded to positively and promptly in accordance with enterprise requirements.
		1.3	Relevant **legislation, codes and national standards** that impact on workplace environmental practices are recognised and followed.
2	Contribute to improved environmental work practices	2.1	**Suggestions** are made to **designated personnel** for improvements to workplace practices where possible.
		2.2	Information is gathered and improvements are suggested to support the development of improved **workplace approaches to environmental practices.**
		2.3	**Environmental issues** and their relationship to workplace practices are discussed in the workplace with colleagues and designated personnel.
		2.4	Contributions to the review of **environmental practices and policies** are made within limits of responsibility.

3	Recognise and report on a **potential environmental threat**	3.1	**Signs or symptoms** of the potential environmental threat are recognised.
		3.2	Information about or observations of a potential environmental threat are **reported** to supervisors and/or appropriate authorities.
		3.3	Location and extent of the potential environmental threat is accurately recorded.
		3.4	Reports on the potential environmental threat are completed according to enterprise guidelines.
4	Maintain **environmental records**	4.1	Environmental records are accurately prepared as required according to enterprise policies and procedures.
		4.2	Environmental records are stored securely in a form accessible for reporting purposes.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What does **recognise and follow** mean?	That a person will acknowledge that environmental impacts, hazards and risks exist and that they have a responsibility to work in a manner which will minimise the impact on the environment within the guidelines established by the workplace.
What might environmental **workplace procedures and work instructions** include?	These could include written procedures or work instructions for environmental hazard and risk identification, avoiding or minimising environmental risks, improving environmental performance, waste minimisation and segregation, environmental monitoring, signs and labels (e.g., chemical labels), emergency procedures, hazard and incident recording and reporting procedures, and environmental data recording and reporting procedures where applicable. Verbal instructions from persons with responsibility related to environmental work practices are also included in this definition.
What **legislation, codes and national standards** may be relevant to this competency standard?	Award and enterprise agreements, relevant environmental legislation from all levels of government, Australian standards, international agreements and relevant industry Codes of Practice.

What **environmental threats and hazards** may be included in this competency standard?	These could include spills, leaks, pollution, planned and unplanned emissions, soil compaction, disturbance and erosion, accidents and disposal of waste, and damage or disruption to ecosystems resulting from work practices. Also includes plants, animals or diseases that are classified as an environmental threat or problem in an area, unauthorised changes in land use, fire risks and threats, and inappropriate human interaction on the environment. This may include damage to habitat resources, disruption of animal behaviour and territorial use, illegal vegetation clearance, seed collection, firewood gathering, nest disturbance and egg collecting.
Who are **designated personnel** in a workplace?	Managers, supervisors, and people who are responsible for work area or who may be assigned to act as a mentor/trainer to a person under instruction.
What **suggestions** may be included?	Ideas to minimise hazards and risks, reduce waste, make more efficient use of resources and improve environmental performance, reduce soil disturbance and improve habitat resources.
What **workplace approaches to environmental practices** may be relevant to this competency standard?	Preventing and minimising the production of pollution (e.g., discharges to air, land and water, hazardous waste, reducing 'burning off', composting, recycling materials, conservation practices), and improving workplace maintenance practices (e.g., using a broom instead of a hose, using environment-friendly cleaning agents).
What **environmental issues** are included in this competency standard?	Sustainability, reduction and disposal of waste, water quality, energy efficiency, biodiversity and habitat protection, conservation of natural resources, air quality, land contamination, noise, soil and salinity management and fire management.
What may be listed under **environmental policies**?	Waste minimisation and management, sustainability, local, regional, state and national strategies on weed and pest management, protection of land and habitat and conservation of resources, energy use, greenhouse gas emissions, use of chemicals and plant and equipment.

What may be listed as **signs or symptoms** of a potential environmental threat?	Observation of the presence of weeds, pest animals or chemicals; damage caused to plants, animals or the environment, changes in plant (e.g., dieback of trees) and animal health, erosion of soils, soils in water suspension, and presence of salt.
How may a **report** be made?	Verbally (face-to-face or through communication equipment) and in writing (notes, faxes, email or electronic messages).
What **environmental records** may be included?	Environmental data, maintenance and inspection reports, incident or accident reports, and complaints from the public.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in observing environmental work practices requires evidence that skills and knowledge have been successfully and appropriately applied and demonstrated in a work place or equivalent situation. The skills and knowledge required to observe environmental work practices must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, environmental hazards and risks, and workplace practices and procedures.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• Relevant legislation from all levels of government on environmental issues.
	• Relevant environmental policies and workplace/industry practices and procedures.
	• Good practice approaches relevant to work area particularly in regard to minimising environment hazards and risks, and improving environmental performance.
	• Environmental issues, especially in regard to water catchments, air, noise, ecosystems, habitat, efficient use of resources, sustainability and waste minimisation.
	• Potential environmental threats and problems relevant to a given region and occupation.

- General work place practices and their potential impact on the environment.

| **What specific skills are needed to achieve the performance criteria?** | To achieve the performance criteria, some complementary skills are required. These skills include the ability to:
- Communicate with supervisors and workplace colleagues.
- Recognise basic environmental hazards and threats.
- Follow workplace directions and instructions.
- Keep simple records. |

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Verbally with supervisor and others on environmental work practices and potential hazards and risks.
2. How can **information be collected, analysed and organised (1)**?	Through maintaining and analysing environmental records.
3. How are **activities planned and organised (1)**?	According to enterprise environmental and work place practices and policies.
4. How can **team work (1)** be applied?	Through working with others to follow and improve environmental practices.
5. How can the use of **mathematical ideas and techniques (1)** be applied?	Through quantification (e.g., counting, estimating areas) of environmental hazards or problems and through collection of data.
6. How can **problem-solving skills (1)** be applied?	Through recognition of and responses to environment hazards and risks, and determining ways that work practices can be more environmentally friendly.
7. How can the **use of technology (1)** be applied?	Technology may be required to record information, deal with environmental hazards, and improve work practices to be more environmentally friendly.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC2704A   Provide basic first aid

This competency standard covers the process of providing essential first aid in recognising and responding to an emergency using basic life support measures. The first aider is not expected to deal with complex casualties or incidents, but to provide an initial response where first aid is required. The first aider will generally be working under supervision. It requires the ability to respond positively to emergencies in line with practised actions and demonstrate basic first aid casualty management principles. Providing basic first aid requires knowledge of the use of safe working practices, the emergency network, and first aid casualty management principles.

Note: This competency standard can be acquired through completion of St John's Basic Life Support (Level 1), the Australian Red Cross' Essential First Aid or other equivalent one-day programs.

Element		Performance Criteria	
1	Assess the situation	1.1	**Emergency situation** is recognised.
		1.2	**Physical hazards** to personal and others health and safety are identified.
		1.3	Immediate risk to self and casualty's health and safety are minimised by isolating the **hazard**.
		1.4	The casualty's physical condition and vital signs are assessed.
2	Apply basic first aid techniques	2.1	Casualty is reassured in a caring and calm manner and made comfortable using available resources.
		2.2	First aid care is provided in accordance with established first aid procedures.
		2.3	First aid assistance is sought from others as appropriate.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **emergency situations** that impact on the operation may be included in this unit?	Fire, fuel spillage, anhydrous ammonia emergencies and chemical spillage. Emergency situations can also arise due to trauma, e.g., road accidents, snakebite or poisoning, respiratory or cardiac arrest, burns and scalds, fall from heights and electrocution.
What may be included as **hazards?**	Proximity of other people, lack of oxygen, vehicles and machinery, fire, gas, fume and electrical situations.

What maladies might be relevant to this standard?	Bleeding and shock, burns, fits, choking, heart attack, fractures, poisoning and drowning.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in providing basic first aid requires evidence that an individual has the skills and knowledge to recognise and respond to an emergency using basic life support measures. The skills and knowledge required to act to provide basic first aid must be **transferable** to a range of work environments and contexts. For example, this could include different workplace environments and signs and symptoms requiring attention.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below: • The use of safe working practices. • The emergency network.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • Respond positively to emergencies in line with practised actions. • Apply first aid casualty management techniques.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Verbally including through communication systems.
2. How can **information be collected, analysed and organised (1)**?	Observation and reporting to supervisor or appropriate authorities.
3. How are **activities planned and organised (1)**?	According to Occupational Health and Safety practices and policies.

4.	How can **team work (1)** be applied?	Through reacting to emergency situations in a coordinated way.
5.	How can the use of **mathematical ideas and techniques (1)** be applied?	Calculating pulse rates.
6.	How can **problem-solving skills (1)** be applied?	Identifying solutions to preserve life or counteract emergencies.
7.	How can the **use of technology (1)** be applied?	Use of communications equipment.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC2705A

Work effectively in the industry

This competency standard covers the process of working effectively on an individual basis and with others. It requires the ability to obtain information about the industry, observe employment requirements, accept responsibility for quality of own work, maintain safety of self and others, participate in workplace teams, and follow work schedules. Working effectively in the industry requires knowledge of industry/workplace awards and conditions, employer expectations, relevant legislation and Codes of Practice applying to the industry, OHS policies and procedures, workplace policies and procedures, emergency procedures, organisational structure, and workplace communication channels.

Element		Performance Criteria	
1	Obtain information about the industry	1.1	**Sources** of **information** about the industry are correctly identified and accessed.
		1.2	Information to assist effective and safe work performance within the industry is collected.
		1.3	Specific information on sector of work is obtained and updated.
		1.4	Industry and OHS information is correctly applied to day-to-day work activities.
		1.5	Employment **terms and conditions** are defined.
		1.6	Career pathways within the industry are identified.
2	Observe employment requirements	2.1	**Industry developments** are used in workplace context to improve quality, productivity and conditions.
		2.2	Work practices comply with Codes of Practice and workplace expectations.
		2.3	Faults and abnormalities in workplace practices are recognised and remedial **action** is taken to enterprise requirements.
		2.4	Dress and personal requirements comply with workplace standards.
		2.1	Punctuality in work attendance is observed.
		2.2	Employers expectations are met through completion of workplace routines and specific instructions within enterprise policies and procedures.
3	Accept responsibility for quality of own work	3.1	Personal work space is kept in a well organised and safe condition, and is in accordance with relevant standards and policies.
		3.2	Workplace code of conduct is adhered to.

		3.3	Variations in the quality of service and/or products from required standards are detected and reported in accordance with workplace procedures.
4	Plan own work	4.1	Instructions are interpreted correctly and observed.
		4.2	**Factors affecting work requirements** are identified and appropriate action is taken.
		4.3	Work load is assessed and prioritised within allocated timeframes.
		4.4	The need for assistance to improve performance is communicated clearly to the appropriate person.
5	Promote workplace co-operation	5.1	Responsibilities and duties are undertaken in a positive manner to promote co-operation and good relationships.
		5.2	Co-operation with others is conducted in a courteous manner and is appropriate to culture, **special needs** and linguistic background and position in the organisation.
		5.3	Problems and conflict are recognised and resolved, where possible, through personal communication and/or are referred to a supervisor, manager or employer for resolution.
6	Contribute to a productive work environment	6.1	Commitments to undertake work or assist colleagues/co-workers are fulfilled.
		6.2	Information relevant to work is shared with colleagues/co-workers to ensure designated work goals are met.
		6.3	Knowledge and skills are shared with colleagues/co-workers through conversations and meetings.
		6.4	Contribution of individuals of different gender and social and cultural backgrounds is recognised and sought.
		6.5	The principles of equal employment opportunity are observed and implemented.
		6.6	Work is consistent with workplace standards relating to anti-discrimination and workplace harassment.
7	Undertake an activity to workplace requirements	7.1	Interpretation of work schedules is consistent with the schedule and tasks defined.
		7.2	Knowledge and skills required for task are discussed with supervisors and co-workers.
		7.3	Availability of materials and equipment are checked to ensure they are consistent with work schedules and the requirements of the tasks.
		7.4	A daily schedule for completing **workplace activities** and allocated tasks including priorities,

allocated start times, estimation of completion times and materials, equipment and assistance required for completion is decided upon.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **information** about the industry may be relevant to this standard?	Different sectors of the industry and the services available in each sector, relationship between sectors and other industries, industry working conditions including OHS hazards, legislation that affects the industry, industrial relations issues and major organisations, career opportunities within the industry, work ethic required to work in the industry and industry expectations of staff, and quality assurance.
What **terms and conditions** may be included in this unit?	Workplace agreements, relevant union bodies, relevant awards, employment contracts and workplace requirements and etiquette.
What **legislation** may be relevant to those working in the industry?	OHS, workplace relations, workers compensation, consumer protection and trade practices, duty of care, building regulations, hygiene, equal employment opportunity (EEO), and anti-discrimination.
How might **industry developments** be relevant?	Implications of technology changes on employment, industry environment, and changes in market conditions.
What may be seen as **factors affecting work requirements**?	Time and weather contingencies, other work demands
What types of **workplace change** might be relevant to this standard?	Implementation of new work practices and services, enterprise restructuring, introduction of new technology or communication systems, and changes in staff numbers and individuals.
What can be defined as **special needs**?	People with a disability, children, elderly people, and people from non-English speaking background.
What **policies and procedures** may be relevant to this standard?	Quality system policies and procedures, environmental policies, OHS policies and procedures including accident reports, responsibilities and duties
What **workplace activities** may be included in this unit?	Daily routines, periodic routines and ad hoc activities.
What sorts of **action** may be relevant to this unit?	Reporting, rectifying faults, and prevention of damage.

What **sources** of information are relevant to this standard?	Media, reference books, libraries, unions, industry associations, industry journals, internet sites, personal observation and experience.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in working effectively in the industry requires evidence that skills and knowledge to work effectively in the industry have been successfully demonstrated in a work place or equivalent situation. The skills and knowledge required to working effectively in the industry must be **transferable** to a range of work environments and contexts.

For example, this could include different workplaces, groups of co-workers, and within enterprise policies and procedures.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below: • Industry/workplace awards and conditions. • Employer's expectations. • Relevant legislation and Codes of Practice applying to the industry. • OHS policies and procedures. • Workplace policies and procedures including those relating to quality systems. • Emergency procedures. • Organisational structure. • Workplace communication channels.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • Collate information on the industry. • Observe employment requirements. • Accept responsibility for quality of own work. • Manage own work. • Maintain safety of others. • Promote workplace co-operation. • Contribute to a productive work environment. • Interpret work schedules.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in

all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (1)** be applied?	Verbally with supervisor and others using enterprise terminology relating to work conditions.
2.	How can **information be collected, analysed and organised (1)**?	Working effectively in the industry will require basic information to be gathered and organised accordingly.
3.	How are **activities planned and organised (1)**?	Working effectively in the industry requires limited planning and organising.
4.	How can **team work (1)** be applied?	Working effectively in the industry will require participation with others in a team.
5.	How can the use of **mathematical ideas and techniques (-0)** be applied?	Not Applicable.
6.	How can **problem-solving skills (1)** be applied?	Problems requiring simple solutions may arise.
7.	How can the **use of technology (1)** be applied?	Technology may be required to obtain and record information.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC2801A   Participate in workplace communications

This competency standard covers the process of effectively participating in workplace communications. It requires the ability to follow simple spoken messages, perform routine workplace duties, follow simple written notices, obtain and provide information in response to workplace requirements, complete relevant work related documents, and participate in workplace meetings and discussions. Participating in workplace communications requires an understanding of different modes of communication, basic mathematical processes, and knowledge of communication procedures and systems and technology relevant to the enterprise and the individual's work responsibilities.

Element		Performance Criteria	
1	Follow routine spoken messages	1.1	Required information is gathered by listening, and is correctly interpreted.
		1.2	Instructions/procedures are followed in appropriate sequence for tasks and in accordance with information received.
		1.3	Clarification is sought from workplace supervisor on all occasions when any instruction/procedure is not understood.
2	Perform workplace duties following routine written **notices**	2.1	Written workplace notices and instructions are read and interpreted correctly.
		2.2	Routine written instructions/procedures are followed in sequence.
		2.3	Clarification is sought from workplace supervisor on all occasions when any instruction/procedure is not understood.
3	Obtain and provide information in response to workplace requirements	3.1	Specific, relevant information is obtained.
		3.2	Important information is interpreted correctly.
		3.3	Information is written completely, accurately and legibly.
		3.4	Sources of required information are identified and appropriate **contact** established.
		3.5	Personal **interaction** is courteous and inquiries carried out clearly and concisely.
		3.6	Defined workplace procedures for the location and **storage** of information are used.
4	Complete relevant work related documents	4.1	Range of **forms** relating to conditions of employment are completed accurately and legibly.
		4.2	Workplace data is recorded on standard workplace forms and documents.

		4.3	**Basic mathematical processes** are used for routine calculations.
		4.4	Errors in recording information on forms/documents are identified and rectified.
		4.5	Reporting requirements to supervisor are completed according to enterprise guidelines.
5	Participate in workplace meetings and discussions	5.1	Team meetings are attended on time.
		5.2	Own opinions are clearly expressed and those of others are listened to without interruption.
		5.3	Meeting inputs are consistent with the meeting purpose and established **protocols.**
		5.4	**Workplace interactions** are conducted in a courteous manner appropriate to cultural background and authority in the enterprise procedures.
		5.5	Questions about simple routine workplace procedure and matters concerning conditions of employment are asked and responded to.
		5.6	Meeting outcomes are interpreted and implemented.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What types of **notices** may be relevant to this unit?	Instructions, labels, symbols, signs, tables, simple graphs, personnel information, notes, rosters, safety material, dockets with customer/client details, messages, enterprise specific data, and industry network details.
What other **contact** may be included?	Suppliers, industry bodies, local government, regulatory bodies, trade personnel, training personnel, contractors and advisers.
How should **interaction** with others be conveyed?	Efficiently, effectively, responsively, courteously and supportively, using correct forms of greeting, identification and address as required, and presenting the enterprise in a positive way.
What forms of data **storage** may be included?	Manual or computer based filing systems.
What workplace **forms** may be included?	Personnel forms, telephone message forms, electronic crop and labour registration systems, safety reports and work rosters.

What different types of work groups and teams does this standard apply to?	Formal and informal groups/teams, small and large groups/teams and teams based on work function, level of supervision, work rosters or other.
What **routine workplace measures** may be included?	Estimates and calculations of pay, leave entitlements, workplace allowances, materials usage, crop and product characteristics (length, weight, capacity, time, temperature, stock numbers and age), product tallies, and packing and storing of stock/product.
What are defined as **basic mathematical processes?**	Addition, subtraction, multiplication and division.
What meeting **protocols** may be included?	Observing meeting convention, compliance with meeting decisions, and obeying meeting instructions.
What industry standards for **workplace interaction** may be specified?	Courtesy requirements, discretion, confidentiality, and structured follow-up procedures.
What **workplace interactions** may be relevant to this standard?	Verbal discussions including face to face, telephone, electronic and two-way radio, written including electronic, memos, instructions and forms, and non-verbal including gestures, signals, signs and diagrams.
What **enterprise requirements** may be relevant?	Clear and concise organisation, defined procedures for storage, and accurate and legible recording.
What **personal presentation** standards may be included?	Dress requirements for personal safety in the working environment, the wearing or use of personal protective equipment, personal and workplace hygiene and personal presentation for safety, e.g., the need to cover long hair or remove jewellery.
Which forms of **communication** may be relevant?	Face to face, telephone, written means, computers, e-mail, facsimile, 2-way radio, mobile phone, attendance at industry forums, paging systems and answering machines.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Participating in workplace communications in the workplace requires evidence that effective communications have been carried out according to the elements and performance criteria in this competency standard and according to workplace guidelines and procedures. The skills and knowledge required participate in workplace communications must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, types of communication and work teams.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• Effective communication.
	• Different modes of communication.
	• Written communication.
	• Electronic communication
	• Effective communication in a work team.
	• Communication procedures and systems, and technology relevant to the enterprise and the individual's work responsibilities.
	• OHS legislative requirements and Codes of Practice.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• Follow simple spoken messages.
	• Perform routine workplace duties following simple written notices.
	• Gather and provide information in response to workplace requirements.
	• Complete relevant work related documents.
	• Estimate, calculate and record routine workplace measures.
	• Basic mathematical processes of addition, subtraction, division and multiplication.
	• Estimation processes.
	• Participate in workplace meetings and discussions.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	By discussion with supervisor and others.
2. How can **information be collected, analysed and organised (1)**?	By obtaining various workplace documents and processing them accordingly.

3.	How are **activities planned and organised (1)**?	Participating in workplace communications requires limited planning and organising.
4.	How can **team work (1)** be applied?	Participating in workplace communications will require participation with others in a team.
5.	How can the use of **mathematical ideas and techniques (1)** be applied?	Mathematical ideas and techniques can be applied by calculating and recording workplace information.
6.	How can **problem-solving skills (1)** be applied?	In emergencies or communication breakdown, technical problems may arise requiring simple solutions.
7.	How can the **use of technology (1)** be applied?	Equipment such as calculators, computers, telephones and radios may be required to communicate and calculate.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTE2003A

Carry out postharvest operations

This competency standard covers the process of carrying out routine postharvest operations in a horticultural enterprise. It covers the grading, labelling and treatment of harvested produce, packing procedures and correct delivery and storage of harvested produce.

Postharvest operations are likely to be carried out under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Postharvest operations are usually carried out within established routines, methods and procedures. Competency at this level requires the application of knowledge and skills to a range of postharvest tasks and roles.

Element		Performance Criteria	
1	Prepare for postharvest operations	1.1	Postharvest operations to be performed and **client specifications** are identified according to **enterprise work procedures**.
		1.2	**Materials, tools, equipment and machinery** appropriate to the task being undertaken are selected.
		1.3	Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
		1.4	**OHS hazards** are identified, risks assessed and reported to the supervisor.
		1.5	Suitable **personal protective equipment (PPE)** is selected, used and maintained.
2	Transport harvested produce	2.1	Safe manual handling techniques are employed when handling containers.
		2.2	**Growing area handling practices** are conducted in a way that minimises damage to harvested **produce**.
		2.3	**Temperature** of harvested produce is maintained at the levels set by industry and enterprise work procedures.
		2.4	Produce is **transported** with due care from the growing area to the postharvest processing or storage area.
		2.5	Containers are maintained in good working order.
3	Grade, label and treat produce	3.1	Harvested produce is **graded** and labelled according to client specifications and enterprise work procedures.
		3.2	Produce that does not meet specifications and enterprise standards is identified and disposed of according to **enterprise environmental**

			procedures.
		3.3	**Postharvest treatments** are applied to produce according to enterprise work procedures and industry best practice.
		3.4	Postharvest practices are economical, methodical, meet established work schedules and **minimise damage to produce**.
		3.5	Postharvest operations are undertaken according to **OHS requirements**.
		3.6	Tools, equipment and machinery are cleaned and maintained according to enterprise work procedures.
4	Pack produce	4.1	Quality parameters of produce and specifications for packaging materials, **containers**, filling techniques and **labelling** of packed produce are identified and confirmed according to enterprise work procedures.
		4.2	Correct packaging materials and containers for specific produce are selected.
		4.3	Correct filling techniques for specific containers and produce are used to fill and arrange produce within the containers according to client specifications, enterprise work procedures and industry best practice.
		4.4	Correct wraps and lids are applied and containers are labelled according to client specifications, enterprise work procedures and industry best practice.
5	Store produce in a facility	5.1	Containers are placed onto pallets to ensure stability and maximum airflow.
		5.2	Pallets are transported to and arranged in the **storage facility** according to enterprise work procedures.
		5.3	The storage facility monitoring gauges are read accurately and efficiently with abnormal readings reported to the supervisor.
		5.4	The condition of stored produce is checked with damaged produce and containers removed from the storage facility according to enterprise work procedures.
		5.5	The storage facility and packing containers are **cleaned** to a level of hygiene acceptable to enterprise and industry standards without damaging monitoring or refrigeration equipment.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What **client specifications** will affect the carrying out of postharvest operations?	Client specifications may include quality of plant produce (and various grades) such as variety, shape, size, weight, length, colour, maturity, moisture content, ripeness, texture, skin condition, blemishes, bud count and health which are subject to seasonal and market forces. Client preferences may also specify packaging materials, containers, filling techniques, labelling and storage requirements from growing area to client such as the cool chain concept.
What **enterprise work procedures** may apply to this standard?	Work procedures will be based on sound horticultural principles and practices and may include supervisors oral or written instructions, postharvest program or production schedule, enterprise standard operating procedures (SOP), specifications, routine maintenance schedules, work notes; industry best practice guidelines on quality, food safety and hygiene; product labels and Material Safety Data Sheets (MSDS); manufacturers service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.
What **materials, tools, equipment and machinery** may be used to carry out postharvest operations?	Materials may include preservatives, chemicals, gases, cleaning agents, packaging materials and containers, labels, adhesives and proformas. Tools, equipment and machinery may include tractors, trailers, light trucks, forklifts, snips, knives, gloves, containers, grading machinery, washers, brushes, dryers, chemical applicators, gassing chambers, labelling devices, packing tools, scales, pallets, hand trolleys and lifting aids, coolrooms and dedicated storage facilities.
What **OHS hazards** may be associated with carrying out postharvest operations?	Hazards may include a wet working environment including electricity, solar radiation, dust, pollen, soil-borne micro-organisms, noise, chemicals and hazardous substances, confined spaces, sharp hand tools and equipment, manual handling, slippery or uneven surfaces, and moving equipment, machinery and vehicles.
What **PPE** may be required when carrying out postharvest operations?	PPE may include hat, boots, overalls, gloves, apron, waterproof clothing, spray clothing, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.

What **growing area handling practices** may be employed to minimise damage to produce?	Growing area handling practices may include observing the fill level of containers, lifting rather than dragging containers to avoid contact with dirt, correctly stacking containers on transport to reduce the risk of bruising, squashing or damaging the produce, and smoothly transporting the harvested produce to the postharvest processing or storage facility.
What types of harvested **produce** may require postharvest operations?	Harvested produce may include fruit, vegetables, herbs, flowers, foliage, bulbs, tubers, nuts, mushrooms, wild harvest plants and oils.
How is the **temperature** of harvested produce maintained in the growing area and upon delivery at the postharvest processing or storage area?	Harvested produce may need to be stored in the shade, in water-filled or covered containers in the growing area. In the shed, storage may occur in a temperature-controlled environment such as a coolroom. These may include forced air coolrooms for tablegrapes, hydro coolrooms for stonefruit and vacuum coolrooms for mushrooms.
How is harvested produce **transported** from the growing area to the postharvest processing area?	Harvested produce is placed into containers and transported by tractor, trailer, truck or forklift. Team members involved in the operation of vehicles should comply with operators manuals, and enterprise work and OHS procedures.
How may produce be **graded**?	Grading may be done by hand or machine. It may include removing out-of-type plants, or physically damaged, unhealthy, rotten or immature produce. Produce may be graded according to variety, shape, size, weight, length, colour, maturity, moisture content, ripeness, texture, skin condition, blemishes, bud count and health which are subject to seasonal and market forces. Produce in doubt is checked with the supervisor. Any out-of-standard produce should be disposed of according to enterprise procedures.
How will **enterprise environmental procedures** affect the carrying out of postharvest operations?	Enterprise environmental procedures may include procedures for the disposal of out-of-standard produce, waste material such as chemicals and hazardous substances used in postharvest treatments, their containers, plant debris, litter, processing and cleaning water run-off, and broken components and packaging. Waste may be removed to designated areas for recycling, reuse, return to the manufacturer or disposal.

What **postharvest treatments** may apply to this standard?	Postharvest treatments may include removal of dirt and foreign material, stripping excess leaves and/or trimming, brushing, washing/hydration, drying, applying preservatives, applying fungicides and insecticides by spraying or dipping, waxing and polishing, ripening or de-greening with ethylene gas, observing quarantine requirements and storing in a controlled environment.
What postharvest practices may be employed to **minimise damage to produce**?	Produce damage may be minimised by wearing gloves, maintaining sharp tools, placing rather than dropping produce into containers, cutting fingernails, observing fill heights, arrangement of produce and packing instructions for containers, and correctly stacking containers on transport.
What **OHS requirements** may be relevant to this standard?	OHS requirements may include identifying hazards, assessing and reporting risks, cleaning, maintaining and storing tools, equipment and machinery; appropriate use of personal protective equipment, safe operation of tools, equipment and machinery, ensuring operational safety exits from coolrooms and gassing chambers, safe handling, use and storage of chemicals and hazardous substances, correct manual handling, basic first aid, personal hygiene, and reporting problems to supervisors.
What types of **containers** may be used when packing produce?	Containers may include boxes, cartons, trays, crates, net bags, customised packaging and bulk bins.
What information may be included in produce **labelling**?	Labelling information on packed produce may include produce details such as variety, grade, weight, number and origin, and producer details, container number, packing date, quality assurance and handling instructions.
What **storage facility** may be used to store produce?	Coolrooms are the most common form of storage facility and vary depending on the type and suitability of the produce being stored. Coolroom environ-mental conditions may include temperature, humidity and light. Although most produce requires cooling, storage sheds may also be used as a storage facility.
How are storage facilities and containers **cleaned**?	Cleaning may involve sweeping, dusting, washing, fumigating or sterilising storage facilities to ensure dust, pests, diseases and waste material are removed. Cleaning should ensure a level of hygiene that protects the quality and health status of the stored produce.

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in carrying out postharvest operations requires evidence that a person can transport, grade, treat, pack and store harvested produce according to marketing requirements and industry and enterprise standards.

The skills and knowledge required to carry out postharvest treatments must be **transferable** to a different work environment. For example, if postharvest operations are carried out on a property growing citrus fruits, it should be evident that they could be carried out on a property where flowers are grown, following induction to the new workplace.

What specific knowledge is needed to achieve the performance criteria?	- Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: - the attributes of enterprise produce in relation to the desired quality of produce to be presented to the client - the importance of maintaining quality of produce including handling and cooling requirements - the relationship between the quality attributes of produce and packing techniques and packaging - industry standards for packaging - cool chain principles and practices - characteristics and procedures for use of coolrooms - storage methods relevant to different enterprise produce - the correct storage temperatures for a range of enterprise produce - humidity levels and their effect on the quality of enterprise produce - hygiene issues in the handling and storage of plant produce - environmental effects of postharvest treatments and how to dispose of waste materials to minimise damage to the external environment.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: - communicate orally with team members and supervisors - interpret and confirm chemical labels, MSDS, work instructions and enterprise work procedures - record information about work activities on proformas - participate in teams and contribute to team objectives - count and calculate quantities, treatment application rates and storage requirements - correctly dispose of chemical and hazardous substances, their containers and other waste materials to minimise environmental impact.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Ideas and information relating to postharvest operations and problems encountered should be discussed with other members of the work team and the supervisor.
2. How can **information be collected, analysed and organised (1)**?	Enterprise work procedures and client specifications should be consulted, interpreted and applied to co-ordinate postharvest operations with further clarification sought from the supervisor where necessary.
3. How are **activities planned and organised (1)**?	Equipment, materials and work procedures for postharvest operations will need to be arranged before and between work periods and there may be some responsibility for co-ordinating work with others.
4. How can **team work (1)** be applied?	Postharvest operations usually involve co-ordination and participation with other members of a production team to complete specified tasks and maximise production schedules.
5. How can the use of **mathematical ideas and techniques (1)** be applied?	Mathematical concepts will be required to count and tally quantities, to calibrate grading and treatment application machinery, measure volumes and calculate rates of chemical to apply, record information and calculate time periods before work can continue in chemically affected areas.
6. How can **problem-solving skills (1)** be applied?	Problems relating to daily work activities such as a power failure affecting crop storage facilities may arise when carrying out postharvest operations. Problems will need to be identified, reported and discussed with other members of the work team and the supervisor.
7. How can the **use of technology (1)** be applied?	Technology may be applied in the preparation, use and maintenance of postharvest tools, equipment and machinery.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function, for example:

Operation of tractors, particularly on public roads, will require a motor vehicle licence from the relevant State or Territory motor vehicle licensing authority. Operation of a forklift will require an accredited, current operators licence.

Handling, applying and storing chemicals and hazardous substances may require a current ChemCert certificate.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE2010A   Establish horticultural crops

This competency standard covers the process of planting and establishing crops such as fruit, vegetables, flowers, foliage, plants and herbs. Crop planting and establishment is likely to be under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Competency at this level requires the application of knowledge and skills to a range of planting tasks, including site clearance and preparation, the handling and planting of a range of planting materials, and the care of young plants. Crop establishment activities are usually undertaken within established routines, methods and procedures.

Element		Performance Criteria	
1	Prepare for crop establishment operations	1.1	**Instructions** about establishing the crop are interpreted and clarified with the supervisor.
		1.2	**Machinery, equipment and tools** are selected and prepared for the task being undertaken.
		1.3	**OHS hazards** are identified, risks assessed and reported to the supervisor.
		1.4	The **environmental implications** of the crop establishment program are identified and discussed with the supervisor.
		1.5	Suitable **personal protective equipment (PPE)** is selected, used and maintained.
2	Prepare the site for planting	2.1	Old crop and other waste materials are removed and **disposed of** in full consideration of environmental implications.
		2.2	Where soil is the growing media, samples are taken for **testing** according to established industry procedures.
		2.3	Where soil is the growing media, **soil treatment/amendments** are applied according to soil test results and supervisors instructions.
		2.4	Growing media is prepared according to the crop establishment plan.
		2.5	**Crop protection** is implemented according to enterprise guidelines.
		2.6	The planting pattern is marked out according to the crop establishment plan.
		2.7	Machinery, equipment and tools are operated according to enterprise guidelines.
3	Carry out planting operations	3.1	**Planting material** is selected according to the type of crop and enterprise quality standards.
		3.2	Planting material is **treated** according to the crop

			and supervisors instructions.
		3.3	Planting material, waiting to be planted is **maintained** under conditions that will ensure maximum viability.
		3.4	Planting material is handled and transported to the site with no signs of transport damage.
		3.5	Planting is carried out according to the planting plan.
4	Care for young plants	4.1	**Treatments** are applied to plantings according to the supervisors instructions.
		4.2	**Water is applied** to plantings according to the irrigation schedule and established sustainable farming practices.
		4.3	Plantings are **trained** according to the supervisors directions.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What **instructions** may be relevant to this standard?	Instructions may include Standard Operating Procedures (SOPs), company policy and procedures in regard crop establishment, specifications, work notes, Material Safety Data Sheets, manufacturers instructions, product labels, or verbal directions from the manager, supervisor, or senior operator.
What **machinery, equipment and tools** are likely to be used for plant maintenance?	Machinery, equipment and tools may include tractors, rotary hoes, planting trolleys, cultivators, fertiliser spreaders, surveying and measuring equipment, seeding or planting machinery.
What **OHS hazards** may be associated with crop establishment?	Hazards may include the use of machinery, moving machinery and machinery parts, falling trees and plant debris, chemicals and hazardous substances, manual handling, solar radiation, dust, and noise.
What are the **environmental implications** associated with crop establishment?	Negative environmental implications may include the contamination of off-site ground water or soils from solids, debris, nutrients or chemicals; land disturbance, spread of noxious weeds, and water run-off.
What **PPE** may be required to undertake horticultural crop establishment work?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, hearing protection, sunscreen lotion and hardhat.

How may the waste materials be **disposed** of?	Waste disposal may include disinfestation, ploughing organic waste into the soil, mulching or composting of plant material, bagging and removal of seed heads, and disposing of noxious or poisonous material at approved disposal sites s.
What **tests** may be carried out on soil samples?	Tests may include pH, salinity, water repellence, slaking, proportion of organic matter.
What **soil/substrate treatments/ amendments** may apply to this standard?	Soil/substrate treatments/amendments may include gypsum, organic matter, artificial fertilisers or the planting of a temporary or permanent cover crop. It may include growing media hydration and/or sterilisation.
What type of **crop protection** may be required for crop establishment?	Crop protection may include wind and solar radiation protection such as artificial structures, solar/thermal screens, permanent shelter belts or temporary plantings of cereals, bana grass or sudax; trellises and stakes; and mulch, including straw, plastic, cover crop or any vegetative material.
What types of **planting material** may be used to establish a crop?	Planting material may include seeds, seedlings, runners, cuttings or bare rooted trees.
How might planting material be **treated** before planting?	Pre-plant treatments may include fungicide dips, fungicide dusts for seeds, root trimming, shoot trimming, crown gall dips and anti-transpirants.
What **treatments** may apply to the care of young plants?	Treatments may include pest and disease prevention and control, weed prevention and control, frost, fertilisers, and mulch.
How might planting material be **maintained** while waiting to be planted?	Maintaining plants may include keeping seeds and tubers dry and cool, minimise stress in plants and plantlets and prevent dehydration.
How may **water be applied** to plants?	Water may be applied using irrigation systems, which may include drips; overheads, central pivot, micro irrigation, under tree, and flood.
In what way may plants be **trained**?	Training may involve thinning, trimming, staking or trellising.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in establishing crops requires evidence that a person can interpret a site map, clear the site of old plantings, prepare the soil or substrate and site for plantings, prepare the plants,

plant the crop and maintain the new crop.

The skills and knowledge required to establish crops must be **transferable** to a different work environment. For example, if a person can establish a citrus crop in South Australia they should be able to establish a mango crop in Queensland following a period of induction.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • principles of sustainable horticultural practices • importance of growing area hygiene and quality control in regard to crop establishment • principles and operations of a range of irrigation systems used for crops • nutritional, water and other requirements of the crop • the importance of correct timing and procedures for crop planting • range of pre-planting soil or substrate treatments and their importance • methods of waste disposal causing minimal impact on the environment.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • participate in teams and contribute to team objectives • communicate with team members and supervisor • read and interpret a range of workplace information • calibrate equipment • measure quantities of treatment • calculate spacings and planting patterns • operate machinery to manufacturers specifications and enterprise procedures • safely apply appropriate agricultural chemicals.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be	Ideas and information relating to preparation, planting and crop care, and problems encountered

	applied?	should be discussed with other members of the work team and the supervisor.
2.	How can **information be collected, analysed and organised (1)**?	Enterprise work procedures, such as a daily planting plan, mulching, fertilising and water requirements of crops, should be consulted, interpreted and applied to crop establishment activities with further clarification sought from the supervisor where necessary.
3.	How are **activities planned and organised (1)**?	Materials, tools, equipment and work activities for crop establishment routines may need to be arranged around seasonal requirements, and there may be some responsibility for co-ordinating work activities with other members of the work team.
4.	How can **team work (1)** be applied?	Crop establishment activities may involve working with other members of a team to complete operations within the daily work routine.
5.	How can the use of **mathematical ideas and techniques (1)** be applied?	Calibrating spray equipment and determining quantities and application rates for treatment. Fertiliser or mulching of crops will require mathematical application.
6.	How can **problem-solving skills (1)** be applied?	Problems relating to site preparation, crop planting, treatments, watering, machinery and equipment, workplace safety, and other team members may arise during the establishment of crops, which may require problem-solving skills.
7.	How can the **use of technology (1)** be applied?	Technology may be applied in the preparation, use and maintenance of horticultural equipment and machinery used for spreading of fertiliser or other crop treatments.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE2018A   Regulate crops

This competency standard covers the process of regulating crops by thinning; pruning, multi-heading, training, climate/irrigation/fertigation steering of flower, fruit or vegetable crops to control yield and quality.

Regulating crops work is likely to be under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Competency requires the application of knowledge and skills to a range of crop regulation tasks. Regulating crops is usually undertaken within established routines, methods and procedures.

Element		Performance Criteria	
1	Identify crop regulation requirements	1.1	Plants that require **crop regulation** are identified according to **enterprise work procedures.**
		1.2	The **purpose** and **methods** of crop regulation are determined according to enterprise work procedures.
		1.3	**Services** are located using site plans and in consultation with the supervisor.
		1.4	Access to the site is determined in consultation with the supervisor.
		1.5	**OHS hazards** are identified, risks assessed and reported to the supervisor.
2	Prepare for crop regulation	2.1	Crop regulation **tools, equipment and machinery** are selected according to enterprise work procedures.
		2.2	Pre-operational and safety checks are carried out on crop regulation tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
		2.3	Chemicals to be used for crop regulation are selected and prepared according to manufacturers specifications and enterprise work procedures.
		2.4	Suitable **safety** and **personal protective equipment (PPE)** are selected, used and maintained.
3	Undertake crop regulation	3.1	Safety equipment is erected around the crop regulation site during and between work periods.
		3.2	The plant material to be regulated is identified according to the crop regulation program.
		3.3	The crop regulation program is undertaken according to enterprise work procedures and **OHS requirements**.
		3.4	Crop regulation tools, equipment and machinery

			are operated safely and effectively.
		3.5	Signs of diseases and pests are recorded and reported to the supervisor.
4.	Complete crop regulation	4.1	**Waste material** removed from the site is disposed of in an environmentally aware and safe manner according to enterprise work procedures.
		4.2	Correct manual handling techniques are used when lifting or moving heavy loads.
		4.3	Crop regulation tools, equipment and machinery are cleaned, maintained, calibrated and stored according to enterprise work procedures.
		4.4	A **clean and safe work area** is maintained throughout and on completion of work.
		4.5	Work outcomes are recorded or reported to the supervisor according to enterprise work procedures.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What does **crop regulation** involve at this standard?	Crop regulation may include thinning; pruning, multi-heading, training, climate/irrigation/fertigation steering of crops.
What **enterprise work procedures** may apply to this standard?	Work procedures will be based on sound horticultural principles and practices and may include supervisors oral or written instructions, the crop regulation program, enterprise standard operating procedures (SOPs), specifications, routine maintenance schedules, work notes; manufacturers service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.

For what **purpose** may crops be regulated?	The goals of pruning may include to shape, form, correct or control growth, provide clearance for services, access or cultural practices, prevent disease or damage, promote health, control capacity and vigour, manage the canopy and fruit and flower production, and to control yield and quality to meet market requirements.
	The goal of thinning is to control yield and quality to meet market requirements.
	The goal of multi-heading, training, climate/irrigation/fertigation steering may be included to shape, form, correct or control growth, provide clearance for services, access or cultural practices, prevent disease or damage, promote health, control capacity and vigour, manage the canopy and fruit and flower production, and to control yield and quality to meet market requirements.
What **methods** of crop regulation are appropriate for this standard?	Crop regulation methods may include thinning by removal of flowers crops using hands, sticks, shakers and thinning sprays, and pruning methods such as winter or summer pruning, minimal pruning and hand clean up after machine pruning.
	Greenhouse crop regulation methods may include pruning by removal of flowers, leaves or fruit using hands, knives, secateurs and seasonal pruning; or encouraging additional flowers, leaves or fruit for plant steering. Plant steering may also be encouraged by manipulation of the climate, irrigation and fertigation setpoints.
What **services** may need to be located?	Services may include above ground outlets for water supply, irrigation fittings, gas lines, heating fuel lines, low overhead power (electricity) and telecommunications lines.
How may **OHS hazards** be identified?	Hazards may be identified through visual inspection of the area, understanding of site plans, and enterprise work procedures.
What **OHS hazards** may be associated with crop regulation?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, chemicals and hazardous substances, manual handling, moving vehicles, machinery and machinery parts, sharp tools and equipment, uneven surfaces, and flying and falling objects.

What crop regulation **tools equipment and machinery** may be used?	Tools, equipment and machinery may include rubber mallets, sticks, spray equipment, knives, handsaws, hand and battery-powered secateurs, pneumatic snips and compressors, hedge trimmers both manual and powered, small chainsaws, chippers, ladders, picking platforms, trolleys, powered ladders and scissor lifts.
	Greenhouse regulation may include climate management systems (manual or automatic) to control items such as ventilators, HAF fans, screens, lighting, fogging/misting, CO_2 enrichment, heating/cooling and irrigation/fertigation.
What **safety equipment** may be required?	Safety equipment may include signage and barriers.
What **PPE** may be required to carry out crop regulation?	PPE may include hat, boots, overalls, gloves, halter, waterproof or spray clothing, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.
What **OHS requirements** may be relevant to this standard?	OHS requirements may include identifying hazards; assessing and reporting risks; cleaning, maintaining and storing tools, equipment and machinery; appropriate use of personal protective equipment including sun protection, drinking to avoid dehydration; safe operation of tools, equipment and machinery; safe handling, use and storage of chemicals and hazardous substances; correct manual handling; working at heights; basic first aid; personal hygiene and reporting problems to supervisors.
What **waste material** may be generated during crop regulation?	Waste material may include small to medium branches, foliage, leaves, sticks, buds, flowers, fruit, bark, plant debris and chipped material.
How may a **clean and safe work area** be maintained?	Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of crop regulation activities; safely storing materials on site; using signage and safety barriers during crop regulation and removing them after activities are completed; and swiftly and efficiently removing and processing debris and waste from the work area.

For more information on contexts, environmental implications and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in regulating crops requires evidence that a person using appropriate techniques and equipment can effectively support the achievement of the crop yield and quality desired by individual enterprises.

The skills and knowledge required to regulate crops must be **transferable** to different work environments. For example, pruning techniques are required for a range of stages of plant growth in a number of horticultural sectors, including production, amenity horticulture, arboriculture and nurseries. The practical knowledge of techniques used to remove canes in a viticultural enterprise may be applied in a different context to removing wood from roses after flowering in a floricultural enterprise.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • principles of thinning, multi-heading, training, climate/irrigation/fertigation steering and pruning are the methods used to achieve crop regulation goals • effects on plant growth, habit and production levels of thinning multi-heading, training, climate/irrigation/fertigation steering and pruning operations in relation to the market goals of the enterprise • the purpose of tools, equipment and machinery used for crop regulation and the correct and safe use and care of these tools, equipment and machinery • the effect of outdoor climatic conditions (e.g., rain, hail, total fire ban days, or very high ultraviolet radiation), which may prevent, impede or influence crop regulation activities, or influence the selection of crop regulation tools, equipment and safety equipment to minimise the hazards presented.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • participate in teams and contribute to team objectives • communicate orally with work team members and supervisors • utilise proforma recording, reporting and work procedure documents • interpret site plans and crop regulation specifications • measure quantities, estimate quantities of plant material to be regulated such as counting buds, flowers, heads or fruit to be retained along a stem, branch or cane, and numbers of stems or branches to be retained per plant or

bay, calculate material requirements, area, volume, ratios and application rates, and calibrate machinery

- measure and target various setpoints for climate, irrigation and fertigation to steer crop/s in a desired direction
- co-ordinate own activities with the work group
- monitor enterprise plants for quality
- minimise noise, dust, high activity vehicle traffic and water run-off to prevent nuisance-level environmental disturbance.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life. which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Ideas and information relating to crop regulation activities and problems encountered should be discussed with other members of the work team and the supervisor.
2. How can **information be collected, analysed and organised (1)**?	The crop regulation site and surrounding area should be inspected visually and the information gained discussed with the work team and the supervisor.

Enterprise work procedures and site plans should be consulted, interpreted and applied to co-ordinate crop regulation activities with further clarification sought from the supervisor where necessary. |
3. How are **activities planned and organised (1)**?	Equipment, materials and work procedures for crop regulation will need to be arranged before and between work periods, and there may be some responsibility for co-ordinating work with others.
4. How can **team work (1)** be applied?	The crop regulation program may involve working with other members of a team to complete the program.
5. How can the use of **mathematical ideas and techniques (1)** be applied?	Measuring distance, calculating areas, volume, ratios and application rates, calibrating machinery and estimating quantities of materials will require mathematical application.

6.	How can **problem-solving skills (1)** be applied?	Problems in applying crop regulation methods or achieving crop regulation levels, workplace safety and other team members may arise during the crop regulation activities.
7.	How can the **use of technology (1)** be applied?	Technology may be applied in the preparation, use and maintenance of crop regulation tools, equipment and machinery.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE2021A   Support horticultural product harvesting

This competency standard covers the process of crop picking and related tasks such as routine assessment of product readiness for harvest, basic sorting, bunching and grading, and transportation of the product from the growing area.

Work is likely to be under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Product harvesting is usually carried out within established company procedures. Competency at this level is demonstrated by the application of knowledge and skills to a range of product harvesting tasks and roles.

Element		Performance Criteria	
1	Perform routine assessment of plant products for harvest	1.1	Product **maturity** is determined according to supervisors instructions and **enterprise work procedures**.
		1.2	Analysis is reported to the supervisor according to enterprise work procedures.
		1.3	The **product** selected for harvesting conforms to **enterprise market requirements**.
2	Prepare equipment for harvesting	2.1	**Tools, equipment and machinery** appropriate to the task being undertaken are selected.
		2.2	Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
		2.3	**OHS hazards** are identified, risks assessed and reported to the supervisor.
		2.4	Suitable **personal protective equipment (PPE)** is selected, used and maintained.
3	Harvest the product	3.1	**Harvesting practices** employed minimise plant damage and reflect efficient use of time, resources and labour as per enterprise work procedures.
		3.2	Harvesting the product is undertaken according to **OHS requirements**.
		3.3	Basic **sorting and grading** of the product is carried out according to enterprise work procedures.
		3.4	Harvesting tools, equipment and machinery are cleaned and maintained according to enterprise work procedures.
		3.5	**Problems** are reported to the supervisor.
4	Transport the product	4.1	Safe manual handling techniques are employed

when handling **containers**.

4.2   Containers are moved and stacked in such a way that minimises damage to the product.

4.3   **Temperature** of the product is maintained at the levels set by industry and enterprise work procedures.

4.4   The product is **transported** from the growing area to the processing or storage area.

4.5   Containers are maintained in good working order.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

How is the **maturity** of a product determined?	Maturity parameters may include size, weight, length, shape, colour, ripeness, texture, skin condition, ease of removal and moisture content. These characteristics may be measured by observation and maturity testing tools and equipment such as knives, sizing rings, colour charts, refractometers, and penetrometers and produce firmness testers. The results are interpreted and analysed by comparison with specification charts and enterprise and industry maturity standards.
What **enterprise work procedures** may apply to this standard?	Work procedures will be based on sound horticultural principles and practices and may include supervisors oral or written instructions, harvest program or production schedule, enterprise standard operating procedures (SOPs), specifications, routine maintenance schedules, work notes; manufacturers service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.
What types of **product** may be harvested?	Products include the harvested parts of crops. Products may include fruit, vegetables, herbs, flowers, foliage, bulbs, tubers, nuts, mushrooms, wild harvest plants and oils.
What **enterprise market requirements** may influence the product being harvested?	Enterprise market requirements may include variety, size, weight, length, shape, colour, health and quality depending on seasonal and market forces.

What **tools, equipment and machinery** may be used to carry out product harvesting procedures?	Tools, equipment and machinery may include secateurs, knives, machetes, rubber bands, string, callipers or sizing rings, specification charts or aids, gloves, bags, ladders, trolleys, tractors, trailers, forklifts, powered ladders, containers, buckets, dip tins and bins.
What **OHS hazards** may be associated with harvesting a product?	Hazards may include solar radiation, noise, dust, pollen, pests, sharp hand tools and equipment, manual handling, ladders, working at height, slippery or uneven surfaces, potholes and moving machinery and vehicles.
What **personal protective equipment (PPE)** may be required to support product harvesting?	Personal protective equipment may include boots, overalls, gloves, goggles, face mask, hearing protection, and sun hat and sunscreen lotion.
What **harvesting practices** may be employed to harvest a product?	Harvesting practices may include correct use of equipment, select picking, reporting or recording tallies, removing out-of-type plants and removing rotten or immature fruit. Plant and product damage may be minimised by wearing gloves, cutting fingernails, maintaining sharp tools, placing rather than dropping the product into containers, observing fill heights or packing instructions for containers, and correctly stacking containers on transport.
What **OHS requirements** may be relevant to this standard?	OHS requirements may include identifying hazards, assessing and reporting risks, cleaning, maintaining and storing tools, equipment and machinery; appropriate use of personal protective equipment including sun protection, drinking to avoid dehydration, safe operation of tools, equipment and machinery, correct manual handling, basic first aid, personal hygiene and reporting problems to supervisors.
What does **sorting and grading** of the product involve?	Sorting and grading may include removing out-of-type plants, or physically damaged, unhealthy, rotten or immature fruit and vegetables. The product may be graded according to variety, size, length, colour, maturity, blemishes, bud count and quality, which are subject to seasonal and market forces. Product in doubt is checked with the supervisor. Any out-of-standard produce should be disposed of according to enterprise policy.
What **problems** may arise when harvesting a product?	Problems may include hazards, pests, tools, equipment and machinery, product quality, other team members, climate or plant health.

What types of **containers** may be used in product harvesting?	Containers may include boxes, trays, crates, bulk bins or net bags.
How is the **temperature** of a product maintained in the growing area and upon delivery at the processing or storage area?	Products may need to be stored in the shade, in water-filled or covered containers in the growing area. In the shed storage may occur in a temperature-controlled environment such as a cool room. These may include forced air cool rooms for tablegrapes, hydro cool rooms for stonefruit and vacuum cool rooms for mushrooms.
How is the product **transported** from the growing area to the processing area?	Produce is picked into containers and transported by tractor, trailer, truck, picking trolleys, conveyors or forklift. Team members involved in the operation of vehicles should comply with operators manuals, and enterprise work and OHS procedures.

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in supporting product harvesting requires evidence that the trainee can perform routine assessment of plant products for harvest in accordance with enterprise market requirements, harvest a product and transport it according to enterprise procedures and OHS requirements.

The skills and knowledge required to support product harvesting must be **transferable** to a different work environment. A person who can support the harvesting of a product should be able to transfer that knowledge and skill to another workplace although different products may be present. For example, if a product is harvested on a property growing vegetables, it should be evident that a product could be harvested on a property where flowers are grown, following induction to the new workplace.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• recognition of the maturity parameters of a range of products
	• enterprise quality procedures and characteristics of a product relative to varying market requirements
	• grading characteristics of each product
	• the importance of maintaining quality of produce including cooling requirements and quick transport from growing area to processing areas
	• the effect of adverse climatic conditions (e.g., rain, hail,

	extreme wind with dust, or very high ultraviolet radiation), which may downgrade the quality of affected product, prevent or impede harvest operations or severely influence the time taken to complete the harvest program.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • participate in teams and contribute to team objectives • read and interpret work procedures • communicate with team members and supervisor • calculate tallies and production rates • disposal of out-of-standard plant material in an environmentally aware and sensitive manner, such as the careful disposal of rotten produce to minimise smell and the spread of insect pests and disease.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Ideas and information about crop selection, product maturity standards, harvesting procedures, grading requirements and transportation methods should be discussed with other members of the work team and the supervisor.
2. How can **information be collected, analysed and organised (1)**?	Enterprise work procedures should be consulted, interpreted and applied to product harvesting activities with further clarification sought from the supervisor where necessary.
3. How are **activities planned and organised (1)**?	Tools, equipment and machinery, harvesting schedule, own work activities and co-ordination in the work team should be organised according to enterprise work procedures such as supervisors instructions and production schedules.
4. How can **team work (1)** be applied?	Product harvesting usually involves co-ordination and participation with other members of a production team to complete specified tasks and maximise

	production schedules.
5. How can the use of **mathematical ideas and techniques (1)** be applied?	Mathematical concepts may be used in counting; tallying and calculating individual and team harvesting output or hours worked.
6. How can **problem-solving skills (1)** be applied?	Problems relating to harvesting techniques, processes, the product, workplace safety and other team members may arise during the harvesting of a product.
7. How can the **use of technology (1)** be applied?	Technology may be applied in the preparation, use and maintenance of harvesting tools, equipment and machinery.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE2308A   Operate ride-on vehicles

This competency standard covers the process of maintaining and operating two and four wheel all terrain vehicles and ride-on machinery. This unit does not include tractors or motor vehicles, as they are covered by other units of competency.

It requires the application of basic skills and knowledge to safely utilise individual controls and features of ride-on vehicles, with or without attached equipment, and carry out basic maintenance procedures. Competency requires an awareness of duty of care to self, others and the environment. The work is likely to be carried out under routine supervision within enterprise guidelines.

Element		Performance Criteria	
1	Prepare ride-on vehicle for operation	1.1	Existing and potential **OHS hazards** in the work area are identified and reported to the supervisor.
		1.2	**Routine checks and maintenance** of **ride-on vehicle** are conducted prior to use according to manufacturers specifications and **enterprise requirements.**
		1.3	**Attached equipment** is identified and selected appropriate to work requirements, checked for safety, and set for operation.
		1.4	Ride-on vehicle and equipment faults or malfunctions are identified and reported for repair according to enterprise requirements.
		1.5	Appropriate licences for operation of vehicles are obtained where required.
2	Operate ride-on vehicle	2.1	**Risks** to self, others and the environment are recognised and avoided according to OHS and enterprise requirements.
		2.2	Suitable **personal protective equipment** is selected, used and maintained according to OHS and enterprise requirements.
		2.3	Ride-on vehicle is operated in a **safe and controlled manner,** and monitored for performance and efficiency.
		2.4	Hazards are identified, anticipated and controlled through the application of safe riding techniques.
		2.5	**Environmental implications** associated with ride-on vehicle operation are recognised and positive enterprise environmental procedures applied where relevant.
3	Complete and check ride-on vehicle operation	3.1	**Shut-down procedures** are conducted according to manufacturers specifications and enterprise requirements.

	3.2	Malfunctions, faults, irregular performance or damage to ride-on vehicle is detailed and reported according to enterprise requirements.
	3.3	Ride-on vehicle is cleaned, secured and stored according to enterprise requirements.
	3.4	Ride-on vehicle operational **reports** are maintained to industry standards according to enterprise requirements.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work situations available.

What **OHS** requirements may be relevant to this standard?	Safe systems and procedures for:
	• the safe operation and maintenance of ride-on vehicles and attached equipment, including the guarding of exposed moving parts
	• checks to ensure loads are secure and within working specifications
	• hazard and risk control
	• safe mounting and dismounting
	• manual handling including lifting and carrying
	• the application of emergency/defensive driving techniques
	• handling, application and storage of hazardous substances
	• outdoor work including protection from solar radiation, dust and noise
	• the appropriate use and maintenance of personal protective equipment.
What existing and potential **hazards** may be associated with the operation of ride-on vehicles?	Hazards may include exposure to loud noise and fumes, hazardous substances (fuel, oils), solar radiation, and organic and other dusts. It may also include ergonomic hazards associated with posture and mechanical vibration. Other hazards may include bystanders, livestock and wildlife, difficult terrain and varying gradients, fall from heights, defective pipe/rail supports, broken ground, potholes, ditches, gullies, embankments, obstacles, flying objects, adverse weather conditions, electricity, powerlines, loose clothing, speed and fatigue, load shifts, mechanical malfunctions, exposed moving parts, and other machinery.

What **routine checks and maintenance** might be carried out prior to operation?	Pre-start and safety checks to manufacturers specifications including an assessment of tyres, wheels, controls and cables, lights, safety mirrors, electrics, safety restraints, chain/driveshaft, chassis and suspension. Service and maintenance of cooling system, fuel, oils and lubricants, battery levels; tyre pressure, fan belts, leads, lines, connections, air filters, air conditioning, brakes, clutch, gearbox, steering, lighting, and transmission. Inspection of hitch and towing points.
What **ride-on vehicles** might be covered in this standard?	This may include 2 wheel motorcycles (agbikes and trailbikes, excluding road motorcycles), 3 and 4 wheel motorcycles (all terrain vehicles), electric trolleys, "B-max trucks" and ride-on mowers. All terrain vehicles are small, motorised vehicles with low pressure, high flotation tyres.
What **enterprise requirements** may be applicable to this standard?	SOP, industry standards, production schedules, MSDS, work notes and plans, product labels, manufacturers specifications, operators manuals, enterprise policies and procedures (including waste disposal, recycling and re-use guidelines), and supervisors oral or written instructions.
What range of **attached equipment** may apply to this standard?	Mounted equipment may include spray equipment, spreaders, winch, gun scabbard, toolbox, and first aid kits. Trailed equipment may include a range of trailers, picking trolleys, spray equipment, slashers and spreaders.
What **risks** may be associated with the operation of ride-on vehicles?	Loss of rider control caused by the incorrect matching of operator size and weight to vehicle size and weight, and load shifting as a result of uneven weight distribution.
What **personal protective equipment** may be relevant to this standard?	This may include helmets, boots, overalls, gloves, protective eyewear, hearing protection, respirator or face mask, and sun protection (sun hat, sunscreen).
How might the operation of a ride-on vehicle be demonstrated in a **safe and controlled** manner?	Appropriate selection and use of vehicle controls, features, settings and operational techniques for the terrain and weather or greenhouse climate conditions without causing damage to ride-on vehicle, equipment, person, property, or environment.

What **environmental implications** may be associated with the operation of ride-on vehicles?	Negative environmental impacts may result from excessive noise and exhaust emissions, the unsafe use and disposal of maintenance debris (oils containers, chemical residues), and hazardous substances (fuel, oils). High traffic activity, particularly the repeated use of tracks may negatively impact in soil disturbance, dust problems and increased run-off flows from unsafe cleaning and servicing activities.
What may be involved in shut **down procedures** for ride-on vehicles?	This may include turning the engine off, safe dismounting, and securing the vehicle. It may also include parking away from hazards, maintaining a clear thoroughfare, refuelling, cleaning the vehicle and recharging batteries.
What **reports** may be relevant to this standard?	This may include routine checks and maintenance, scheduled maintenance activities, mandatory or statutory inspections, log books, faults, malfunctions and damage details, and hazard and incident reports.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in this standard requires evidence of the ability to safely and effectively ride 2, 3 and 4 wheel all terrain vehicles, electric trolleys, "B-max trucks" and ride-on mowers with or without attached equipment in off-road or appropriate environments. It also requires the ability to perform routine pre-operational checks and maintenance, attach and operate equipment, recognise and control hazards and risks, and monitor and maintain vehicle records. Evidence must be demonstrated in safe workplace and positive environmental practices associated with the operation of ride-on vehicles.

The skills and knowledge required to operate ride-on vehicles must be **transferable** to a different work environment. For example, this could include different vehicles, terrains and enterprise situations.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • components, controls and features of ride-on vehicles and their functions • range of ride-on-vehicles and attached equipment and functional applications • operating principles and operating methods • load limits and the principles of weight distribution with

	regard to load shifting and vehicle movement
	• effects of adverse weather or greenhouse climate and terrain conditions on the operation of ride-on vehicles
	• OHS legislative requirements
	• codes of practice with regard to the use and control of hazardous substances
	• environmental codes of practice with regard to machinery operation.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • steer, manoeuvre and position vehicles in a smooth and controlled manner • apply hand-eye co-ordination • safely operate ride-on vehicles in adverse weather or greenhouse climate and difficult terrain conditions • match and attach equipment appropriate to work requirements • demonstrate safe and environmentally responsible workplace practices • read and comprehend manufacturers specifications, work and maintenance plans, and MSDS's • effectively communicate faults and hazards, interpret and apply task instructions, report and maintain operational records.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Information with regard to hazards and unsafe work practices associated with the operation of ride-on vehicles may be reported to the supervisor and work team.
2. How can **information be collected, analysed and organised (1)**?	Information with regard to ride-on vehicle performance, faults and maintenance carried out may be detailed and recorded for reference, and organised by reports.
3. How are **activities planned**	Maintenance and repairs may be planned and co-

	and organised (1)?	ordinated around work schedules, or sequenced as required.
4.	How can **team work (1)** be applied?	Team work may be applied in the application of methods and procedures to complete maintenance procedures and maintain records.
5.	How can the use of **mathematical ideas and techniques (1)** be applied?	Mathematics may be applied in the calculation and measurement of load and weight, servicing requirements, and distance and fuel consumption.
6.	How can **problem-solving skills (1)** be applied?	Breakdown, faults or malfunctions will require arrangements for repair or replacement to achieve work schedules.
7.	How can the **use of technology (1)** be applied?	To communicate, measure and record information with regard to maintenance, usage and performance of vehicle.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE2707A   Follow site quarantine procedures

This competency standard covers the process of following enterprise site quarantine procedures that are designed to reduce the likelihood of pests and pathogenic organisms entering the site. Site quarantine procedures are followed as a routine part of one's own work and are applied to visitors to the site. Work is performed under supervision and according to established procedures and policies.

It may apply to work in all rural production and production horticultural enterprises.

Element		Performance Criteria	
1	Prepare to work in **quarantine site**	1.1	Ensure personal and/or work vehicles are **decontaminated** before entering the quarantine site.
		1.2	Contact with **potential contaminants** is reported according to **enterprise requirements**
		1.3	Hands are washed before livestock, feed, plant stock or other products or crops are handled
		1.4	Appropriate clothing, gloves, headwear and footwear is put on before commencing work and 'street clothing' is securely stored away from livestock, feed or other products or crops
		1.5	Footbaths are used where appropriate and **marked quarantine boundaries** are observed
2	Work in quarantine site	2.1	Chemicals, fertilisers and/or medications are handled and stored appropriately
		2.2	Different feed mixes, soils and/or growing media and/or other products are kept separate and appropriately marked according to enterprise procedures
		2.3	Any cases of **pest** and/or disease infestation are identified and reported to supervisor
		2.4	Any breaches of quarantine procedures are identified and reported to supervisor
		2.5	Any OHS hazards are identified and appropriate action is taken according to enterprise policy and OHS legislation and codes.
		2.6	All **waste product** is disposed of according to enterprise procedures
		2.7	All deceased livestock, unwanted biological material or damaged/infected plant stock are disposed of according to enterprise procedures
		2.8	Information relating to work in quarantine site is recorded as required by the enterprise procedures

3	Assist in maintaining site quarantine procedures	3.1	All visitors are informed of the quarantine procedures and are provided with appropriate clothing and footwear, if required by enterprise procedures
		3.2	Any observed breaches of quarantine procedures by visitors are noted and reported to supervisor
		3.3	Gates and doors are kept locked where required by enterprise procedures and supervisor instructions
		3.4	Where installed, security fencing is maintained according to supervisors instructions
		3.5	Deliveries to site are checked to ensure that established procedures for vehicle decontamination, unloading and receipt and holding or storage of stock and/or supplies are followed
4	Respond to site quarantine breach or problem	4.1	The specific problem and its location is identified and reported to supervisor
		4.2	Problems are secured according to enterprise procedures
		4.3	Quarantine site and location of breach is cleaned and disinfected as required according to the specific nature of the problem and enterprise procedures
		4.4	Livestock, plant stock suspected of being exposed to contaminants are isolated and monitored for evidence of contamination according to enterprise procedures.
		4.5	All contaminated stock/materials are treated and/or disposed of according to enterprise procedures
		4.6	Information about the breach or problem is recorded according to enterprise procedures

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work contexts.

What might be included in a **quarantine site**?	The quarantine site may be the whole farm or enterprise premises or part of the premises, such as greenhouse production area, an isolation area or sick bay. In some cases, the quarantine area may extend beyond the enterprise boundaries.
How might **marked quarantine boundaries** be identified?	Marked quarantine boundaries may be identified by the use of quarantine tape, appropriate signage and building and structure boundaries

How might vehicle **decontamination** be carried out?	Vehicle decontamination may require that all vehicles are driven through a dip of treated solution before entering the site or greenhouse as per enterprise procedures.
What may be **potential contaminants**?	Potential contaminants may include pests and/or pathogens entering on clothing/footwear, equipment, vehicles or items being delivered to the enterprise. Potential contaminants may also enter in foodstuffs, including food for animal or human consumption, vaccines, water or soil, tools, personal items or be brought on to the site by new livestock, plantstock or pets.
What may be included in **enterprise requirements**?	These may include standard operating procedures (SOPs), enterprise quality assurance manual, industry standards and quality assurance programs specific to biosecurity, production schedules, Material Safety Data Sheets, work notes, product labels, manufacturers specifications, operators manuals, enterprise policies and procedures (including waste disposal, recycling and re-use guidelines), OHS procedures, supervisors oral or written instructions, work and routine maintenance plans.
What type of **pest** infestations might occur?	Pests can include vertebrate and invertebrate pests, wild birds in sheds or housing, dogs, cats, feral animals and wildlife.
What sort of **waste products** might need to be disposed of?	Waste products might include feed spills, unused/expired vaccine, and biological matter, such as semen, embryos, tissue samples, plant cuttings, dead birds, plant product residue, substrates, waste water, crop strings, greenhouse cladding material and manures.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in following site quarantine procedures requires evidence that the person is able to understand and apply the specific procedures in place in an enterprise and to report any breaches of quarantine to supervisors.

The skills and knowledge required to follow site quarantine procedures must be **transferable** to a different work environment. For example, following site quarantine procedures in different types of enterprises or where quarantine is imposed in response to different circumstances on different occasions.

What specific knowledge is needed to	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other

achieve the performance criteria?	contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Enterprise site quarantine policy and procedures
	• industry quality assurance requirements (where applicable) and documentation required to be kept
	• Reporting procedures for alleged breaches of site quarantine procedures
	• Consequences of breaching site quarantine procedures
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills are:
	• Read and/or interpret site quarantine procedures
	• Follow procedures
	• Communicate with visitors to the enterprise about site quarantine procedures.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Discussing problems with maintaining the quarantine procedures.
2. How can **information be collected, analysed and organised (1)**?	Keeping records of visitors to the enterprise, and noting the requirements for exclusion periods from the quarantine site.
3. How are **activities planned and organised (1)**?	Scheduling locking of sheds, gates and storage areas.
4. How can **team work (1)** be applied?	Working as a team member to review and implement the required enterprise procedures and to deal with breaches of site quarantine.
5. How can the **use of mathematical ideas and techniques (1)** be applied?	Recording and calculating chemical application rates.
6. How can **problem solving skills (1)** be applied?	Identifying and investigating pest infestation mode of entry.
7. How can the **use of technology (1)** be applied?	Using alarms or other warning systems to notify of breaches of quarantine site.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTC3704A

Prepare and apply chemicals

This competency standard covers the process of preparing and applying chemicals for the control of weeds, pests and diseases. It requires knowledge of the chemicals related to the workplace, the hazards and risks involved in their use, and the specific safety procedures prescribed for working unsupervised within organisational guidelines. It requires the ability to handle and apply chemicals ensuring minimum risk to self, others and environment and accurately record their use.

NB: This competency standard may be deemed to have a time limit when used as part of an accreditation or licence to purchase or use chemicals.

Element		Performance Criteria	
1	Determine the need for **chemical** use	1.1	Nature and level of the pest, weed infestation or disease is identified.
		1.2	Need for action is assessed.
		1.3	Assess the requirement for chemical use as an option within an integrated pest management strategy.
		1.4	Hazard and risk analysis of different chemical options is undertaken.
		1.5	Requirement for chemical application including coverage by appropriate insurance is identified and confirmed.
2	Prepare appropriate chemical	2.1	Chemical label and Material Safety Data Sheets (MSDS) are read and understood.
		2.2	Labels are checked to ensure chemicals meet user requirements and specifications.
		2.3	Chemicals are prepared from those registered for the intended purpose, and to suit the organisation's chemical use strategy.
		2.4	**Legislation and regulations** concerning chemical use are identified and followed.
		2.5	Occupational Health and Safety **(OHS) hazards and risks** and **risk control requirements** associated with use of the chemical are identified.
3	Prepare to use chemicals according to the label and MSDS	3.1	**Personal protective equipment** is selected and checked for use according to the product label and MSDS.
		3.2	Requirements for **pre and post-operative checks** on equipment are followed.

		3.3	Damage, wear or malfunctions of any equipment is identified and reported or repaired.
		3.4	Requirements for the selection, preparation and adjustment of **application equipment and tools** for the appropriate chemicals are followed.
		3.5	Mixing rates are defined and calculated.
		3.6	**Directions, standards** and legislative requirements for mixing chemicals are followed.
4	Apply chemicals	4.1	**Meteorological conditions** and forecasts are assessed prior to and during application.
		4.2	**Hazards** of particular chemicals are identified.
		4.3	**Risks** to others and the environment are assessed and controlled.
		4.4	Application equipment calibration procedures are followed.
		4.5	Procedures and precautions for the use of the chemicals are interpreted from labels and accreditation requirements.
		4.6	Requirements for chemical handling and application are determined from directions, standards and legislative requirements.
		4.7	Chemicals are applied safely and effectively according to directions.
		4.8	Chemical spills or accident procedures are followed.
		4.9	First aid equipment is made available on site.
5	Clean up following chemical application	5.1	**Tools or equipment** required to clean up chemicals are selected.
		5.2	Requirements for cleaning equipment and sites are defined and followed according to directions and standards.
		5.3	Requirements for disposing of unused chemicals, empty containers or spilled material are defined from directions and standards.
		5.4	Procedures for reporting chemical spills are followed.
6	Record application details	6.1	Application of chemicals is recorded according to **organisation procedures**, label directions and legislation.
		6.2	Details of the specific chemical concerned are recorded correctly in the chemical inventory according to regulations.
		6.3	Inventory of personal protective equipment and application equipment is recorded.
		6.4	Procedures and requirements for reporting application details to senior management or client are followed.
		6.5	Records of injury or poisoning associated with application of chemical are made and provided

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **chemicals** may be considered for use?	Chemicals may include insecticides, fungicides, herbicides, bactericides, algaecides, bio-agents, nematacides, rodenticides, antimicrobial agents, anthelmintics, hormone growth promotants, acids, alkalis, fertilizers, sterilising agents or a range of veterinary chemicals used to treat animals for disease.
What **legislation and regulations** may be relevant to this standard?	Legislation may include Pesticides Acts, Occupational Health and Safety Acts and associated Hazardous Substances Regulations/ Codes of Practice, Dangerous Goods Acts, Poisons Act or Protection of the Environment Acts.
What **OHS hazards and risks** are relevant to this standard?	OHS hazards include exposure of the operators and others in the workplace to the absorption of chemicals through the skin and by inhalation and ingestion. Risks may include acute poisoning, chronic or long-term health effects, and lack of appropriate insurance coverage.
What **OHS risk control requirements** are relevant to this standard?	OHS risk control measures may include safe application techniques, use and maintenance of personal protective equipment, safe wash down procedures, safe procedures for container rinsing and management, and re-entry periods for greenhouse environments.
What **personal protective equipment** might be relevant to this standard?	Personal equipment may include boots, overalls, chemical resistant gloves, aprons, face shields, respirators, safety barriers or hats.
What **pre and post operational checks** might be relevant to this standard?	Checks may be made to weather conditions (e.g., wind), nozzles, hoses, regulators/gauges, respirator cartridges, drench and protective clothing and equipment. Greenhouse growers are to be aware of re-entry requirements following spray activities. Assessment of application effectiveness for crop penetration and coverage through use of water sensitive papers.
What **application equipment** may be relevant to this standard?	Include knapsacks or hand held pneumatic sprayers, drench guns, spot on applicators, CDA and air assisted units, self-propelled sprayers, controllers or power operated equipment like boomsprays, pressure wands, jetting race, shower/plunge dips, hand jetting or air blast sprayer.

What **directions and standards** may be relevant to this standard?	May include the instructions on the chemicals label, in an operator's manual, on a MSDS, in an industry standard, or from Codes of Practice and advisory material explaining legislation relevant to chemical use as well as SOP for trolley spray systems..
What **hazards** may need to be addressed in this standard?	Hazards will be listed on labels and the MSDS for the chemical concerned and may include flammability, toxicity, health hazards, damage to non-target organisms, uneven surfaces, trip points, solar radiation, manual handling, faulty equipment, environmental damage or residues in foods.
What **risks** may need to be assessed in this standard?	Risks that may be assessed include spillage, contact of chemical with skin or eyes, accidental ingestion, incorrect concentrations in mixtures, faulty or inappropriate storage containers, incorrectly calibrated equipment, spray drift, contamination of waterways, incorrect disposal of unused chemicals or faulty equipment
What **meteorological conditions** might be assessed?	Rain, wind, temperature, relative humidity, inversion or stable air conditions.
What **tools and equipment** may be used for cleaning up after chemical application or spill?	Include washing soda, chlorine, containers for disposal of chemicals, non-flammable absorbent materials and shovels, booms, sausages and sandbags.
What **organisational procedures** may be in place for recording?	Written journal or computer record may be used for recording.
Who may be the **appropriate person** to receive reports about accidents and spills?	Include relevant authorities, supervisor, manager, business owner or colleague.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in this preparing and applying chemicals requires evidence that a person can work unsupervised to prepare the correct chemical for the problem, apply the chemical according to safe work practice and legislation and ensure minimal effects on the environment and others.

The skills and knowledge required to prepare and apply chemicals must be **transferable** to a different work environment. For example, this could include different chemicals, application methods and workplaces.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

- Chemical free options for pest control.
- OHS issues, legislative requirements and Codes of Practice relevant to chemical use and hazardous substances.
- Use, maintenance and storage of equipment to prepare and apply chemicals.
- Use, maintenance and storage of personal protective equipment, including how, when and why it should be used.
- Licensing requirements and relevant State authorities.
- Modes of chemical absorption and paths of entry associated with risks to bystanders/public and applicators.
- Environmental effects of chemicals.
- Drift management.
- Calibration, crop penetration and coverage and adjustments.
- Integrated Pest Management and Integrated Resistance Management principles.
- Cost effective use of chemicals.
- Hazard identification, assessment and control, and emergency response.
- Correct use of trolley spray systems
- Correct wearing/fit of personal protective equipment.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- Communicate orally and in writing.
- Read and interpret labels.
- Measure quantities, application rates and calibrate equipment.
- Report on and record activities.
- Use safe and environmentally responsible work practices.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be	Reporting and recording information about chemical application.

applied?

2.	How can **information be collected, analysed and organised (2)**?	Information in labels, directions, standards and accreditation conditions (in the case of 'prescribed chemicals), need to be interpreted and analysed.
3.	How are **activities planned and organised (2)**?	Planning the application of chemicals in conjunction with other workplace activities.
4.	How can **team work (2)** be applied?	A chemical strategy may be implemented in a team through health and safety meetings.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	Calibration of equipment, mixing chemicals and calculations.
6.	How can **problem-solving skills (2)** be applied?	Matching the correct chemical to the problem and ensuring the all accreditation conditions are met.
7.	How can the **use of technology (1)** be applied?	Recording information may require the use of appropriate technology.

What are the special assessment conditions for this competency standard?

Where this competency standard is being used as part of an accreditation or licence for purchase or use of chemicals, the assessor must meet the requirements of the issuing body. This may include:

1. Accreditation with that issuing body.

2. Maintenance of current competency in this and the following standards:

   RTC3705A -.Transport, handle and store chemicals

   RTC4702A -.Minimise risks in the use of chemicals

   RTC4703A -.Plan and implement a chemical use program.

3. Involvement in professional development programs comprising technical and legislative updates on an annual basis.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC3705A   Transport, handle and store chemicals

This competency standard covers the process of transporting, handling and storing chemicals safely without supervision. It requires minimising risks, including avoiding spills and accidents, and following procedures, safety and environmental regulations, and Occupational Health and Safety (OHS) requirements to protect the health and safety of everyone in the workplace when handling chemicals. It requires knowledge of the chemicals used in a particular environment and the hazards involved in their handling and storage.

NB: This competency standard may be deemed to have a time limit when used as part of an accreditation or licence to purchase or use chemicals.

Element		Performance Criteria	
1	Transport and handle chemicals and biological agents	1.1	Transport methods according to label and Material Safety Data Sheets (MSDSs) are identified and confirmed to safely transport the **chemical.**
		1.2	**Risks** involved in transport and handling are identified and minimised.
		1.3	**Personal protective equipment (PPE)** is used to transport and handle chemicals where required.
		1.4	Requirements for **safe working procedures** and **legislation** are recognised and followed during transport.
		1.5	**Procedures** and risk control measures are in place and followed in the event of a spill or accident.
		1.6	Reports of injury or poisoning associated with transport of chemicals are made to the manager.
2	Store chemicals in the workplace	2.1	**Storage method** selected is appropriate for the chemical concerned.
		2.2	OHS hazards in the **storage area** are identified and risks controlled.
		2.3	Storage method selected is appropriate to prevent contact with people or animals, and contamination of produce or the environment.
		2.4	Requirements to maintain storage area in accordance with **directions and standards** related to chemicals are defined.
		2.5	Safe working procedures for the storage of chemicals are defined.
3	Record storage details	3.1	Chemical store inventory is maintained.
		3.2	Storage of chemicals is recorded in accordance with OHS and enterprise requirements.

3.3 Records of injury or poisoning associated with transport and storage of chemicals are made and provided to the manager.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **chemicals** may be transported, handled and stored?	Chemicals may include insecticides, fungicides, herbicides, bactericides, algaecides, biologicals, nematacides, rodenticides, antimicrobial agents, anthelmintics, hormone growth promotants, molluscicides and avicides, acids, alkalis, fertilizers, sterilising agents or a range of veterinary chemicals used to treat animals for disease.
What **risks** may need to be minimised during the transport and storage of a chemical?	May include serious potential affects on worker's health during transport due to spillage or accident, poisoning, affects on public health through possible cross-contamination of produce, damage to the environment and the general public in the event of spillage or leakage during transport, lack of appropriate insurance coverage, chemicals flowing into drains, water sources or produce growing areas.
What **hazards and risks** may occur during the transport of a chemical?	Contact with chemicals through the skin, inhalation or ingestion may cause acute poisoning, or chronic or long-term health effects. These may occur through direct contact with a spilled chemical, or through contamination of food. Material Safety Data Sheets (MSDS) provide health information. Other hazards and risks include fire and explosion.
What **personal protective equipment** may be relevant to this standard?	May include boots, overalls, chemical resistant gloves, aprons, face shields, respirators or hats.
What **hazards** may be relevant to this standard?	Hazards will be listed on labels and the MSDS for the chemical concerned and may include flammability, toxicity, health hazards, damage to non-target organisms, environmental damage or residues in foods.
What **storage methods** might be relevant to this standard?	Storage methods may include on site or off site, approved drums, bottles or containers.
What equipment may be found in a **storage area**?	Equipment may include specific dispensing and preparation equipment, recording of processes and use, and associated safety equipment such as eyewash and emergency showers.

What **directions and standards** might be relevant to this standard?	May include directions on a label, in an operator's manual, on a MSDS, in an industry standard, or from Codes of Practice, and advisory material outlining legislation relevant to chemical use. Regulations to be followed may include segregation, wash down areas and sumps.
What **safe working procedures** are relevant to this standard?	Safe working procedures may include following manufacturers instructions, separating chemicals from passengers, observing loading instructions, ensuring liquids are top side up, ensuring chemicals are correctly labelled, ensuring no cross-contamination, separating reactive chemicals, safe driving and vehicle operation, ensuring load is not stacked too high, ensuring the chemicals are protected from the weather, and ensuring the load is secure.
What **legislation** may be relevant to this standard?	Legislation may include Pesticides Acts, Occupational Health and Safety Acts and associated Hazardous Substances Regulations/ Codes of Practice, Dangerous Goods Acts, Poisons Schedule or Protection of the Environment Acts.
What **procedures** following a spill or accident might be relevant to this standard?	Procedures may include directions on labels, MSDS, OHS and environmental regulations or operator's manuals, and may cover cleaning the site, monitoring and protecting the environment where possible, securing the area and notifying authorities.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in transporting, handling and storing chemicals requires evidence that a person can safely and securely transport, handle and store chemicals in the workplace without harming people, foodstuffs or the environment. The skills and knowledge required to transport and store chemicals must be **transferable** to other workplaces. For example, this could include different transport methods, storage structures and workplaces.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Australian Standards Association (ASA) levels and standards.
	• Risks to the environment.
	• Different methods of transport.
	• OHS risks management principles as they apply to

hazardous substances.

- Hazards and risks involved in the transport of the specific chemical concerned and related control measures.
- Relevant OHS legislative requirements and Codes of Practice with regards to hazardous substances and the use of chemicals.
- Correct wearing/fit of personal protective equipment.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: - Accurately read and interpret instructions for transporting and handling chemicals. - Accurately read and interpret instructions for action to be taken to control and minimise the effects of a spillage of chemicals. - Communicate with others regarding transport and storage processes.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Information about the transport arrangements for chemicals will need to be communicated to relevant authorities, supervisor and colleagues.
2. How can **information be collected, analysed and organised (2)**?	Information about hazards and risks associated with transporting chemicals will be collected and analysed.
3. How are **activities planned and organised (2)**?	Transport and storage will need to occur without harming or interrupting other workplace activities.
4. How can **team work (3)** be applied?	Ensuring others are aware of transport of chemicals, and the hazards and control measures.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Amounts of chemical that can be safely transported in one load and how they can be stored.
6. How can **problem-solving skills (2)** be applied?	Difficulties with transport vehicles or the storage area may require problem solving.
7. How can the **use of**	The use of the storage manifest may require use of

technology (2) be applied?   appropriate technology.

What are the special assessment conditions for this competency standard?

Where this competency standard is being used as part of an accreditation or licence for purchase or use of chemicals, the assessor must meet the requirements of the issuing body. This may include:

1. Accreditation with that issuing body.
2. Maintenance of current competency in this and the following standards:

    RTC3704A - Prepare and apply chemicals

    RTC4702A - Minimise risks in the use of chemicals

    RTC4703A - Plan and implement a chemical use program.
3. Involvement in professional development programs comprising technical and legislative updates on an annual basis.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

NOTE: Controlled Environment Horticulture has identified the previous two units as essential for the Certificate 2 course. Please refer to CEH Level 3 units for any changes to units. RTC3704A Prepare and apply chemicals, and RTC3705A Transport, handle and store chemicals.

Certificate 3 in Production Horticulture (CEH) Controlled Environment Horticulture

RTC3805A	Coordinate work site activities
RTE3002A	Co-ordinate a crop regulation program
RTE3003A	Co-ordinate horticultural product harvesting
RTE3013A	Implement a post-harvest program
RTE3611A	Operate pressurised irrigation systems
RTE3612A	Implement a maintenance program for an irrigation system
RTE3713A	Carry out workplace OHS procedures
RTE3801A	Provide on-job training support
RTE3904A	Keep records for a primary production business
RTE3907A	Use hand held e-business tools
RTF3033A	Implement a maintenance program for hydroponic systems
RTF30???	Implement a plant monitoring program
RTC3401A	Control weeds
RTC3404A	Control plant pests, diseases and disorders
RTC4702A	Minimise risks in the use of chemicals
RTC4703A	Plan and implement a chemical use program

RTC3805A   Coordinate work site activities

This competency standard covers the process of coordinating work site activities for small-scale projects. Responsibility may be for the basic direction and coordination of small groups working on a site remote from the main enterprise, small projects or parts of projects, or small areas within the enterprise. The coordination of work site activities is likely to be under limited supervision with checking only related to overall progress. Work site coordination requires the application of extensive agricultural, horticultural and/or conservation and land management knowledge, and a broad range of relevant skills. The work is usually done within routines, methods and procedures where some discretion and judgement is required in the selection of equipment, work organisation, services, actions, and achieving outcomes within time constraints.

Element		Performance Criteria	
1	Prepare for **work site activities**	1.1	Requirements of the work are clarified with supervisor of the project.
		1.2	Personnel, equipment and material **resource requirements** are identified according to the scope of the project and supervisors instructions.
		1.3	The order of activities and time allocation is identified, documented and presented to the supervisor for verification.
		1.4	The **environmental implications** of the proposed work site activities are identified and the likely outcomes assessed and reported to the supervisor.
		1.5	**OHS hazards** are identified, risks assessed and reported to the supervisor.
		1.6	**Personal protective equipment** (PPE) is selected, used, maintained and stored according to the type of work site activities to be undertaken.
2	Organise resources	2.1	**Materials** are purchased and **equipment/machinery** is hired as authorised by the supervisor and according to enterprise guidelines.
		2.2	**External agency permits** are gained in the correct order as necessary.
		2.3	Neighbours and affected parties are **notified** of works to be undertaken as necessary.

		2.4	Delivery of materials and equipment/machinery to site is organised according to documented order of activities.
		2.5	Personnel are organised to be on site when they are required.
3	Coordinate and report on activities	3.1	All resources are coordinated and timed to suit the scope of the project and order of activities.
		3.2	Personnel are directed in activities for each period of work.
		3.3	Personnel, activities, timelines and resource usage are monitored and **documented** according to enterprise guidelines.
		3.4	**Contingency situations** are recognised and reported to the supervisor, and corrective actions taken according to enterprise guidelines.
		3.5	A simple **project report** is written to inform management of work site activities undertaken and completed.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work contexts.

What might be included in **work site activities?**	Work site activities may be part of small or short-term projects or be part of larger projects.
What material, equipment/ machinery and personnel **resource requirements** are likely to be identified?	Materials may include goods that will be consumed by the project such as fertilisers, plants, stakes and mulch in a planting program. Equipment and machinery may include hand tools, tractors, trolleys, vehicles, watering equipment and personal protective equipment. Personnel may include those obtained from within an enterprise, staff "borrowed" from another enterprise, hired from a contracting firm, or hired for the project from outside the industry.

What might be the **environmental implications** of proposed work site activities?	Environmental implications may include threats to flora and fauna; risk of contamination of soils, water or adjoining property through fertilisers and chemicals flowing into drains and water sources. Land used for a planting program for example may include chemical residues in the soil, 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.
	Compliance with local, State/Territory, and Commonwealth environmental legislation may be required if removing trees for example.
	Legislation may address management requirements for water, natural heritage, vegetation clearance and waste.
What **OHS hazards** may apply to work site activities?	Hazards may include disturbance of services, solar radiation, dust, noise, through traffic, uneven surfaces and holes, working at heights, moving machinery and machinery parts, powered equipment and hand tools, confined spaces, hazards from use of hired equipment (untrained staff), and overhead hazards including powerlines.
What **PPE** is likely to be selected?	PPE will be determined by the type of activity being undertaken and may include work boots, gloves, overalls, sun hat and sunscreen lotion, safety harness, hard hat, hearing or eye protection, respirator or face mask.
Where might the **materials** be available from?	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.

Where might **equipment/machinery** be sourced?	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.
What type of activities may require **external agency permits**?	Some typical activities that may need a permit include: pruning or removal of large trees, connecting to water systems, application and disposal of chemicals and polluted waters, operating specialised machinery (e.g., chainsaws, skid steer loaders, forklifts), working outside normal hours, setting up traffic and pedestrian barriers and digging near services (phone, gas, power, water, sewerage and drains).
What situations may require neighbours and affected parties to be **notified?**	Neighbours may need to be notified if the activities involve high levels of noise, dust or chemical use. Often the local council requires notices to be sent out in advance of such work.
Why would activities etc be **documented?**	Documentation of work site activity may allow you to determine if the work is on track, provide progress reports to supervisors, and plan for delivery and storage of materials and hiring of equipment to minimise costs and time wasting for the enterprise.
What might be considered **contingency situations**?	Contingency situations may include the delay in delivery and/or breakdowns with equipment and machinery, poor weather conditions, poor quality materials and unforseen soil or substrate problems. A coordinator of work site activities may need to be prepared for such situations and provide other work on the project until the problem is fixed, provide other work away from the site, or delay the project if possible.
What might be included in a simple **project report**?	A project report may include the project name, authors name and date, project description, progress of activities, major issues, OHS issues, expenditure and any future activities that may need to be planned.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in **coordinating work site activities** construction works requires evidence that a

person can prepare and plan for activities, organise all resources required, and monitor and report on activities undertaken. The skills and knowledge required to **coordinate work site activities** must be **transferable** to a different work environment. For example, this could include different projects, workplaces and labour force situations.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • Environmental awareness associated with undertaking project works to ensure the impact on the environment is minimal. • Work schedule programming. • Hiring and subcontracting of labour. • 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.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • Read and interpret documentation associated with work site activities. • Calculate material and resource requirements. • Coordinate a team to achieve optimum performance. • Communicate with personnel at all levels. • Document results clearly and concisely. • Perform an OHS risk assessment.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of**	Ideas and information may need to be communicated

ideas and information (2) be applied?	with the supervisor as work site activities progress.	
2. How can **information be collected, analysed and organised (2)**?	Information on personnel and resource requirements may need to be collected, analysed and organised according to the scope of the project to be coordinated.	
3. How are **activities planned and organised (2)**?	Activities may need to be planned and organised to ensure that the needs of management are met and that the site activities are completed on time.	
4. How can **team work (2)** be applied?	Team work may be applied to ensure that all site works are completed successfully.	
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical ideas and techniques may be applied when organising time frames for each activity in the project.	
6. How can **problem-solving skills (2)** be applied?	Site contingencies, personnel difficulties, timeline failures, and assessing hazards and identifying controls may require problem-solving skills.	
7. How can the **use of technology (2)** be applied?	Technology may be used to communicate and record progress of work site activities.	

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTE3002A

Co-ordinate a crop regulation program

This competency standard covers the process of co-ordinating a crop regulation program in which thinning and pruning of flower, fruit or vegetable crops is undertaken to control yield and quality. Crop regulation methods may include manual thinning, chemical thinning, selective harvesting, training, summer and winter pruning, hedging, skirting, topping and trimming. Irrigation and plant nutrition programs are covered in other units of competency.

Co-ordinating a crop regulation program is likely to be carried out under limited supervision from others with checking only related to overall progress. The work requires the application of horticultural knowledge and a broad range of horticultural skills. Co-ordination is usually carried out within established routines, methods and procedures where some discretion and judgement are required in the selection of equipment and materials, organisation of work and the achievement of outcomes within time and budgetary constraints.

Element		Performance Criteria	
1	Prepare for the crop regulation program	1.1	The site and operational requirements of the **crop regulation program** are identified according to the site plan and **enterprise work procedures**.
		1.2	**Crop regulation materials** are selected according to enterprise work procedures.
		1.3	**Services** are located using site plans and in consultation with the supervisor.
		1.4	**OHS hazards** are identified, risks assessed, controls implemented and reported to the supervisor.
		1.5	Suitable **safety** and **personal protective equipment (PPE)** are selected, used and maintained.
2	Prepare crop regulation equipment	2.1	**Tools, equipment and machinery** are selected according to enterprise work procedures.
		2.2	Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
		2.3	Tools, equipment and machinery are calibrated and adjusted according to manufacturer's guidelines and enterprise work procedures.
3	Implement the crop regulation program	3.1	Enterprise work team and contractors are identified and work tasks are co-ordinated in a sequential, timely and effective manner in

			consultation with the supervisor.
		3.2	Work pattern is planned to cover the site in an efficient, sequential and co-ordinated manner according to enterprise work procedures.
		3.3	Crop regulation tasks are undertaken according to **OHS requirements** and with due consideration of the **environmental and greenhouse climate implications**.
		3.4	Crop regulation tasks are monitored and remedial action is undertaken where necessary to achieve program objectives.
		3.5	A **clean and safe work area** is maintained throughout and on completion of work.
4	Complete crop regulation activities	4.1	**Waste material** is removed from the site and disposed of in an environmentally aware and safe manner according to enterprise work procedures.
		4.2	Tools, equipment and machinery are cleaned, maintained and stored according to enterprise work procedures.
		4.3	Work outcomes are recorded or reported to the supervisor according to enterprise work procedures.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What tasks may be undertaken in the **crop regulation program**?	The program may include manual thinning, chemical thinning,pruning, multi-heading, climate/irrigation/fertigation steering selective harvesting, training, seasonal pruning, hedging, skirting, topping and trimming.

What **enterprise work procedures** may apply to this standard?	Work procedures will be based on sound horticultural principles and practices and may include supervisors oral or written instructions, crop regulation program, enterprise standard operating procedures (SOPs), specifications, routine maintenance schedules, work notes, product labels and Material Safety Data Sheets (MSDS), manufacturers service specifications and operators manuals, waste disposal, recycling and re-use guidelines, and OHS procedures. Greenhouse crop regulation procedures may include pruning by removal of flowers, leaves or fruit using hands, knives, secateurs and seasonal pruning; or encouraging additional flowers, leaves or fruit for plant steering. Plant steering may also be encouraged by manipulation of the climate, irrigation and fertigation setpoints.
What **crop regulation materials** may be selected for the program?	Materials may include thinning agents, growth hormones and retardants, and trellising and training materials.
What **services** may need to be located?	Services may include water supply, gas, power (electricity), CO_2, heating equipment, telecommunications, irrigation, stormwater and drainage.
What **OHS hazards** may be associated with the crop regulation program?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil and air-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, working at heights, moving vehicles, machinery and machinery parts, uneven surfaces and flying objects.
What **safety equipment** may be required?	Safety equipment may include signage and barriers.
What **PPE** may be required when regulating crops?	PPE may include hat, boots, overalls, gloves, spray clothing, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hardhat.

What **tools, equipment and machinery** may be required for the crop regulation program?	Application equipment and machinery may include backpack spray equipment; tractors and trailed or 3-point linkage spray equipment, pumps and pump fittings. Pruning tools, equipment and machinery may include knives, handsaws, 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, trolleys and scissor lifts. Plant training equipment may include trellising and specialised training systems. Greenhouse regulation may include climate management systems (manual or automatic) to control items such as ventilators, HAF fans, screens, lighting, fogging/misting, CO_2 enrichment, heating/cooling and irrigation/fertigation.
What **OHS requirements** may be relevant to this standard?	OHS requirements may include identifying hazards, assessing risks and 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 chemicals and hazardous substances, correct manual handling, basic first aid, personal hygiene and reporting problems to supervisors.
What **environmental implications** may be associated with the regulation of crops?	Detrimental environmental impacts may arise where crop regulation activities produce excess noise, dust or water run-off, or off-site ground water or soils are contaminated from solids, debris, nutrients, chemicals and water run-off.
How may a **clean and safe work area** be maintained?	Tasks may include disabling unused tools, equipment and machinery 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, and swiftly and efficiently removing and processing debris and waste from the work area.
What **waste material** may be relevant to this standard?	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.

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in co-ordinating a crop regulation program requires evidence that a person is able to prepare for crop regulation activities, co-ordinate work groups and implement crop regulation activities to achieve enterprise crop production targets in terms of yield and quality.

The skills and knowledge required to co-ordinate a crop regulation program must be **transferable** to a different work environment. For example, this could include different crops, canopy management requirements and workplaces.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• principles of thinning, multi-heading, training, climate/irrigation/fertigation steering and pruning and the methods used to achieve crop regulation goals
	• effects on plant growth, habit and production levels of thinning, multi-heading, training, climate/irrigation/fertigation steering and pruning operations in relation to the market goals of the enterprise
	• enterprise quality procedures and characteristics of a crop relative to varying market requirements.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• communicate orally and in writing with work team members, supervisors and contractors
	• utilise proforma recording, reporting and work procedure documents
	• interpret site plans and crop regulation specifications
	• measure quantities, calculate material requirements, area, volume, ratios and application rates, and calibrate machinery
	• in a greenhouse measure and target various setpoints for climate, irrigation and fertigation to steer crop/s in a desired direction
	• co-ordinate 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.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Written, oral and telecommunication of ideas and information relating to crop regulation activities and problems encountered will be required with the work group, supervisor and contractors.
2. How can **information be collected, analysed and organised (1)**?	Enterprise work procedures and site plan should be consulted, interpreted and applied to co-ordinate crop regulation activities with further clarification sought from the supervisor when necessary.
3. How are **activities planned and organised (1)**?	Work activities for the work group, contractors and self will be planned prior to and adjusted during the crop regulation program.
4. How can **team work (2)** be applied?	The crop regulation program will involve facilitating and leading members of a team to complete the program on time and budget.
5. How can the use of **mathematical ideas and techniques (1)** be applied?	Mathematical application will be required to calculate the spatial and logistical requirements of the crop regulation program.
6. How can **problem-solving skills (1)** be applied?	Site contingencies, personnel difficulties and timeline failures may require problem-solving techniques.
7. How can the **use of technology (1)** be applied?	Technological understanding will be required to use crop regulation tools, equipment and machinery, undertake crop regulation activities, communicate and keep records.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE3003A   Co-ordinate horticultural product harvesting

This competency standard covers the process of co-ordinating harvesting activities for horticultural crops including preparing for harvest, maintaining harvest requirements, monitoring crop quality and delivering the product.

Co-ordinating product harvesting is likely to occur under limited supervision with checking only related to overall progress. Co-ordinating product harvesting requires the application of extensive horticultural knowledge and a broad range of horticultural skills. Co-ordinating product harvesting is normally done within established routines, methods and procedures where some discretion and judgement is required in the selection of equipment and materials, organisation of work, services, actions and the achievement of outcomes within time and budgetary constraints.

Element		Performance Criteria	
1	Prepare for product harvesting	1.1	The **product** to be **harvested** and the requirements and procedures to assure product quality are identified according to **enterprise work procedures**.
		1.2	**Product maturity** is determined by experience, specification charts, aids or devices and according to **client**, enterprise and industry quality assurance specifications.
		1.3	Suitable **weather or greenhouse climate conditions** for picking are established according to enterprise work procedures.
		1.4	**Tools, equipment and machinery** are selected according to harvest requirements and enterprise work procedures.
		1.5	Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
		1.6	**OHS hazards** are identified, risks assessed, controls implemented and reported to the supervisor.
		1.7	Suitable **safety** and **personal protective equipment (PPE)** are selected, used and maintained.
2	Co-ordinate harvesting activities	2.1	Enterprise work team, contractors and clients are identified and work tasks are co-ordinated in a sequential, timely and effective manner in consultation with the supervisor.

		2.2	Harvesting of the product is undertaken according to **OHS requirements** and with due consideration of the **environmental implications**.
		2.3	**Harvest records** are maintained according to enterprise work procedures.
		2.4	A **clean and safe work area** is maintained throughout and on completion of work.
3	Maintain harvest requirements	3.1	Enterprise tools, equipment and machinery are maintained in effective working order throughout the harvest to enable smooth operations and minimise downtime.
		3.2	Harvest workers are provided with sufficient tools, equipment and machinery to match harvest output and to prevent unnecessary interruptions.
		3.3	Full containers are removed, emptied into or loaded onto transport vehicles as soon as possible after harvesting to minimise deterioration of the product.
4	Monitor product quality throughout harvest	4.1	PPE is selected, maintained and used according to OHS procedures.
		4.2	Harvesting procedures and the harvested product comply with client, enterprise and industry quality assurance specifications.
		4.3	The product is **handled** carefully to prevent damage according to enterprise work procedures.
		4.4	**Sorting and grading** of the product complies with client, enterprise and industry quality assurance specifications.
		4.5	Product **storage** minimises postharvest deterioration according to enterprise work procedures.
		4.6	The product is **transported** with minimum damage according to enterprise work procedures.
		4.7	Picking tallies or harvest yields are calculated and recorded according to enterprise work procedures.
5	Deliver product to specified destination	5.1	Delivery details including quantity, timing and **destination** are confirmed according to enterprise work procedures.
		5.2	Product is delivered with damage levels that are within client, enterprise and industry quality assurance specifications.
		5.3	Delivered product complies with client, enterprise and industry quality assurance specifications.
		5.4	Delivery documentation is completed accurately

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What types of **product** may be harvested?	Products may include fruit, vegetables, herbs, flowers, foliage, bulbs, tubers, nuts, mushrooms, wild harvest plants and oils.
How may the product be **harvested**?	The product may be harvested manually or mechanically.
What **enterprise work procedures** may apply to this standard?	Work procedures will be based on sound horticultural principles and practices and may include supervisors oral or written instructions, the harvest plan, program and schedule, quality assurance policy and plan, enterprise standard operating procedures (SOPs), specifications, routine maintenance schedules, work notes; product labels and Material Safety Data Sheets (MSDS); manufacturers service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.
How is **product maturity** determined?	Maturity parameters may include size, weight, length, shape, colour (external and/or internal), texture, skin condition, ease of removal, moisture content, ripeness, percentage juice, specific gravity, acidity and sugar content.
	These characteristics may be measured by observation and maturity testing tools and equipment such as knives, sizing rings, callipers, colour charts, refractometers, penetrometers and produce firmness testers.
	The results are interpreted and analysed by comparison with specification charts and client, enterprise and industry maturity standards.
What **clients** may be relevant to this standard?	Clients may include the enterprise, packers, wholesalers, retailers, processors and exporters.
What **weather and greenhouse climate conditions** may affect the harvesting of the product?	Weather and greenhouse climate conditions may include temperature, humidity, rain, and wind and sun intensity

What **tools, equipment and machinery** may be used to carry out product harvesting activities?	Tools, equipment and machinery may include secateurs, knives, maturity testing equipment, specification charts, gloves, bags, ladders, trolleys, tractors, trailers, forklifts, powered ladders, mechanical harvesters, pallets, containers, cartons, trays, net bags, buckets, dip tins, bulk bins, gondolas, trucks and trailers for transport of bulk produce, grading machinery, cutting machines, coolrooms, gassing chambers and labelling devices.
What **OHS hazards** may be associated with co-ordinating harvest activities?	Hazards may include solar radiation, dust, noise, soil and air-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, ladders, working at heights, moving vehicles, machinery and machinery parts, slippery or uneven surfaces, potholes and flying objects.
What **safety equipment** may be required?	Safety equipment may include signage and barriers.
What **PPE** may be required when harvesting horticultural products?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.
What **OHS requirements** may be relevant to this standard?	OHS requirements may include identifying hazards, assessing risks and implementing controls, cleaning, maintaining and storing tools, equipment and machinery, appropriate use of personal protective equipment including sun protection, safe operation of tools, equipment and machinery; safe handling, use and storage of chemicals and hazardous substances, correct manual handling, basic first aid, personal hygiene and reporting problems to supervisors.
What **environmental implications** may be associated with co-ordinating horticultural product harvesting activities?	Detrimental environmental impacts may arise where harvesting activities produce excess noise, dust or water run-off.

What **harvest records** may be required by the enterprise?	Harvest records may include harvest workers tallies or working hours, data input into crop and labour registration systems, written harvest instructions, dates of harvest, withholding periods (time since last chemical spray), product yield from each section, weather conditions during harvest, percentage product deterioration, maturity measurements taken, storage conditions, machinery settings or adjustments, machinery repairs and maintenance, dispatch details and delivery dockets.
How may a **clean and safe work area** be maintained?	Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of harvest activities, safely storing harvest materials on site, using signage and safety barriers during and removing after mechanical harvesting activities are completed, and swiftly and efficiently removing and processing debris and waste from the work area.
How may damage to the product be incurred if it is incorrectly **handled?**	Damage may occur during mechanical harvesting by rods, beaters, shakers, blades, belts, chains, wheels and other moving machinery parts, during manual harvesting by long fingernails, tearing or cutting the product when picking, bruising or squashing the product when dropping or tipping it into containers, and overfilling containers. Protruding nails, splinters or rotting, unemptied product in containers may damage the product, as may driving too fast or roughly, leaving filled containers in the sun too long, frost damage when full containers are left out overnight and not separating varieties.
What **sorting and grading** requirements may be monitored?	Sorting and grading may include removing out of type plants, or physically damaged, unhealthy, rotten or immature produce. The product may be graded according to variety, size, length, colour, maturity, blemishes, bud count and quality, which are subject to seasonal and market forces. Product in doubt is checked with supervisors. Any out-of-standard produce should be disposed of according to enterprise policy.

What **storage** conditions may be relevant from the time of harvest until delivery to the client?	Storage requirements may include high humidity, cold temperature and controlled atmosphere storage, supplying produce with water after harvest e.g., asparagus and roses, controlling gases and temperature in storage to speed up maturity e.g., ethylene gas to ripen bananas and improve the colour of citrus, and coating with wax or wrapping in plastic.
How may the product be **transported**?	The product may be transported by trailer, forklift, truck, picking trolleys or other specialised methods of transport.
What **destinations** may be relevant to this standard?	Destinations for harvested product may include points of sale or sites for further treatment.

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in co-ordinating product harvesting requires evidence that a person can prepare for product harvesting activities, maintain harvest requirements, monitor product quality throughout harvest and deliver the product according to quality specifications.

The skills and knowledge required to co-ordinate product harvesting must be **transferable** to a different work environment. For example, a person who can co-ordinate product harvesting on a property producing citrus should be able to transfer that knowledge and skill to another workplace although different products, such as winegrapes, may be present.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• recognition of the maturity parameters of a range of products
	• enterprise quality procedures and characteristics of a product relative to varying market requirements
	• grading characteristics of each product
	• the importance of maintaining quality of produce including cooling requirements and quick transport from field to processing areas
	• industry wage rates and conditions, contractors services, conditions and rates
	• licensing requirements for use of forklifts, trucks and machinery

	• the effect of adverse climatic conditions (e.g., rain, hail, extreme wind, or very high ultraviolet radiation), which may prevent or impede product harvesting operations, or severly influence the time taken to complete the tasks necessary to fulfill the operation.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • communicate ideas and information to work team members, supervisors, contractors and clients • utilise proforma reporting, analysis and work procedure documents, and interpret quality specifications • utilise electronic data entry systems • measure materials, interpret harvest specifications and schedules, interpret and apply test results, calculate tallies, working hours, yields and quality results • co-ordinate work group, contractors and own activities to sequentially and effectively complete harvest in a timely and cost effective manner.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Written, oral and telecommunication of ideas and information relating to harvesting activities and problems encountered will be required with the work group, supervisor, contractors and clients.
2. How can **information be collected, analysed and organised (2)**?	Enterprise work procedures and quality specifications should be consulted, interpreted and applied to co-ordinate harvesting activities with further clarification sought from the supervisor when necessary.
3. How are **activities planned and organised (2)**?	Daily work activities for the work group, contractors and self will be planned prior to and adjusted during the harvest program.
4. How can **team work (2)** be applied?	The harvesting program will involve facilitating and leading members of a team to complete the harvest

	on time and budget.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical application will be required to calculate the logistical requirements of the harvest program, yields, percentage deterioration of products, tallies and working hours.
6. How can **problem-solving skills (2)** be applied?	Site contingencies, adverse weather, machinery breakdown, contractual and personnel difficulties, and timeline failures may require problem-solving techniques.
7. How can the **use of technology (2)** be applied?	Technological understanding will be required to access and apply harvest specifications, undertake harvesting activities, communicate, report and keep records.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE3013A   Implement a post-harvest program

This competency standard covers the process of implementing a post-harvest program for horticultural crops including grading, treating, packing and storing harvested produce.

Implementing a post-harvest program is likely to be carried out under limited supervision from others with checking only related to overall progress. The work requires the application of extensive horticultural knowledge and a broad range of horticultural skills. The post-harvest program usually follows established routines, methods and procedures where some discretion and judgement is required. This includes selection of equipment and materials, organisation of work, services, actions and the achievement of outcomes within time and budgetary constraints.

Element		Performance Criteria	
1	Prepare for implementation of post-harvest operations	1.1	**Post-harvest operations** to be performed are identified according to **enterprise work procedures,** the **marketing plan** and industry guidelines and confirmed with the supervisor.
		1.2	**Materials, tools, equipment and machinery** are selected according to enterprise work procedures.
		1.3	Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
		1.4	**OHS hazards** are identified, risks assessed, controls implemented and reported to the supervisor.
		1.5	Suitable **safety** and **personal protective equipment (PPE)** are selected, used and maintained.
2	Co-ordinate post-harvest work	2.1	Enterprise work team is identified and tasks are co-ordinated in a sequential, timely and effective manner in consultation with the supervisor.
		2.2	Post-harvest operations are undertaken according to **OHS requirements** and with due consideration of the **environmental implications**.
		2.3	A **clean, safe and hygienic work area** is maintained throughout and on completion of work.
3	Implement post-harvest	3.1	Harvested produce is graded and labelled according to the marketing plan and enterprise

	treatments		work procedures.
		3.2	Produce that does not meet specifications and enterprise standards is identified and disposed of according to **enterprise environmental procedures**.
		3.3	**Post-harvest treatments** are selected according to harvested produce requirements, the enterprise integrated pest management strategy and the marketing plan.
		3.4	Timing, rate, application method, environmental requirements and handling techniques conform to the requirements of the harvested produce, enterprise work procedures and industry best practice.
		3.5	Post-harvest practices are economical, methodical, meet established work schedules and **minimise damage to produce**.
		3.6	Tools, equipment and machinery are cleaned and maintained according to enterprise work procedures.
4	Implement hazardous waste disposal guidelines		Waste disposal requirements of the enterprise are reviewed and operational tasks determined.
		4.2	Collection of waste and disposal are monitored with variation from enterprise environmental procedures addressed promptly.
		4.3	Conditions likely to impact on business viability are reported promptly to the supervisor.
5	Implement packing and presentation requirements of produce	5.1	**Packing and presentation requirements** specified in the marketing plan and enterprise work procedures are reviewed and operational tasks determined.
		5.2	Packing and presentation of produce conform to the requirements of the harvested produce, the marketing plan and industry best practice.
		5.3	Packing and presentation processes are monitored and remedial action taken where necessary.
		5.4	Packing and presentation processes are recorded according to enterprise work procedures.
6	Implement storage requirements of produce	6.1	**Storage requirements** specified in the marketing plan and enterprise work procedures are reviewed and operational tasks determined.
		6.2	Storage and handling of produce conform to the requirements of the harvested produce, the marketing plan and industry best practice.
		6.3	Storage processes and facilities are monitored and remedial action taken where necessary.

6.4	Storage processes and conditions are recorded according to enterprise work procedures.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What **post-harvest operations** may apply to this standard?	Post-harvest operations may include transporting harvested produce from the growing area to post-harvest processing or storage facilities, grading, applying treatments, and packing, labelling and storing harvested produce.
How may the **marketing plan** affect the implementation of a post-harvest program?	The marketing plan will address client specifications that may include quality of plant produce (and various grades) such as variety, shape, size, weight, length, colour, maturity, moisture content, ripeness, texture, skin condition, blemishes, bud count and health which are subject to seasonal and market forces. Client preferences may also specify packaging materials, containers, filling techniques, labelling and storage requirements from field to client such as the cool chain concept.
What **enterprise work procedures** may apply to this standard?	Work procedures will be based on sound horticultural principles and practices and may include supervisors oral or written instructions, post-harvest program or production schedule, marketing plan, enterprise standard operating procedures (SOPs), specifications, routine maintenance schedules, work notes; industry best practice guidelines on quality, food safety and hygiene; product labels and Material Safety Data Sheets (MSDS), manufacturers service specifications and operators manuals, waste disposal, recycling and re-use guidelines, and OHS procedures.
What **materials, tools, equipment and machinery** may be used to implement a post-harvest program?	Materials may include preservatives, chemicals, gases, cleaning agents, packaging materials and containers, labels, adhesives and proformas.
	Tools, equipment and machinery may include tractors, trailers, trolleys, light trucks, forklifts, snips, knives, gloves, containers, grading machinery, washers, brushes, dryers, chemical applicators, gassing chambers, labelling devices, packing tools, scales, pallets, hand trolleys and lifting aids, coolrooms and dedicated storage facilities.

What **OHS hazards** may be associated with implementing a post-harvest program?	Hazards may include a wet working environment including electricity, solar radiation, dust, pollen, soil-borne micro-organisms, noise, chemicals and hazardous substances, confined spaces, sharp hand tools and equipment, manual handling, slippery or uneven surfaces, and moving equipment, machinery and vehicles.
What **safety equipment** may be required?	Safety equipment may include signage and barriers, and operational safety exits from coolrooms and gassing chambers.
What **PPE** may be required when implementing a post-harvest program?	PPE may include hat, boots, overalls, gloves, apron, waterproof clothing, spray clothing, goggles, respirator or face mask, face guard, self-contained breathing apparatus, hearing protection, sunscreen lotion and hard hat.
What **OHS requirements** may be relevant to this standard?	OHS requirements may include identifying hazards, assessing and reporting risks, cleaning, maintaining and storing tools, equipment and machinery; appropriate use of PPE, safe operation of tools, equipment and machinery, ensuring operational safety exits from coolrooms and gassing chambers, confined spaces policy and procedures, safe handling, use and storage of chemicals and hazardous substances, correct manual handling, basic first aid, personal hygiene and reporting problems to supervisors.
What **environmental implications** may be associated with the implementation of a post-harvest program?	Detrimental environmental impacts may arise where post-harvest activities produce excess noise, dust or water run-off, disposal of unwanted or waste plant material that produces odour and attracts pests, and risks infecting healthy crops, or on- and off-site ground water or soils that are contaminated from solids, debris, nutrients, chemicals and water run-off.
How may a **clean, safe and hygienic work area** be maintained?	Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of post-harvest activities, safely storing materials including chemicals on-site, using signage and safety barriers during and removing after post-harvest activities are completed, cleaning, fumigating or sterilising post-harvest equipment and storage facilities, and swiftly and efficiently removing and processing debris and waste from the work area.

How will **enterprise environmental procedures** affect the implementation of a post-harvest program?	Enterprise environmental procedures may include procedures for the disposal of out-of-standard produce, waste material such as chemicals and hazardous substances used in post-harvest treatments, their containers, plant debris, litter, processing and cleaning water run-off, and broken components and packaging. Waste may be removed to designated areas for recycling, reuse, return to the manufacturer or disposal.
What post-harvest practices may be employed to **minimise damage to produce**?	Growing area handling practices may include observing the fill level of containers, lifting rather than dragging containers to avoid contact with dirt, correctly stacking containers on transport to reduce the risk of bruising, squashing or damaging the produce, and smoothly transporting the harvested produce to the post-harvest processing or storage facility. Harvested crops may need to be stored in the shade, in water-filled or covered containers in the growing area. In the shed storage may occur in a temperature-controlled environment such as a coolroom. These may include forced air coolrooms for tablegrapes, hydro coolrooms for stonefruit and vacuum coolrooms for mushrooms. Produce damage may be minimised by wearing gloves, maintaining sharp tools, placing rather than dropping produce into containers, cutting fingernails, observing fill heights, arrangement of produce and packing instructions for containers, and correctly stacking containers on transport.
What **packing and presentation requirements** will need to be determined?	Packing and presentation requirements for specific produce and clients may include specifications for packaging materials and containers, filling techniques and arrangement of produce within the container, and for labelling.
What **storage requirements** will need to be determined?	Storage requirements for specific produce and clients may include specifications for storage facilities, environmental conditions such as temperature, humidity and light, length of storage, position in the storage facility and cleaning processes to ensure a level of hygiene that protects the quality and health status of the stored produce.

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in implementing a post-harvest program requires evidence that a person can co-ordinate post-harvest operations, implement post-harvest treatments, hazardous waste disposal guidelines, and packing, presentation and storage requirements according to industry best practice and market specifications.

The skills and knowledge required to implement a post-harvest program must be **transferable** to a different work environment. For example, this could include different crops, harvesting methods and enterprises.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • the attributes of produce in relation to the desired quality of produce to be presented to the client • Integrated Pest Management principles and enterprise policy • the importance of maintaining the quality of produce including handling and cooling requirements • the relationship between the quality attributes of produce and packing techniques and packaging • industry standards for packaging • cool chain principles and practices • characteristics and procedures for the use of coolrooms • storage methods for a range of produce • the correct storage temperatures for a range of produce • humidity levels and their effect on the quality of produce • hygiene issues in the handling and storage of plant produce • environmental effects of post-harvest treatments and hazardous waste disposal methodologies, application and purpose • enterprise confined spaces policy and safety procedures.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • communicate orally and in writing with team members and supervisors

- interpret and confirm chemical labels, MSDS, work instructions and enterprise work procedures
- record information about work activities on proformas or electronic data input systems
- participate in teams and contribute to team objectives
- count and calculate quantities, treatment application rates and storage requirements
- correctly dispose of chemical substances, their containers and other waste materials to minimise environmental impact
- implement enterprise OHS policy and procedures.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Written, oral and telecommunication of ideas and information relating to post-harvest activities and problems encountered may be required with the work group and supervisor.
2. How can **information be collected, analysed and organised (2)**?	Enterprise work procedures and client specifications in the marketing plan should be consulted, interpreted and applied to co-ordinate the post-harvest program with further clarification sought from the supervisor when necessary.
3. How are **activities planned and organised (2)**?	Work activities for the work group and self will be planned prior to and adjusted during the post-harvest program.
4. How can **team work (2)** be applied?	The post-harvest program will involve facilitating and leading members of a team to complete the program on time and budget.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical application will be required to calculate and apply the spatial and logistical requirements of the post-harvest program.
6. How can **problem-solving skills (2)** be applied?	Produce quality issues, the selection and sourcing of treatments and products, co-ordination with the work

	group and work activities may require negotiation and the ability to devise alternative courses of action.
7. How can the **use of technology (2)** be applied?	Technological understanding will be required to access and apply program specifications, undertake post-harvest activities, communicate, report and keep records.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE3611A

Operate pressurised irrigation systems

This competency standard covers the process of operating pressurised irrigation systems including the use of pre-start checks, start-up, operation and inspection of the system, and shut down in response to irrigation indicators. It requires the ability to read and follow operations manual and irrigation schedules, measure and interpret flow rates and pressures, identify adverse environmental impacts of irrigation activities and take appropriate remedial action, and implement and follow relevant OHS and environmental policies and procedures. Operating pressurised irrigation systems requires knowledge of main components of pressurised irrigation systems, pump types and their operation, environmental impacts of irrigation, soil/substrate/plant/water relationships, and water requirements of plants/crops.

Element		Performance Criteria	
1	Perform pre-start checks for pressurised irrigation system	1.1	Checks of water, power, fuel and lubricants ensure that all are available and the control system is operational.
		1.2	Pumps are primed, if necessary, and valves and controls are open or closed as directed.
		1.3	Pressure and flow testing equipment are calibrated and available as required.
		1.4	Other pre-start system checks are carried out in accordance with manufacturers, **OHS** and enterprise procedures.
2	Start up and inspect system	2.1	Start up sequence is implemented in accordance with operations manual.
		2.2	All malfunctions, leaks and blockages are corrected or repaired immediately and reported in accordance with OHS and enterprise procedures.
		2.3	Pressure at the headworks and control valves is within design specifications indicating efficient filter operation, and water is distributed evenly to the targeted areas with minimal wastage and run-off.
3	Shut down system based upon irrigation indicators	3.1	Water is applied for sufficient time to allow amount of water necessary to achieve required soil/substrate moisture levels in accordance with irrigation schedule, **environmental considerations** and allowing for weather conditions.

	3.2	**System components** are shut down and drained in sequence in accordance with manufacturers, OHS and enterprise procedures.
	3.3	Drainage and treatment systems are checked in accordance with enterprise procedures.
	3.4	Irrigation activities are **recorded** and in reported accordance with regulatory requirements and enterprise procedures.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **pressurised irrigation systems** might be relevant to this standard?	Pressurised irrigation systems may include micro-irrigation systems; spray irrigation systems; flood and drain; nutrient film technique; deep flow technique; floating raft (tank culture); and, Aeroponic.
	Micro-irrigation systems may be mains pressure, low pressure, below or above ground, sprays systems, drip emitter, trickle, pressure-compensated drippers, t-tape, mini-sprinklers, and capillary.
	Spray irrigation systems may be travelling irrigators (soft hose, hard hose boom type), centre pivot, linear move, powered side roll hand shift permanent (installed), and bike shift/easy shift.
	Irrigation systems may range from manual operation and monitoring to fully automated with computer control and monitoring.
What **OHS** requirements are relevant to this standard?	These may include systems and procedures for the safe operation of irrigation equipment and to ensure protection against injury when working with pressurised equipment, the prevention of electrical type injury, manual handling and procedures for working outdoors, including protection from solar radiation, dust and noise.
What may need to be **inspected?**	This may include water flow, water quality and pressures at delivery points, lines for leaks and blocks, and drainage flow. Greenhouse operators may need to inspect EC and pH levels.
What **irrigation indicators** might be relevant to this standard?	These may include soil/substrate moisture, EC, pH, temperature; run-off volume, EC and pH; and, plant/crop condition.

What **environmental considerations** relate to this standard?	Environmental considerations may include efficient operation of the system to conserve water by identifying and repairing leaks, avoidance of over watering, and even distribution of water to targeted areas with minimal wastage and run-off.
What might **system components** include?	These may vary according to brand and supplier and may include pumps, tensiometers, probe tubes, flow meter, catch cans, pressure gauge, computer and/or other scheduling devices, weigh scales, moisture content meters, recycling equipment and spray equipment.
What irrigation activities may be **recorded?**	These may include water used, radiation accumulated, temperature, humidity; EC, pH and volume for drip (feed) and drain (run-off); time of shutdown, malfunctions, blockages, leaks and other faults requiring repair.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in operating pressurised irrigation systems requires evidence that a person can perform pre-start checks, start, operate and inspect the system, and shut down in response to irrigation indicators.

The skills and knowledge required to operate pressurised irrigation systems must be **transferable** to a different work environment. For example, this could include different crops, pressurised irrigation systems, environmental parameters and enterprise procedures.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• general irrigation methods for pressurised systems
	• main components of pressurised irrigation systems
	• relationship between plant physiology and greenhouse environmental management
	• pump types used in pressurised irrigation systems and their operation
	• environmental impacts of irrigation using water from any ground or underground source
	• soil/substrate/plant/water relationships
	• water requirements of plants/crops consistent with

sound environmental management
- shutdown sequence
- OHS, environmental and enterprise policies and procedures relating to the operation of pressurised irrigation systems.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: - read and follow operations manual and irrigation schedules - greenhouse operators may need to be *reasonably conversant* with climate and irrigation management systems - measure and interpret flow rates, drip and drain parameters and pressures - identify adverse environmental impacts of irrigation activities and appropriate remedial action - implement and follow relevant OHS and environmental policies and procedures relating to the operation of pressurised irrigation systems.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Reporting irrigation activities.
2. How can **information be collected, analysed and organised (2)**?	Reading and interpreting flow rates, drip and drain parameters and recording irrigation activities. Can be automatically collated on the climate and irrigation management systems
3. How are **activities planned and organised (2)**?	Performing shut down sequence or programming climate management systems in the greenhouse.
4. How can **team work (2)** be applied?	Reporting malfunctions or targets met.

5.	How can the use of **mathematical ideas and techniques (2)** be applied?	Measuring and interpreting pressure and flow rates.
6.	How can **problem-solving skills (2)** be applied?	Identifying and correcting malfunctions, leaks and blockages.
7.	How can the **use of technology (2)** be applied?	Using computerised equipment.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE3612A   Implement a maintenance program for an irrigation system

This competency standard covers the process of implementing a maintenance program for an irrigation system. It requires the ability to interpret an irrigation maintenance program, inspect irrigation system, record and report maintenance activities, test irrigation equipment, record results, undertake minor repairs of equipment, and dispose of unused or waste materials from site in an environmental safe sensitive manner. Implementing a maintenance program for an irrigation system requires knowledge of soil/substrate/plant/water relationships, environmental impacts of irrigation, irrigation system components, common operational and maintenance problems, and environmentally safe disposal procedures.

Element		Performance Criteria	
1	Interpret an irrigation maintenance program	1.1	**Scope of maintenance works** is determined according to the irrigation maintenance program.
		1.2	Frequency of maintenance works is determined and implemented according to the irrigation maintenance program.
		1.3	Irrigation maintenance standards are established in line with the irrigation maintenance program.
		1.4	Maintenance works are planned and prepared.
		1.5	**OHS requirements** are identified, associated hazards and risks assessed, and suitable controls implemented.
		1.6	**Environmental considerations** of irrigation maintenance activities are identified.
2	Inspect **irrigation system**	2.1	An inspection checklist is established according to the irrigation maintenance program.
		2.2	System is regularly inspected according to the checklist.
		2.3	Remedial action and repairs are identified and undertaken to restore system to full effectiveness.
		2.4	Servicing of **mechanical equipment** is undertaken according to the irrigation maintenance program.
		2.5	Results of maintenance works are assessed and recorded to ensure repairs or maintenance standards have been achieved according to the irrigation maintenance program.
		2.6	Ensure surroundings are tidied and materials and

			equipment cleared from the site on completion of maintenance works.
3	Record and report maintenance activities	3.1	Damage and blockage caused by pests, animals or abnormal events are recorded by damage type, location and the section of the system affected.
		3.2	Damage or faulty pumps, valves, electrical components and computer systems are recorded and reported, and action taken to effect repairs.
		3.3	Routine and preventative maintenance activities are recorded and reported in accordance with enterprise standards.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work context.

What is likely to be included in the **scope of maintenance works**?	Irrigation maintenance work on pressurised systems may range from manual operation and monitoring to fully automated with computer control and monitoring. They may include micro-irrigation systems; flood and drain; nutrient film technique; deep flow technique; floating raft (tank culture); and, Aeroponic and spray irrigation systems. Micro-irrigation systems may be mains pressure, low pressure, below or above -ground, sprays systems, drip emitter trickle, pressure-compensated drippers, t-tape, mini-sprinklers, and capillary. Spray irrigation systems may be travelling irrigators (soft hose, hard hose boom type), centre pivot, linear move, powered side roll hand shift permanent (installed), and bike shift/easy shift.
	Irrigation maintenance work on gravity-fed systems may range from manual operation and monitoring to fully automated with computer control and monitoring. Flood irrigation systems may include border check, contour irrigation, furrow irrigation, hillside flooding, and basin irrigation. Border check systems may be either permanent or temporary earth, plastic or concrete devices for insertion in a drain for reticulating water, contour banks used to collect and distribute water along the perimeter of an irrigation plot, contour banks within a plot to collect/distribute water, or larger scale systems to stop water exiting one area to another.

What **OHS** requirements are relevant to this standard?	These may include systems and procedures for the safe operation of irrigation equipment and to ensure protection against injury when working with pumps, outlets and other system equipment, the prevention of electrical type injury, manual handling and procedures for working outdoors, including protection from solar radiation, dust and noise.
What **environmental considerations** relate to this standard?	Environmental considerations may include efficient operation of the system to conserve water by identifying and repairing leaks, avoidance of over watering, and even distribution of water to targeted areas with minimal wastage and run-off.
What might servicing of **mechanical equipment** include?	Periodical maintenance for pumping unit may include changing engine oil, replacing the oil filter, replacing the air cleaner, checking battery water level, pre-cleaner, gear box oil, cooling system/water, fuel, battery charge and fuel tank, greasing the pump jack shaft and bearings, and flushing (de-silting) the pump.
	Centre control tower maintenance may include greasing head of pivot and all gearboxes, checking tyre pressure, and cleaning electrical controls of authorised components.
	There may be environmental considerations relating to the servicing of mechanical equipment such as disposal of oils/grease and used parts.
What might **irrigation systems** be composed of?	Tanks, mains pressure lines, valves, taps, solenoids, filters, regulators, conditioners, diverters, fertigators, flow meters, header and lateral lines, flushing systems, drippers/emitters, sensors, probes and heaters/coolers

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in implementing a maintenance program for an irrigation system requires evidence that a person can interpret the maintenance program and implement it to industry and enterprise standards.

The skills and knowledge required to implement a maintenance program for an irrigation system must be **transferable** to a different work environment. For example, this could include different irrigation systems, enterprises, locations, soil types and environmental considerations.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• soil/substrate/plant/water relationships
	• environmental impacts of irrigation
	• greenhouse operators may need to be *reasonably conversant* with climate and irrigation management systems
	• irrigation system components
	• common operational and maintenance problems
	• enterprise, OHS and environmental policies and procedures
	• environmentally safe disposal procedures for chemical containers and residues, oils/grease and used parts.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, as per template complementary skills are required. These include the ability to:
	• interpret an irrigation maintenance program
	• inspect irrigation system
	• record and report maintenance activities
	• read and interpret design and layout plans
	• test irrigation equipment and components
	• data input into automated systems
	• record all test results clearly and concisely with attention to detail
	• undertake minor repairs of equipment
	• dispose of unused or waste materials from site in an environmentally safe and sensitive manner.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Through reporting of maintenance activities.
2. How can **information be**	Information may need to be collected, analysed and

	collected, analysed and organised (2)?	organised when testing systems and recording results.
3.	How are **activities planned and organised (2)**?	Activities may need to be planned and organised according to enterprise guidelines.
4.	How can **team work (2)** be applied?	Team work may need to be applied when testing and adjusting environmental parameters.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical ideas and techniques may need to be applied when testing irrigation equipment.
6.	How can **problem-solving skills (2)** be applied?	Problem-solving skills may need to be applied in troubleshooting problems with the system.
7.	How can the **use of technology (2)** be applied?	The use of technology may be applied when using tools to check or repair the system.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE3713A Carry out workplace OHS procedures

This competency standard covers the process of carrying out enterprise Occupational Health and Safety (OHS) policies and procedures. The unit is also concerned with OHS responsibilities of employees with supervisory responsibilities. It requires the ability to work in accordance with workplace procedures in hazard identification and risk control, carry out safe practices during work operations, and participate in arrangements for maintaining the health and safety of all people in the workplace. Carrying out OHS policies and procedures requires knowledge of employee and employer responsibilities under the OHS Act, enterprise procedures relating to hazards, fires, emergencies, accidents and risk control, and OHS signs and symbols relevant to area of work.

Note: This unit is based on the national guidelines for integrating OHS competencies into National Industry Competency Standards.

Element		Performance Criteria	
1	Adapt OHS policies and procedures	1.1	Information regarding the organisation OHS policies and procedures is made readily accessible to all employees.
		1.2	**Employee responsibilities** prescribed in OHS legislation, codes and national standards are identified and carried out.
		1.3	**Employee responsibilities** prescribed in enterprise OHS policies and procedures (including **emergency** procedures) are identified and carried out.
2	Assist in workplace hazard identification and risk control	2.1	Information regarding hazard identification and risk control is provided and explained regularly.
		2.2	**Hazards in the workplace** are recognised and reported to designated personnel according to enterprise procedures.
		2.3	Assessment of risk associated with identified hazards is made in accordance with enterprise procedures.
		2.4	Workplace procedures and work instructions for controlling risks are followed accurately.
		2.5	**Risks** to fellow workers, other people and animals are recognised and action is taken to eliminate or reduce them.
		2.6	Safety **training** is undertaken or provided as necessary.

3	Observe safe practices during work operations	3.1	Work requiring personal protective equipment (PPE) is identified, used, maintained and stored according to enterprise procedures.
		3.2	Basic safety checks on all machinery and equipment are undertaken before operation according to enterprise procedures.
		3.3	Hazards associated with handling of hazardous substances are identified and notified, and risk assessed in accordance with enterprise **procedures** and OHS requirements.
		3.4	Noise hazards are identified and notified, and risk assessed in accordance with enterprise procedures and OHS requirements.
		3.5	**Manual handling** risks are assessed prior to activity, and work carried out according to currently recommended safe practice.
		3.6	Information on OHS for specific work operations is accessed as required.
4	Participate in arrangements for maintaining health and safety of all people in the workplace	4.1	Individuals have input into on going monitoring and reporting on all aspects of workplace safety.
		4.2	OHS issues are raised with designated personnel in accordance with enterprise procedures and relevant OHS legislation.
		4.3	Contributions to **participative arrangements** in the workplace are made within organisational procedures and scope of responsibilities and competencies.
		4.4	Suggestions are made to assist the development of effective solutions to control the level of risk with enterprise activities.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **legislation, codes and national standards** may be relevant to the workplace?	Industry codes of practice, award and enterprise agreements, relevant industrial instruments, and relevant legislation from all levels of government that affects business operation.
	OHS legislative requirements vary from State to State (or Territory) and may include common law duties to meet the general duty of care requirements, requirements for the maintenance and confidentiality of records of occupational injury and disease, provision of information, induction and training, regulations and approved codes of practice relating to hazards present in the work area, health and safety representatives and health and safety committees, and prompt resolution of OHS issues
	OHS policies and procedures may include procedures for hazard identification, procedures for risk assessment, selection and implementation of risk control measures, incident (accident) investigation, OHS audits and safety inspections, consultative arrangements for employees in work area, hazard reporting procedures, safe operating procedures/instructions, and the use and care of personal protective equipment
What **employee responsibilities** in OHS legislation may be included in this unit?	Co-operation with the employer/supervisor in any action taken to comply with OHS legislation, taking reasonable care for own health and safety; and accepting responsibility for protection of the health and safety of others through avoidance of personal action which puts others at risk. This includes smoking in the workplace, use of substances which modify mood or behaviour, inappropriate behaviour, not wilfully interfering with or misusing anything provided to protect health and safety, or not wilfully placing at risk the health or safety of any person in the workplace.
Which OHS **emergencies** may apply to this unit?	Electrocution, fire, flood, chemical spills, storms and cyclones, gases in confined spaces, falls from heights, gas leaks, serious injury associated with tractors, machinery and equipment, animals, vehicles, firearms and grain suffocation.

What hazards in the workplace may be included?	Equipment and machinery operation and maintenance (including powered tools), vehicles, noise, chemicals, gases, dust, manual handling, plants and animals/livestock, solar radiation, electricity, overhead hazards including powerlines, confined spaces, working at heights, tripping hazards, water bodies, firearms, explosives, damaged or broken structures, damaged or worn equipment, items blocking exits, items of equipment in areas used for access, poor surfaces, and spillages and breakages.
What risks to people might be relevant?	Drowning in waterways, run over and injury associated with vehicles and machinery, machinery entanglement, exposure to noise, splash, scalding, and drift and volatility of chemicals.
What OHS training may be relevant?	OHS induction, specific OHS training, safe machinery operation and maintenance, hazard identification and assessment, and safe chemical use.
What might be included in workplace for which protective clothing or equipment could be required?	Noise associated with plant, machinery and animals, pesticides, dusts, work in the sun, welding and use of grinders. Personal protective equipment (PPE) may include ear, eye and chemical protection, protective clothing, sunscreen lotion, gloves, safety harness and headgear.
What procedures may be included?	Hazard policies and procedures, emergency policies and procedures, procedures for use of personal protective clothing and equipment, hazard identification and issue resolution procedures, job procedures and work instructions, reporting procedures, and the installation of workplace safety signage.
What could be some of the **manual handling** hazards?	Moving, lifting, shovelling, loading materials, pulling, pushing, up-ending materials, hand tool use, storing materials at heights too high or too low, bending, repetitious tasks, and handling plants and animals.
What may constitute **participative arrangements**?	OHS committees and team or work group meetings.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in carrying out OHS procedures requires evidence that hazards have been recognised, reported and acted upon, that relevant workplace procedures are complied with, and that contributions have been made to participative arrangements. The skills and knowledge required to carry out OHS procedures must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, OHS issues, work situations and teams.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below: • employee and employer responsibilities under the OHS Act • enterprise procedures relating to hazards, fires, emergencies, accidents, and risk control • OHS signs and symbols relevant to area of work.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • apply workplace procedures for hazard identification and risk control • ability to **direct** others in identifying hazards, controlling risks, and following other OHS enterprise requirements • ability to **read** safety warning signs • **observe and direct** others to follow safe working operations • participate in arrangements for maintaining the health and safety of all people in the workplace • accurately record incidents in the work area in accordance with OHS legal requirements.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	By raising OHS issues verbally with other employees.

2.	How can **information be collected, analysed and organised (2)**?	By recognising hazards, keeping maintenance records and reporting accidents and dangerous occurrences.
3.	How are **activities planned and organised (2)**?	Carrying out OHS procedures requires some planning and organising.
4.	How can **team work (2)** be applied?	Carrying out OHS procedures may require participation with others in a team.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	To determine liquids and weights used in the workplace.
6.	How can **problem-solving skills (2)** be applied?	To determine appropriate action in emergency.
7.	How can the **use of technology (2)** be applied?	By the use of communication equipment to raise OHS issues.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE3801A   Provide on-job training support

This competency standard covers the process of providing on-job training support within an enterprise. It requires the ability to identify needs, support and provide follow-up and support to learner with on-job training support. Providing on-job training support requires knowledge of adult learning principles, setting up on-job training support, approaches to on-job training support, resources required for on-job training support, reviewing and reporting on on-job training support and OHS issues related to on-job training support.

Element		Performance Criteria	
1	Identify needs for on-the-job training support	1.1	Training needs are **determined** in consultation with supervisor and employee/trainee.
		1.2	Extent and scope of training support to be provided is agreed with the supervisor.
		1.3	Outcomes from training are defined prior to commencement.
		1.4	**Methods** of providing on-job training support is clarified and agreed with supervisor.
2.	Support on-the-job training	2.1	Training outcomes are clearly indicated to the learner.
		2.2	Training is delivered as directed and in accordance with **workplace procedures and relevant legislation**.
		2.3	Practice opportunities are provided to re-enforce the training.
3	Provide follow-up and support to learner	3.1	Opportunities to apply competencies on-the-job are provided.
		3.2	Constructive feedback and coaching are provided to assist learning.
		3.3	Feedback of employee's progress is given to the supervisor in the workplace.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What may assist in **determining** training needs?	Industry/enterprise or other performance standards, endorsed components of relevant industry training packages, industry/workplace training practices, job descriptions, results of training needs analyses, business plans of the organisation which identify skill development requirements and standard operating and/or other workplace procedures.
What **methods** may be relevant to providing training support?	Demonstrations, explanations, problem-solving, mentoring, experiential learning, group work, on-the-job coaching, job rotation or a combination of the above.
What **workplace procedures and relevant legislation** may be relevant to this competency standard?	Award and enterprise agreements, related to OHS and environmental issues, relevant industry codes of practice, and standard operating procedures.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in providing on-job training support requires evidence that on-job training support has been successfully and appropriately provided in an enterprise. The skills and knowledge required to provide on-job training support must be **transferable** to a range of work environments and contexts. For example, this could include different work places, training arrangements, competencies and trainees/learners.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• adult learning principles
	• setting up on-job training support
	• approaches to on-job training support
	• resources required for on-job training support
	• reviewing and reporting on on-job training support
	• OHS issues related to on-job training support.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to:
	• identify needs for on-the-job training support
	• provide follow-up and support to learner.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in

all jobs. They are fundamental processes and generally transferable to other work functions.
Some of these are covered by the **key competencies**, although others may be added. The
questions below highlight how these processes are applied in this competency standard.
Following each question a number in brackets indicates the level to which the key competency
needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and
administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Through interpreting training materials.
2. How can **information be collected, analysed and organised (2)**?	Through consultation and analysis of training needs with supervisors and trainee.
3. How are **activities planned and organised (2)**?	According to adult learning principles and on-job training procedures.
4. How can **team work (2)** be applied?	Through working co-operatively in providing training support across a team.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Through support for training where work tasks involve calculations.
6. How can **problem-solving skills (3)** be applied?	Through on-going analysis of outcomes and dealing with contingencies and knowledge gaps in training support as they arise.
7. How can the **use of technology (3)** be applied?	Through use of computers and communication systems.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other
competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent
performance** and **where and how it may be assessed**, in the Assessment Guidelines for this
Training Package. All users of these competency standards must have **access** to the
Assessment Guidelines. Further advice may also be sought from the relevant **sector
booklet.**

RTE3904A Keep records for a primary production business

This competency standard covers the process of creating and maintaining physical records, preparing and processing basic financial transactions, establishing and maintaining a cashbook, and reconciling and preparing invoices within primary production businesses. Both the physical and financial records of the business are vital for use by management for planning purposes, meeting legislative requirements, and the efficient operation of the business on a daily basis.

Work performed at this level requires a full range of well-developed skills where some discretion and judgement is required. One will take responsibility for own outputs and limited responsibility for the output of others.

Element		Performance Criteria	
1	Prepare and store **physical records**	1.1	Physical records and inventories required for the organisation are determined in consultation with the **management team**.
		1.2	**Methods for collecting information** are reliable, and time and resources are used efficiently.
		1.3	Appropriate **interpersonal skills** are used to access relevant information from individuals and teams.
		1.4	Information is organised into a **format** suitable for analysis, interpretation and dissemination in accordance with organisational requirements.
		1.5	**Business equipment/technology** is used to maintain information in accordance with organisational and OHS requirements.
		1.6	Records are updated and stored in accordance with organisational requirements.
2	Process petty cash transactions	2.1	Petty cash claims and vouchers are **checked for accuracy and authenticity** prior to processing.
		2.2	Petty cash transactions are processed and recorded in accordance with organisational requirements.
		2.2	Petty cash book balanced in accordance with organisational requirements.
3	Establish and maintain a **cash book** in accordance with organisational	3.1	Cash receipts and payments book created, and **documentation** relating to financial **transactions checked for validity** prior to

	requirements		processing.
		3.2	Cashbook balances reconciled with bank and creditor statements.
		3.3	Cashbook balances are used to complete **legislative reporting requirements**.
		3.4	**Cash flow statements** are prepared on the basis of summarised cashbook entries.
4	Reconcile invoices for payment to **creditors**	4.1	Adjustments and errors are identified, reported and rectified in accordance with organisational requirements.
		4.2	Invoices processed and payment made in accordance with organisational requirements.
5	Prepare invoices for **debtors**	5.1	Invoices are prepared accurately and, if required, distributed to nominated person for verification prior to despatch.
		5.2	Adjustments are made as required in accordance with organisational requirements.
		5.3	Invoices and other related documents copied and filed in accordance with organisational requirements for **taxation and auditing** purposes.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What sort of things will be recorded in **physical records?**	Records may include a property plan, livestock, paddock treatments including spraying, paddocks, rainfall, production, sales data, supplies, machinery and equipment, crop scheduling, greenhouse climate and irrigation parameters, and stock.
Who might be members of the **management team**?	They may be oneself, family members, fellow managers, employees, professional advisors, partners, and mentors.
What **methods for collecting information** might be used?	Methods for collecting information may include observation and listening, previous file records, individual research, statistics and reports from other organizations, producing reports from data collected on the farm, translating data from diaries and note-books, or professional data collection agency. Greenhouse growers may utilise climate and irrigation systems; and crop and labour registration systems.

What type of **interpersonal skills** may be required?	Interpersonal skills may include effective listening, open questioning techniques, verbal and non verbal communication skills, appropriate body language, and the ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities.
What type of **format** might be relevant?	Format for records and inventories could include maps, graphs, charts, cards, electronic, databases, diaries, or notebooks.
What sort of **business equipment/technology** might be used?	Business equipment and technology that might be used include computer, software, Internet, email, calculator, fax or phone.
What type of **checking for accuracy and authenticity** might be used?	Checking may include correct information on voucher, receipt of purchase, and ensuring items are business related.
What is meant by a **cashbook**?	A cashbook documents the daily receipts and payments of the business. It may be created and maintained manually and/or electronically.
What sort of **documentation** requires checking for **validity** in this context?	Documentation may include cheques, taxation invoices, accounts, and credit card vouchers. Validity may include checking date, signature, details on cheque are correct, expiry date of credit cards, information on taxation invoice, and accounts are accurate.
What sort of **legislative reporting requirements** would be included?	Legislative reporting requirements may include recording Australian Business Number (ABN), business activity statements (BAS), instalment activity statements (AIS), PAYG withholding, superannuation, taxation, or work cover.
What is meant by **cash flow statements** in this context?	Cash flow statements summarise the organisations actual and expected cash flow over designated periods of time. Budgets allocate income against expenses. Both types of statements can be created manually or electronically.
Who might be **creditors and debtors?**	Creditors and debtors may include financial institutions, goods and service suppliers, rural merchants, contractors, professional advisors, and co-operatives.
What sort of **taxation and auditing requirements** may be required?	Taxation and auditing requirements would include accurate records of all business assets, liabilities, income, expenses and entitlements to be analysed by an accountant for compliance purposes.

What type of financial **transactions** might the business undertake?	Financial transactions may include purchasing and selling products, machinery and equipment, vehicles and supplies, banking cheques, paying invoices and bills, or transferring funds electronically.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in record keeping in rural businesses requires evidence that both physical and financial records for the business can be created, maintained and stored in accordance with legislative and organisational requirements. Financial transactions involving cash, electronic funds transfer, cheques and invoices must be processed and recorded accurately in accordance with legislative and organisational requirements.

The skills and knowledge required to keep records in a rural business must be **transferable** to a different work environment. For example, across a wide range of small, medium and large agricultural and horticultural businesses.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• nature of the business and its legal and organisational structure
	• relevant National, State and local government legislative requirements, especially in regard to OHS and environmental requirements
	• organisational policies and procedures relating to the distribution of workplace information, legal and ethical obligations
	• methods to identify sources of information
	• procedures to analyse information to identify patterns and trends
	• ability to use electronic data entry systems
	• the organisations record keeping/filing systems, security of information and safe record keeping procedures
	• principles of effective interpersonal communication
	• principles and procedures for cash and non cash handling
	• principles of single entry accounting, and cash flow statements.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- relate to people from a range of social, cultural and ethnic backgrounds, and of varying physical and mental abilities
- collect and record accurate and reliable information
- present data in a format suitable for the organisations requirements
- use business equipment and technology correctly and safely
- file records accurately in accordance with organisational requirements
- perform calculations and balance accounts
- prepare cash flow statements and budgets
- reconcile creditors invoices and prepare debtors invoices
- process forms and other documentation.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	By research and discussion with the management team, employees and outside organisations.
2. How can **information be collected, analysed and organised (2)**?	By collecting and presenting information from a variety of sources and organising it into records, graphs, charts and tables.
3. How are **activities planned and organised (2)**?	By capturing and storing data generated within the business on a regular basis.
4. How can **team work (2)** be applied?	By working with business employees and the management team to assist in providing information on particular aspects of the business.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	By the processing of financial transactions and the development of cash flow statements and budgets.

6.	How can **problem-solving skills (2)** be applied?	Information that is contradictory, inconsistent, ambiguous or incomplete can be rejected.
7.	How can the **use of technology (2)** be applied?	By using technology to research information, keep records and perform calculations.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE3907A   Use hand held e-business tools

This competency standard covers the use of hand held tools for e-business. With the increasing use of information and communication technologies, the tools available to enhance business practices have expanded.

This unit requires the application of knowledge and skills to use hand held business tools that apply information and communications technologies to the workplace.

Element		Performance Criteria	
1	Prepare hand held e-business tools for use	1.1	**E-business** tools are selected according to requirements of the task and business practices.
		1.2	Relevant start up procedures are completed in accordance with technical and business requirements.
		1.3	Tools are configured with relevant business data as required.
		1.4	Connectivity is tested, as required, according to technical and business requirements.
2	Use hand held e-business tools	2.1	E-business tools are used according to technical and business requirements.
		2.2	Equipment faults are addressed, as required, according to technical and business requirements.
		2.3	Data is checked for accuracy and errors are addressed, as required, according to technical and business requirements.
3	Process business data	3.1	**Business data** is generated and compiled, as required, with reference to technical and business requirements.
		3.2	Business data is processed according to technical and business requirements.
		3.3	Performance of hand held e-business tools is reviewed and recommendations made for improvements to hardware, software and/or their use in accordance with e-business strategy and budget.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What forms of **e-business** might relate to this standard?	Every type of business transaction in which the participants (i.e., suppliers, end users, etc.) prepare or transact business, or conduct their trade in goods or services electronically (Definition of e-commerce in *E-competent Australia*, ANTA, May 2000). Some e-business supply chains however, may only involve electronic data related to products, e.g. consignment data relating to product type, price, etc.; details of individual animals captured by RF, or microchip scanners.
What types of hand held **e-business tools** might apply to this unit?	Different industry sectors use different hand held e-business tools that may utilise wired or wireless technologies. Examples include Global Positioning Systems (GPS); Personal Data Assistants (PDAs) e.g. Palm; Radio Frequency (RF) scanners; microchip scanners, mobile phone enabled email and Short Message Service (SMS).
What **business data** might be relevant?	Business data will depend on the business process involved, and will vary depending on the industry sector and the elements of production to which the tools will be applied. Relevant business processes might include recording application of chemicals; recording crop details; (including registration), recording harvest data recording individual livestock data from microchips; recording consignment data for barcoded wool bales; accessing up to date weather information; and general data entry.

What **information and development support** might be relevant to this unit?	The use of hand held e-business tools will often require some form of process re-engineering where aspects of production and administration are changed to meet new business requirements. The changes will vary depending on the industry sector, the elements of production involved, and the state of readiness of the enterprise. Implementation might thus require:
	• advice on technology issues/compatibility
	• protocols for electronic data interchange
	• personal identification and password for online access between businesses for access to inventory data and purchasing, payment or supply processes
	• banking information for electronic funds transfer
	• protocols relating to legal or security issues for e-business.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in participating in using hand held e-business tools requires evidence that the tools are used to ensure that the relevant production data is processed in according to technical and business requirements.

The skills and knowledge required to use hand held e-business tools must be **transferable** to a different work environment. For example, as different supply chains exist across a range of industry sectors, the nature of workplace practices and procedures will vary according to the extent to which electronic forms of data are used.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• operating procedures of relevant business tools
	• relevant protocols for electronic data interchange
	• personal identification and password for online access between businesses for access to inventory data and purchasing, payment or supply processes.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• use relevant technology such as computers, handheld

scanners, and barcoding equipment
- generate data in the format required by the e-business supply chain.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (2)** be applied?	By communicating with management, operators and others in the workplace.
2.	How can **information be collected, analysed and organised (2)**?	By observing the performance of the hand held tool and analysing the usefulness of the data.
3.	How are **activities planned and organised (2)**?	In ensuring that the tools are applied to the task as required by production timelines.
4.	How can **team work (2)** be applied?	In working safely to ensure that the tools are used effectively and the data is processed as required.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	In calculating and recording production data.
6.	How can **problem-solving skills (2)** be applied?	Through identifying solutions to production processes that relate to the existing use of hand held business tools.
7.	How can the **use of technology (2)** be applied?	By ensuring that the hand held e-business tools are used according to technical and business requirements.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTF3033A   Implement a maintenance program for hydroponic systems

This competency standard covers the process of implementing a maintenance program for hydroponic systems. This maintenance includes monitoring the hydroponic environment, and the nutrient solution that is vital to the success of hydroponic farming.

The implementation of a maintenance program is likely to be under limited supervision from others, with checking only related to overall progress. The maintenance and monitoring of hydroponic equipment and the growing environment is usually performed according to enterprise guidelines, and within established routines, methods and procedures. Some discretion and judgement may be required depending on what type of system is to be maintained.

Element		Performance Criteria	
1	Monitor the hydroponic environment	1.1	**Environmental parameters** are monitored according to the production plan and **adjustments** made as required.
		1.2	Samples are collected and sent off for analysis to identify potential **sources of contamination**.
		1.3	**Hygiene procedures** are monitored and adjusted according to enterprise guidelines.
		1.4	Disposal of materials is monitored to ensure it follows enterprise guidelines, and with due consideration of the **environmental implications**.
		1.5	**Workplace information** is interpreted and clarified with the supervisor
2	Monitor nutrient solution	2.1	**Ingredients** of the hydroponic nutrient solution are identified.
		2.2	Samples are taken for **testing** and analysis.
		2.3	Results are interpreted and discussed with the supervisor.
		2.4	Nutrient solution is modified in accordance with results to ensure the correct balance of ingredients for optimum growing conditions.
		2.5	Regular **routine measurements** of the nutrient solution.
3	Perform routine maintenance checks	3.1	All **buildings and structures** are inspected and checked for wear and tear.
		3.2	**Equipment for delivering the nutrient solution** is checked according to enterprise

			guidelines.
		3.3	**Equipment controlling the atmospheric and root zone environments** is checked according to enterprise guidelines.
		3.4	**OHS hazards** are identified, risk assessed and **suitable controls** implemented according to enterprise guidelines.
4	Complete monitoring activities	4.1	Any significant problems are reported to the manager and/or owner operator.
		4.2	All checks are recorded according to enterprise requirements.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work context.

What **workplace information** may be relevant to this standard?	Workplace information may include the production plan, standard operation procedures (SOP), scientific literature, manufacturers specification, MSDSs, product labels, or verbal instruction from the manager or supervisor.
What **environmental parameters** are likely to be monitored?	Environmental parameters may include temperature, light, humidity, Vapour Pressure Deficit (VPD), carbon dioxide concentration and wind.
How can environmental parameters be **adjusted**?	Adjusting environmental parameters may include using fans, heaters, opening and shutting ventilators , windows & screens, using misters/foggers and artificial lighting.
What are likely to be **sources of contamination** in hydroponic systems?	Sources of contamination may include water, soil, vegetable matter, foreign materials and pathogens.
What **hygiene procedures** may be adjusted to minimise or control contamination?	Hygiene procedures may include washing tools and equipment after use, cleaning shoes and hands before entering work areas, maintaining good ventilation around plants, removing diseased or insect infested plants promptly, removing weeds, sterilising the system, greenhouses, tools and equipment, and sterilising the water used in the system.
What **environmental implications** may be considered when maintaining hydroponic systems?	Environmental considerations may include the safe disposal of chemical containers or left over chemicals, the run off from the washing and cleaning of tools and equipment, and the effective management of drainage of high nutrient effluent.

What are the likely **ingredients** of a hydroponic nutrient solution?	Ingredients may include nitrogen, phosphorous, potassium, magnesium, calcium, sulphur and trace elements
What **tests** may be carried out on the nutrient solution?	Tests may include pH, EC, levels of oxygen, N, P, K, Mg, S, Na, Cl, HCO_3, and trace elements.
What **buildings and structures** are likely to be checked?	Buildings and structures may include greenhouses, sheds, service buildings, artificial windbreaks, fences and sealed surfaces.
What **equipment for delivering the nutrient solution** is likely to be checked?	Items of equipment may include pumps, drippers, pipes and channels, timers, injectors, dosers, computers, plant support trellis, salinity (EC) controllers and pH controllers
What **equipment for controlling the atmospheric and root zone environments** is likely to be checked?	Items of equipment may include heaters (air and water), coolers, lights, HAF fans, screens, , misting systems, humidifiers or fogging machines, exhaust fans, air vents, UV sterilisers and aspirated screens. Root-zone equipment may include EC, pH & DO sensors, temperature, moisture & weighing sensors.
What **OHS hazards** may be identified in the work area?	Hazards may include hazardous chemicals; water and dust and splashed or windborne inoculum; manual handling, moving equipment and vehicles, sharp hand tools, noise, slippery or uneven surfaces, and heat.
What **suitable controls** may be used to reduce OHS hazards?	Suitable controls may include following OHS procedures for the use and maintenance of equipment and machinery, use of protective clothing, handling and storage of hazardous substances, drinking fluids to prevent dehydration, correct manual handling procedures, and the use and maintenance of suitable Personal Protective Equipment (PPE).
What **routine measurements** might be required?	Routine measurements may include drip & drain volume, EC, pH, Dissolved Oxygen (DO) & temperature

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in implementing a maintenance program for hydroponic systems requires evidence that a person can maintain a level of hygiene for themselves and the work

environment, that equipment can be maintained according to enterprise guidelines, and that the environmental parameters and nutrient solutions in hydroponic systems can be tested, analysed, recorded and modified accordingly.

The skills and knowledge required to implement a maintenance program must be **transferable** to a different work environment. For example, this could include different hydroponic systems, growing media, crops and enterprise procedures.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • equipment used in hydroponic systems • properties of a nutrient solution • testing methods for the gauging of environmental parameters • testing methods for a hydroponic nutrient solution • recirculated and non-recirculated systems • media choices and their properties • characterisitcs of healthy plants • potential problems associated with a range of crops grown in a hydroponic environment • environmental implications of the disposal of chemicals or chemical containers, and the drainage of high nutrient effluent.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, as per template complementary skills are required. These include the ability to: • read and interpret design and layout plans • test and calibrate hydroponic equipment • monitor and test environment parameters and nutrient solutions • read and interpret test results accurately • record all test results clearly and concisely with attention to detail • undertake minor repairs of equipment, e.g. pumps, pipes and drippers • dispose of unused or waste materials from site in an environmentally safe and sensitive manner.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The

questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (2)** be applied?	Information and ideas may need to be communicated to the manager and/or owner operator if faults are found in the hydroponic equipment.
2.	How can **information be collected, analysed and organised (2)**?	Information may need to be collected, analysed and organised when testing and recording results on nutrient solutions.
3.	How are **activities planned and organised (2)**?	Activities may need to be planned and organised according to enterprise guidelines.
4.	How can **team work (2)** be applied?	Team work may need to be applied when testing and adjusting environmental parameters.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical ideas and techniques may need to be applied when testing and calibrating hydroponic equipment.
6.	How can **problem-solving skills (2)** be applied?	Problem-solving skills may need to be applied when the ingredients in a nutrient solution are out of balance.
7.	How can the **use of technology (2)** be applied?	The use of technology may be applied when maintaining the water quality in a recirculating hydroponic system.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTF30ZZZ

Implement a plant monitoring program

This competency standard covers the process of implementing a monitoring program for plants. This monitoring of the health and performance of the plants is vital to the success of Controlled Environment Horticulture (CEH).

The implementation of a monitoring program is likely to be under limited supervision from others, with checking only related to overall progress. The monitoring of plants is usually performed according to enterprise guidelines, and within established routines, methods and procedures. Some discretion and judgement may be required depending on what type of plants or monitoring system is to be employed.

Element		Performance Criteria	
1	Monitor plant health	1.1	**Workplace information** is interpreted and clarified with the supervisor.
		1.2	Plants are assessed for **overall health** according to sound horticultural practice
2	Monitor the plant performance	2.1	Growth rate of plants are assessed against targets set in the production plan.
		2.2	Plant is assessed for **vegetative/generative balance** according to production plan.
		2.3	Plant is assessed for **fruit/flower development** according to production plan
3	Complete monitoring activities	3.1	Any significant problems are reported to the manager and/or owner operator.
		3.2	All checks are recorded according to enterprise requirements.
		3.3	**OHS hazards** are identified, risk assessed and **suitable controls** implemented according to enterprise guidelines.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work context.

What **workplace information** may be relevant to this standard?	Workplace information may include the production plan, standard operation procedures (SOP), scientific literature, breeders specification, crop registration or verbal instruction from the manager or supervisor.

What indicators can be used to assess the **overall health** of the plant?	Overall health of the plant can be assessed by the presence of pests or diseases, nutrient imbalance symptoms, phytotoxicity and stunted or spindly growth.
How is **vegetative/generative balance** to be monitored?	Plant balance may be monitored by measuring stem diameter, leaf length, internodes, fruit numbers, growth rates, etc as per enterprise guidelines.
How can **fruit/flower development** be assessed?	Fruit/flower development, which may include a range of plant products (i.e. fruit, flower, roots, seeds, etc), can be assessed against the enterprise production plan and registration guidelines.
What **OHS hazards** may be identified in the work area?	Hazards may include hazardous chemicals; water and dust and splashed or windborne inoculum; manual handling, moving equipment and vehicles, sharp hand tools, noise, slippery or uneven surfaces, and heat.
What **suitable controls** may be used to reduce OHS hazards?	Suitable controls may include following OHS procedures for the use and maintenance of equipment and machinery, use of protective clothing, handling and storage of hazardous substances, drinking fluids to prevent dehydration, correct manual handling procedures, and the use and maintenance of suitable Personal Protective Equipment (PPE).

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in implementing a monitoring program for plants requires evidence that a person can visually assess overall plant health, identify healthy or non-healthy plants and effectively use registration tools to assess plant balance.

The skills and knowledge required to implement a plant monitoring program must be **transferable** to a different work environment. For example, this could include different crops and enterprise procedures.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• characterisitcs of healthy & unhealthy plants
	• potential problems associated with a range of crops grown in a hydroponic environment

	• parts of plants to be measured and units of measurements
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, as per template complementary skills are required. These include the ability to: • read and interpret crop registration tools • record all monitoring results clearly and concisely with attention to detail • accurately use measuring tools (i.e. vernier callipers, rulers, tape measures, measuring scales, etc)

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

8. How can **communication of ideas and information (2)** be applied?	Information and ideas may need to be communicated to the manager and/or owner operator if plant health issues are identified
9. How can **information be collected, analysed and organised (2)**?	Information may need to be collected, analysed and organised when measuring and recording results on crop registration.
10. How are **activities planned and organised (2)**?	Activities may need to be planned and organised according to enterprise guidelines.
11. How can **team work (2)** be applied?	Team work may need to be applied when measuring, recording and interpreting crop details
12. How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical ideas and techniques may need to be applied when measuring & recording crop details
13. How can **problem-solving skills (2)** be applied?	Problem-solving skills may need to be applied when the plants are out of balance.
14. How can the **use of technology (2)** be applied?	The use of technology may be applied when measuring & recording crop details.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTC3401A   Control weeds

This competency standard covers the process of controlling weeds, taking into consideration integrated pest management options. Implementation is likely to be under limited supervision from others with checking only related to overall progress. Responsibility for and limited organisation of the work of others may be involved. Implementation requires the application of knowledge in areas such as weed recognition, biology and control, and the lifecycles of weed predators and hosts.

Element		Performance Criteria	
1	Assess **weed** infestation	1.1	Scope and size of the infestation is assessed.
		1.2	**Weeds and beneficial organisms** are identified and reported or recorded as per enterprise guidelines.
		1.3	Levels of weed infestations tolerated by the client, market or environment are identified from the integrated pest management (IPM) strategy.
		1.4	Infestation levels, above which plant health or growth objectives are compromised are identified.
		1.5	Professional advice is obtained as required according to enterprise guidelines.
2	Plan the implementation of control measures	2.1	**Control measures** suitable for the infestation are selected from IPM strategy.
		2.2	**Tools, equipment and machinery** are selected for each work activity according to enterprise work procedures.
		2.3	**OHS hazards** are identified, risks assessed, controls implemented and reported to the supervisor.
		2.4	Suitable safety equipment and **personal protective equipment (PPE)** are selected, used, maintained and stored.
		2.5	Control measures selected need to be in full consideration of **environmental implications**.
3	Implement control measures	3.1	Enterprise work team, contractors and IPM product suppliers are coordinated in a sequential, timely and effective manner in consultation with the supervisor.
		3.2	Control measures are implemented according to the **IPM standards** or industry Code of Practice.
		3.3	Implementation of IPM activities is undertaken

			according to **OHS requirements**.
		3.4	A **clean and safe work area** is maintained throughout and on completion of each work activity.
		3.5	**Records** are maintained as required by legislation and enterprise guidelines.
4	Monitor control methods	4.1	Control methods are monitored to identify side effects to other plants, animals or external environment.
		4.2	Effectiveness of control methods are assessed in reference to specified industry and enterprise standards.
		4.3	Adjustments to IPM control methods are implemented where necessary to meet enterprise specifications.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **weeds** may be relevant to this standard?	These may include weeds which: • present a potential risk for the enterprise, industry or environment. • are notifiable to authorities. • are part of a local, regional, State or national strategy.
What **beneficial organisms** may be relevant to this standard?	These may include volunteer or cultivated plants that out-compete the weed, insects and other non-vertebrates, and microorganisms that attack the weed.
What **control measures** may be employed as part of an IPM program?	These may include targeted chemical application, the application of non-chemical controls including organically or naturally ingredient based sprays, controlled release of predatory organisms, or the application of cultural control methods including removal and disposal of weeds. It may also include the maintenance of a buffer zone around the greenhouse

What **tools, equipment and machinery** may be required?	Standard horticultural tools such as gardening implements, mechanised and manually operated spray applicators and cultivators, tractors and trailed equipment may be required. Monitoring equipment for the implementation of an IPM program may include insect traps, soil, fertiliser and plant tissue test kits and sampling equipment.
What **OHS hazards** may be associated with this standard?	Hazards may include chemicals and hazardous substances, manual handling, operating machinery tools and equipment, noise, dust, solar radiation, falls and tripping.
What **PPE** may be included?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, hearing protection, sunscreen lotion.
What **environmental implications** may be associated with controlling weeds?	Beneficial environmental impacts may occur where reduced and informed targeting of chemicals, fertilisers and water to the site and recycling within the system, result in minimal escape of contaminants to the external environment. Beneficial impacts may also result from improved production through reduced pest and disease pressure, healthier ecosystems, more efficient water and nutrient utilisation and reduced weed numbers. Detrimental environmental impacts may arise where IPM activities produce excess noise, dust or water, or the systems do not function effectively because of inadequate implementation techniques.
What **IPM Standards** may be specified?	Standards may include those established by registered industry associations, clients or markets of the enterprise, land management agencies or quality assurance program.
What **OHS requirements** may be relevant to this standard?	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 chemicals, organically based materials and hazardous substances, correct manual handling, basic first aid, safety procedures for protection of others, personal hygiene, and reporting problems to supervisors.

How may a **clean and safe work area** be maintained?	Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of IPM activities, correct storage of personal protective equipment, safely storing materials on site, and swiftly and efficiently removing and processing debris and waste from the work area.
What **records** may apply to controlling weeds?	Records may include types of weeds and beneficial organisms present, numbers of weeds and beneficials present, treatments applied, date of application, application rates, success of treatments, economic thresholds.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in controlling weeds requires evidence that weed control measures have been successfully planned, implemented and monitored according to enterprise guidelines and industry best practice. The skills and knowledge required to control weeds must be **transferable** to a different work environment. For example, this could include different weed species, enterprise situations and control methods.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Weed recognition.
	• Economic, aesthetic or environmental thresholds for a range of weeds.
	• Chemical, biological and cultural control methods and treatments available to the enterprise within the parameters of an IPM program.
	• Range and use of tools, equipment and machinery available to the enterprise for implementing the control measures.
	• Range of site monitoring and analysis techniques that may be used to implement an IPM program.
	• Association of IPM methods with site limitations, environmental implications, end market and horticultural objectives for the site.
	• OHS issues and legislative requirements associated wth hazardous sunbstances. regulations and Codes of

	Practice.
	• OHS responsibilities of employers and employees.
	• Correct wearing/fit of personal protective equipment.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• Recognise of a range of weeds and beneficial organisms within a particular enterprise.
	• Communicate with work team members, supervisors, contractors and consultants.
	• Utilise proforma reporting, analysis and work procedure documents.
	• Understand IPM symbols and information.
	• Interpret and apply IPM program spatial and logistical specifications.
	• Correct fitting, cleaning and storage of personal protective equipment.
	• 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 IPM activities in a timely and cost effective manner.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (2)** be applied?	Written, oral and telecommunication of ideas and information relating to IPM implementation, activities and problems encountered will be required with the supervisor, work group, contractors or consultants.
2.	How can **information be collected, analysed and organised (2)**?	Enterprise work procedures and IPM program should be consulted, interpreted and applied to coordinate weed control activities with further clarification sought from the supervisor, contractors or consultants where necessary.
3.	How are **activities planned**	Work activities for the work group, contractors and

and organised (3)?	self will be planned prior to and adjusted during implementation of the IPM program.	
4. How can **team work (2)** be applied?	Implementation of the IPM program will involve facilitating and leading members of a team to complete IPM activities, and meet IPM standards and specifications on time and budget.	
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical application will be required to implement the spatial and logistical and quantitative requirements of the IPM program.	
6. How can **problem-solving skills (3)** be applied?	Site contingencies, personnel difficulties and control and timeline failures may require problem-solving techniques.	
7. How can the **use of technology (3)** be applied?	Technological understanding will be required to access and apply IPM specifications to work activities, undertake IPM activities, communicate and keep records.	

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is critical information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC3404A — Control plant pests, diseases and disorders

This competency standard covers the process of controlling plant pests, diseases and disorders taking into consideration integrated pest management options. Implementation is likely to be under limited supervision from others with checking only related to overall progress. Responsibility for and limited organisation of the work of others may be involved. Implementation requires the application of knowledge in areas such as pests and disease recognition, lifecycles, biology and control, and predators and hosts.

Element		Performance Criteria	
1	Assess **pests and disease** infestation	1.1	Scope and size of the infestation is assessed.
		1.2	**Plant pests, diseases and disorders** and **beneficial organisms** are identified and reported or recorded as per enterprise guidelines.
		1.3	Levels of pest infestations tolerated by the client, market or environment are identified from the integrated pest management (IPM) strategy.
		1.4	Infestation levels, above which plant health or growth objectives are compromised, are identified.
		1.5	Professional advice is obtained as required according to enterprise guidelines.
2	Plan the implementation of control measures	2.1	**Control measures** suitable for the infestation are selected from IPM strategy.
		2.2	**Tools, equipment and machinery** are selected for each work activity according to enterprise work procedures.
		2.3	**OHS hazards** are identified, risks assessed, controls implemented and reported to the supervisor.
		2.4	Suitable safety equipment and **personal protective equipment (PPE)** are selected, used, maintained and stored.
		2.5	Control measures selected need to be in full consideration of OHS and **environmental implications**.
3	Implement control measures	3.1	Enterprise work team, contractors and IPM product suppliers are coordinated in a sequential, timely and effective manner in consultation with the supervisor.

		3.2	Control measures are implemented according to the **IPM standards** or industry Code of Practice.
		3.3	Implementation of IPM activities is undertaken according to **OHS requirements**.
		3.4	A **clean and safe work area** is maintained throughout and on completion of each work activity.
		3.5	**Records** are maintained as required by legislation and enterprise guidelines.
4	Monitor control methods	4.1	Control methods are monitored to identify side effects to other plants, animals or external environment.
		4.2	Effectiveness of control methods are assessed in reference to specified industry, OHS and enterprise standards.
		4.3	Adjustments to IPM control methods are implemented where necessary to meet enterprise specifications.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **plant pests, diseases and disorders** may be relevant to this standard?	These may include plant pests, diseases and disorders which: • present a potential risk for the enterprise, industry or environment. • are notifiable to authorities. • are part of a local, regional, State or national strategy.
What **beneficial organisms** may be relevant to this standard?	These may include volunteer or cultivated plants, insects, spiders and microorganisms that out-compete, parasitise or predate on the pests and disease relevant to the IPM program.
What **control measures** may be employed as part of an IPM program?	These may include targeted chemical application, the application of non-chemical controls including organically or naturally ingredient based sprays, controlled release of predatory organisms, adjusting greenhouse climate controls , or the application of cultural control methods including removal and disposal of plant pests, diseases and disorders.

What **tools, equipment and machinery** may be required?	Standard tools, such as gardening implements, mechanised and manually operated spray applicators and cultivators, tractors and trailed equipment or greenhouse spray trolleys may be required. Monitoring equipment for the implementation of an IPM program may include insect traps, soil, substrate, fertiliser and plant tissue test kits and sampling equipment.
What **OHS hazards** may be associated with this standard?	Hazards may include chemicals and hazardous substances (including Ozone – O_3, Ultra Violet - UV), greenhouse re-entry times, working at heights, manual handling, falling branches, overhead powerlines, operating machinery tools and equipment, noise, dust, solar radiation.
What **PPE** may be included?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, hearing protection, sunscreen lotion.
What **environmental implications** may be associated with controlling plant pests, diseases and disorders?	Beneficial environmental impacts may occur where reduced and informed targeting of chemicals, fertilisers and water to the site and recycling within the system, result in minimal escape of contaminants to the external environment. Beneficial impacts may also result from improved production, healthier ecosystems, more efficient water and nutrient utilisation, and reduced pest numbers.
	Detrimental environmental impacts may arise where IPM activities produce excess noise, dust or water, or the systems do not function effectively because of inadequate implementation techniques.
What **IPM Standards** may be specified?	Standards may include those established by registered industry associations, clients or markets of the enterprise, land management agencies or quality assurance program.
What **OHS requirements** may be relevant to this standard?	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 chemicals, organically based materials and hazardous substances, correct manual handling, basic first aid, personal hygiene, and reporting problems to supervisors and safety procedures for the protection of others.

How may a **clean and safe work area** be maintained?	Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of IPM activities, safely storing materials on site, and swiftly and efficiently removing and processing debris and waste from the work area.
What **records** may apply to controlling plant pests, diseases and disorders?	Records may include types of plant pests, diseases and disorders and beneficial organisms present, numbers of pests and beneficials present, treatments applied, date of application, application rates, success of treatments, economic thresholds, accident and dangerous occurrence records.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in implementing an integrated pest management (IPM) program requires evidence that the person is able to prepare for IPM activities, coordinate work activities, and monitor and apply control methods to pests or diseases within the parameters of IPM standards and specifications. The skills and knowledge required to control plant pests, diseases and disorders must be **transferable** to a different work environment. For example, this could include different plant pests, diseases and disorders, enterprise situations and control methods.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Pest, disease and plant disorder recognition.
	• Economic, aesthetic or environmental thresholds for a range of plant pests, diseases and disorders.
	• Chemical, biological and cultural control methods and treatments available to the enterprise within the parameters of an IPM program.
	• Range and use of tools, equipment and machinery available to the enterprise for implementing the control measures.
	• Range of site monitoring and analysis techniques that may be used to implement an IPM program.
	• Association of IPM methods with site limitations, environmental implications, end market and production or environmental objectives for the site.

	- OHS responsibilities for employees and employers.
	- OHS procedures.
	- OHS legislative requirements including hazardous substances regulations and Codes of Practice.
	- Correct wearing/fit of personal protective equipment.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	- Recognise of a range of pests, diseases and beneficial organisms within a particular enterprise.
	- Communicate with work team members, supervisors, contractors and consultants.
	- Interpret and apply the Integrated Pest Management Program.
	- Utilise proforma reporting, analysis and work procedure documents and e-business tools.
	- Understand IPM symbols and information.
	- Interpret and apply IPM program spatial (i.e. hotspots in greenhouse) 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 IPM activities in a timely and cost effective manner.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Written, oral and telecommunication of ideas and information relating to IPM implementation, activities and problems encountered will be required with the supervisor, work group, contractors or consultants.
2. How can **information be collected, analysed and organised (2)**?	Enterprise work procedures and IPM program should be consulted, interpreted and applied to coordinate plant pest, disease and disorder control activities with further clarification sought from the supervisor, contractors or consultants where

		necessary.
3.	How are **activities planned and organised (3)**?	Work activities for the work group, contractors and self will be planned prior to and adjusted during implementation of the IPM program.
4.	How can **team work (2)** be applied?	Implementation of the IPM program will involve facilitating and leading members of a team to complete IPM activities, and meet IPM standards and specifications on time and budget.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical application will be required to implement the spatial and logistical and quantitative requirements of the IPM program.
6.	How can **problem-solving skills (2)** be applied?	Site contingencies, personnel difficulties, control and timeline failures and identifying, assessing and controlling hazards may require problem solving techniques.
7.	How can the **use of technology (2)** be applied?	Technological understanding will be required to access and apply IPM specifications to work activities, undertake IPM activities, communicate and keep records.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is critical information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC3701A   Respond to emergencies

This competency standard covers the process of recognising and responding to emergencies and implementing a range of life support measures across a broad spectrum of situations /incidents. It requires the ability to accurately evaluate the emergency, avoid/control escalation of the emergency, efficiently implement a plan of action, and render first aid care. Responding to emergencies requires knowledge of Occupational Health and Safety legislation and regulations, the emergency network, and first aid casualty management principles.

Element		Performance Criteria	
1	Prepare for **emergency** situations	1.1	Appropriate actions are taken to maximise safety and minimise health hazards in the workplace.
		1.2	Options for action in cases of emergency are identified and evaluated.
		1.3	Organisational emergency procedures and policies are correctly implemented as part of the **workplace procedures.**
		1.4	**Occupational health and safety procedures** and safe working practices are applied including the selection of **personal protective equipment (PPE)** to suit the emergency situation.
		1.5	Regular checks of the workplace are carried out to minimise potential hazards.
		1.6	Emergency procedures are carried out as required by established workplace procedures.
		1.7	Safety equipment and aids required for emergencies are selected, used, maintained and stored in good order.
		1.8	Near misses and potential hazards are reported to supervisor and/or documented according to enterprise guidelines.
2	Implement fire prevention and control on site and in the workshop	2.1	Fire hazards are minimised as specified in workplace and/or fuelling procedures.
		2.2	Appropriate fire extinguishers and fire fighting equipment are used in fire situations, and appropriate authority notified according to established procedures.
		2.3	Evacuation procedures are followed according to enterprise policy and plan including nominated assembly points.
		2.4	Where required, specific safety procedures for the handling and use of **industrial gases** are carried out in line with standard industry practice

			and regulations.
3	Evaluate the emergency	3.1	Emergency and potential emergency situation reports and signals are promptly recognised and assessed.
		3.2	Advice is sought from **relevant people** in evaluating the emergency.
		3.3	The possible development of the emergency situation is assessed and further potential hazards to staff and/or clients are evaluated.
		3.4	Needs, including those for assistance, are prioritised promptly and accurately.
4.	Act in an emergency	4.1	The plan of action is implemented using techniques appropriate to the situation and available resources and abilities.
		4.2	Equipment is operated safely and, where necessary, equipment and techniques are improvised.
		4.3	Strategies for group control are identified and implemented, and clients and other individuals are removed from danger.
		4.4	The condition of all staff **and others** assisting is constantly monitored.
		4.5	The information required to assist emergency services, where relevant, is acquired and documented.
		4.6	Emergency services are notified as necessary.
		4.7	The plan of action is changed to accommodate changes in the **situation variables.**
		4.8	Casualty evacuation methods are demonstrated where relevant to the context.
		4.9	Organisational procedures and policies and legal requirements are correctly implemented in the event of a major injury or death.
5	Apply essential first aid techniques	5.1	Immediate risk to self and casualty's health and safety are minimised by isolating the **hazard.**
		5.2	The casualty's **injuries** and vital signs are assessed.
		5.3	Casualty is reassured in a caring and calm manner and made comfortable using available resources.
		5.4	First aid care is provided in accordance with established first aid procedures.
		5.5	First aid assistance is sought from others as appropriate.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What might **workplace procedures** refer to?	Search procedures (search of likely routes followed, systematic search, voice or whistle contacts), evacuations, use of isolating equipment, prevention of escalation of risk, containment, clean up, control of fire, administering of first aid, assistance to injured team member, retrieval of team member and activity-specific rescue techniques.
Where may **occupational health and safety requirements** be found?	State/Territory/Commonwealth legislation, Australian Standards, Occupational Health and Safety legislation, industry Codes of Practice and organisation's policies and procedures and Material Safety Data Sheets (MSDSs).
What **personal protective equipment** is relevant to this standard?	Firefighter protective clothing, helmets and hardhats, boots, gloves, breathing apparatus, protective clothing, protective hose lines or sprays, safety eye washes and safety showers.
Which **industrial gases** may be included?	Compressed and liquefied fuel gases, oxygen, acetylene, nitrogen, anhydrous ammonia and carbon dioxide.
What **emergencies** may be relevant to this standard?	Fire, hazardous releases, fuel spillage, gases, chemical spills, bomb threats, civil disorder, medical (e.g., bites, stings, epileptic fit, heart attack), road accidents, injury from machinery and equipment, fall, climbing accident, swimming or diving accident, snake bite or poisoning, respiratory or cardiac arrest, and electrocution, injuries, panic and other emotional responses, equipment failure, lost team or team member, result of environmental conditions (e.g., heat, cold, wet, snow, wind, lightning, bushfires, floods, high seas), and activity-specific.
Who may be classified as **relevant people**?	Managers, OHS officers, workplace first aiders, fire wardens, emergency service people, other external experts and consultants.
What types of **hazards** could this standard refer to?	Biological, chemical, mechanical, electrical, thermal, explosive, structural, climatic, psychological (e.g., critical incident stress), nuclear, proximity of other people, vehicles and machinery, fire, gas, fumes, electrical situations, security related and wildlife related situations.

What **injuries** might be relevant to this standard?	Shock, external bleeding, burns, limb, abdominal and pelvic injuries, head and neck injuries, poisoning, bites and stings, facial injuries and management of a casualty with chest pains, who is fitting, who is known to have diabetes and collapses, who is choking, who is drowning, who has a swollen neck, who has asthma, who is not breathing, who is suffering from overexposure, who is suffering from a chest injury, and/or who has been hit by a motor vehicle or injured by machinery and equipment.
Who may be classified as **others** in this competency standard?	Participants in an activity or program, colleagues, general public, small group or larger group, experienced or inexperienced personnel.
What might be classified as a **development of the situation**?	Spread of fire, threat to adjoining areas, danger of explosion, loss of communications and involvement of additional persons.
What **emergency reports and signals** are included?	Observation, verbal, emergency warning system, emergency alarm system, hand signals, verbal reports, telephone communications, radio communications and whistles.
What **emergency services** may be relevant to this standard?	Police Search and Rescue, State Emergency Service, Fire Brigade, Ambulance Service, Land Management Authorities (e.g., National Parks, Forestry) and Australian Volunteer Coastguard.
Who may be classified as **management authorities**?	Land and facility owners, city councils, local government authorities, national parks and forestry services, fisheries departments, agricultural producers, private land owners, crown land lessees, defence forces, Aboriginal communities, water authorities and utility agencies and commissions.
What **situation variables** may apply to this standard?	Capabilities of the group/clients, weather conditions, topography, time factors, human resources, available food and water, size of search area, distance from emergency response providers, delays in accessing emergency help, time of day, communications facilities and difficulties, and emotional and physical condition of casualties.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in responding to an emergency requires evidence that an individual has the skills and knowledge to recognise and respond to an emergency appropriately to a broad range of situations. The skills and knowledge required to respond to emergencies must be **transferable** to a range of work environments and contexts. For example, this could include different workplace environments, emergencies and situation variables.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below: - The use of safe working practices. - The emergency network. - Enterprise plan and evacuation procedures. - OHS legislative requirements and Codes of Practice. - Legal responsibilities and Duty of Care. - Use of communications equipment. - Organisational and legal policies and procedures in the event of an accident/incident. - Local call out procedures to access emergency services personnel. - Practical first aid skills using prepared and improvised materials. - Hazard identification, assessment and control.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: - Accurately evaluate the emergency. - Avoid/control escalation of the emergency. - Develop a plan of action decisively. - Efficiently implement a plan of action. - Render first aid care. - Deal with contingencies. - Communicate with others.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency

needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (2)** be applied?	Verbally including through communication systems.
2.	How can **information be collected, analysed and organised (2)**?	Observation and reporting to supervisor or appropriate authorities.
3.	How are **activities planned and organised (2)**?	According to Occupational Health and Safety practices and policies.
4.	How can **team work (2)** be applied?	Through reacting to emergency situations in a coordinated way.
5.	How can the use of **mathematical ideas and techniques (1)** be applied?	Determining pulse rates.
6.	How can **problem-solving skills (2)** be applied?	Identifying solutions to preserve life or counteract emergencies.
7.	How can the **use of technology (1)** be applied?	Use of communications equipment.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC4702A   Minimise risks in the use of chemicals

This competency standard covers the process of developing, implementing and monitoring a risk control strategy in a workplace where chemicals are being handled and used. It requires knowledge of legislation and regulations surrounding chemical use, the ability to develop and implement procedures to ensure minimum risk to users, the environment and the produce, and the ability to carry out a risk assessment.

NB: This competency standard may be deemed to have a time limit when used as part of an accreditation or licence to purchase or use chemicals.

Element		Performance Criteria	
1	Identify hazards involved in chemical use	1.1	**External guidelines and legislation** concerning **chemical** use are identified and sourced from relevant authorities.
		1.2	**Hazards** involved in handling and application of chemicals are identified.
2	Assess risk and develop control procedures	2.1	**Risks** associated with chemical use are assessed.
		2.2	Risk control measures including **Emergency** action plans are developed and implemented.
		2.3	Industry requirements for chemicals are identified.
		2.4	**Withholding periods** & **greenhouse re-entry periods** are identified and observed.
		2.5	**Control procedures** for transport, storage and handling of chemicals are developed.
		2.6	Continuous improvement strategy is implemented to minimise risk.
3	Implement and monitor procedures to ensure correct and safe use and application of chemicals	3.1	Appropriate **personal protective equipment** is provided for people in the workplace handling chemicals.
		3.2	Procedures are implemented to ensure suitable **application equipment** is selected and used.
		3.3	Restrictions on use of chemicals due to weather or unsuitable workplace activities are implemented.
		3.4	Procedures covering chemical application rates are implemented and monitored.
		3.5	Procedures for decontamination and disposal of chemicals and their containers are implemented and monitored.

		3.6	Adherence to risk control procedures by people in the workplace is monitored.
4	Record risk assessments	4.1	Record keeping system is developed as required by labels, industry, legislation and authorities.
5	Evaluate risk control measures	5.1	**Procedures for evaluating** the effectiveness of risk control measures are developed.
		5.2	Shortcomings in existing risk control measures are identified and rectified.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **external guidelines** and **legislation** may be relevant to this standard?	Guidelines may include Quality Assurance systems or Codes of Practice. Legislation may include Pesticide Acts, Occupational Health and Safety Acts regarding hazardous substances and application equipment, Dangerous Goods Act, Poisons Act or Protection of the Environment Acts.
What **chemicals** may be involved?	Chemicals may include insecticides, fungicides, herbicides, bactericides, viricides, algaecides, biologicals, nematacides, rodenticides, antimicrobial agents, anthelmintics, fumigants, hormone growth promotants or a range of veterinary chemicals used to treat animals for disease.
What **hazards** may be relevant to this standard?	Hazards will be listed on labels and the Material Safety Data Sheets (MSDS) for the chemical concerned and may include flammability, toxicity, health hazards, damage to non-target organisms, environmental damage or residues in foods.
What **risks** may be relevant to this standard?	Risks to environment may include pollution of ground or surface waters, damage to habitats, damage to off-target organisms, or damage to community amenity due to spray drift. Risks associated with the produce include chemical residue in plant produce, livestock or water. Risks associated with OHS include exposure to chemicals during handling and application, and public health risks. Other risks include lack of appropriate insurance coverage.

What **emergencies** may be relevant to this standard?	Emergencies may include spills, fire, explosion or poisoning.
What **withholding periods** may be relevant to this standard?	May include export slaughter interval or withholding period.
What **greenhouse re-entry periods** may be relevant to this standard?	May include legislative restraints or enterprise guidelines for greenhouse re-entry period. (i.e. re-entering greenhouse following spraying activities, etc)
What risk **control procedures** may be relevant to this standard?	May include provision of adequate personal protective equipment, storage facilities that are suitable to the chemical, implementing buffer zones and other sensitive site strategies, erecting bunding, and sufficient training in transporting, handling and storing chemicals.
What **personal protective equipment** may be relevant to this standard?	May include chemical resistant gloves, boots, overalls, breathing apparatus, goggles, face shields or hats.
What **application equipment** may be relevant to this standard?	Include knapsacks or hand held pneumatic sprayers, drench guns, spot on applicators, CDA and air assisted units, self-propelled sprayers, greenhouse spray trolleys, controllers or power operated equipment like boomsprays, pressure wands, jetting race, shower/plunge dips, hand jetting or air blast sprayer.
What **procedures for evaluating** are relevant to this standard?	May include analysing records to evaluate effectiveness of risk control measures.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Overall competence in this standard requires evidence that a person can act to minimise risks associated with chemical spills, ensuring that damage to environment and others is minimal, that safety precautions and regulations are followed at all times, and that the area is cleaned according to prescribed requirements. These skills must be **transferable** to other work contexts.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • Sources of information on chemicals, including labels,

regulations, and MSDS.

- Relevant industry standards, Codes of Practice, State and Territory legislation and regulations governing application, transport, handling and storage of chemicals.
- OHS legislative requirements and Codes of Practice.
- Insurances required for chemical use, transportation and storage.
- Correct wearing/fit of personal protective equipment.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: - Read and interpret all appropriate relevant chemical related documents. - Communicate procedures to others. - Manage chemical use to comply with industry standards.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Information from a range of sources concerning chemical use will be communicated to others.
2. How can **information be collected, analysed and organised (2)**?	Information on risks involved with chemical use will be collected and analysed to develop risk control measures.
3. How are **activities planned and organised (3)**?	Procedures developed to handle and use chemicals will have to incorporate workplace activities and their planning.
4. How can **team work (3)** be applied?	Team work may be involved in implementing and monitoring procedures.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Interpreting Maximum Residue Limits will involve mathematical techniques.
6. How can **problem-solving**	Assessing comparative risks associated with a variety

skills (3) be applied?	of chemicals will involve problem solving.
7. How can the **use of technology (2)** be applied?	Technology may be involved in developing and implementing procedures and monitoring outcomes.

What are the special assessment conditions for this competency standard?

Where this competency standard is being used as part of an accreditation or licence for purchase or use of chemicals, the assessor must meet the requirements of the issuing body. This may include:

1. Accreditation with that issuing body.
2. Maintenance of current competency in this competency standard.
3. Involvement in professional development programs comprising technical and legislative updates on an annual basis.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC4703A

Plan and implement a chemical use program

This competency standard covers the process of planning and implementing a program for the use of chemicals in a workplace. It involves using chemicals as well as supervising others in the use of chemicals concerned, and the ability to modify application requirements as needed. It involves decision making in regards to the risk control measures to be applied when using chemicals in different situations, monitoring safety procedures, and ensuring that others are trained sufficiently in the use of the chemical concerned. It involves the selection and management of chemical application systems.

NB: This competency standard may be deemed to have a time limit when used as part of an accreditation or licence to purchase or use chemicals.

Element		Performance Criteria	
1	Identify the requirements of chemical use	1.1	**Chemical** use requirements relevant to the workplace are accessed and interpreted.
		1.2	**Legalisation and safety procedures** surrounding the use of chemicals are accessed and interpreted.
		1.3	**Personal protective equipment** is used and provided to others for transport, storage and application of chemicals.
		1.4	Industry standards for chemical use are identified.
		1.5	Appropriate insurance policy cover is confirmed or arranged.
2	Monitor the implementation of safety requirements	2.1	Implementation of safety practices and rules by others is monitored.
		2.2	Safety incidents are investigated and reported in accordance with **directions, standards** and legislative requirements.
		2.3	Safety **hazards** in the transport, storage and application of the chemicals are identified.
		2.4	**Risk control measures** to minimise risk involved in chemical use.
		2.5	Measures for controlling residue in the environment and produce are implemented.
3	Plan and implement a maintenance program for	3.1	Plan for maintenance of application and personal protective equipment is established according to manufacturers instructions.

	chemical use equipment	3.2	Implementation of maintenance plan is supervised.
		3.3	Faulty or damaged equipment is identified and repaired or replaced.
4	Determine the suitability of a chemical for use in a control program	4.1	Integrated Pest Management (IPM) or Animal Health Strategy (AHS) is planned.
		4.2	Chemicals included in the IPM or AHS are selected according to situation.
		4.3	Alternatives to chemical treatments are considered and applied according to IPM or AHS.
5	Ensure the correct selection and application of the chemical	5.1	Chemicals suitable for **situation** are identified, and procedures for preparation, application and **risk control** are read and interpreted.
		5.2	**Application equipment** is selected in accordance with procedures.
		5.3	Ensure calibration of equipment is implemented according to directions and standards.
		5.4	Pre-operative checks and maintenance procedures are implemented.
		5.5	**Meteorological conditions** are assessed as appropriate to application prior to and during chemical application.
		5.6	Chemical application is conducted safely in accordance with hazards associated with the chemicals concerned.
		5.7	Chemical spills or accidents are dealt with according to procedures.
6	Ensure personnel are adequately trained in chemical use	6.1	Training is provided to personnel who are handling or using chemicals.
		6.2	**External training and assessment** opportunities are organised for staff involved in using chemicals.
7	Supervise clean up following chemical application	7.1	Clean up procedures are implemented following chemical applications.
8	Implement recording systems for chemical storage and use	8.1	Records comply with legislation and regulations surrounding chemical use.
		8.2	Risk assessment and control strategies are recorded in accordance with requirements.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **chemicals** may be relevant to this standard?	Chemicals may include insecticides, fungicides, herbicides, bactericides, viricides, algaecides, biologicals, nematacides, rodenticides, fumigants, antimicrobial agents, anthelmintics, hormone growth promotants or veterinary chemicals.
What **legislation and safety rules** may be relevant to this standard?	May include approved Pesticide Acts, OHS Acts regarding hazardous substances and application equipment, Dangerous Goods Act, Poisons Act or Protection of the Environment Acts for chemical use.
What **personal protective equipment** may be relevant to this standard?	May include boots, overalls, chemical resistant gloves, aprons, face shields, respirators and hats.
What **directions and standards** are relevant to this standard?	May include the instructions on the chemical label, in an operator's manual, on a Material Safety Data Sheets (MSDS), in an industry standard, from an OHS manual or other regulation, or a hazardous substances regulation.
What **hazards** may occur in the use of chemicals?	Hazards will be listed on labels and the MSDS for the chemical concerned and may include flammability, toxicity, health hazards, damage to non-target organisms, environmental damage, off target spray drift or residues in foods.
What **risk control measures** may be implemented and monitored as part of this standard?	Risk control measures that may be implemented include those relating to spillage, fire, contact of chemical with skin or eyes, accidental ingestion, incorrect concentrations in mixtures, awareness of greenhouse re-entry periods, faulty or inappropriate storage containers, current insurance policies, likelihood of run-off post application, incorrectly calibrated equipment, spray drift, incorrect disposal of waste chemicals or faulty equipment.
What **situation** may be relevant to this standard?	Situation may include weeds, insects, pathogens, and vertebrate animals.

What **application equipment** may be relevant to this standard?	May include hand held knapsacks or pneumatics, drench guns, spot on or power operated equipment like boomsprays, greenhouse spray trolleys, pressure wands or air blast sprayer, jetting race, hand jetting and shower/plunge dips.
What **meteorological conditions** might be assessed?	Rain, wind, temperature, relative humidity, radiation (light), inversion or stable air conditions.
What **external training and assessment** may be relevant to this standard?	Training may include formal training and assessment by a Registered Training Organisation (RTO) either on or off the job, or Recognition of Prior Learning process.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Overall competence in this standard requires evidence that a person can not only select, apply and clean up the application of a specific chemical, but also that they can supervise others working with the chemical, ensure that all prescribed safety directions are followed, and monitor the implementation of the systems and procedures developed for chemical concerned. The skills and knowledge in this standard should be **transferable** to other work contexts.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Hazards involved in the use of the specific chemical concerned and related risk control measures.
	• Signs of pest damage and signs of beneficial organisms.
	• Life cycle of pests and target stages.
	• Pest resistance to chemicals.
	• Types of chemical and modes of action.
	• Maximum residue limits.
	• OHS legislative requirements and Codes of Practice relevant to chemical use and hazardous substances.
	• Application equipment features.
	• Calibration.
	• Knowledge of record keeping systems.
	• Knowledge and understanding of relevant control of use Acts.
	• Use, maintenance and storage of personal protective equipment.

- Correct wearing/fit of personal protective equipment.
- First aid and emergency procedures.
- Insurances required for chemical use, transportation and storage.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • Access, accurately read and interpret conditions and labels information for chemicals. • Communicate critical chemical information to others and ensure understanding. • Direct others to perform tasks. • Identifying hazardous situations.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Procedures, policies and safety information are communicated to others in the workplace.
2. How can **information be collected, analysed and organised (3)**?	Information on labels, MSDS and legislation need to be interpreted and analysed.
3. How are **activities planned and organised (3)**?	Overall organisation management will require activities to be planned in conjunction with chemical use.
4. How can **team work (3)** be applied?	Working with others, internal and external to the organisation, requires teamwork.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Calibration and calculation of equipment and chemicals requires mathematical techniques.
6. How can **problem-solving skills (2)** be applied?	Identifying hazards and potential problems that may arise during chemical use and developing suitable solutions and risk control measures.

7. How can the **use of technology (2)** be applied?	Technology may be required to record and manage chemical information.

What are the special assessment conditions for this competency standard?

Where this competency standard is being used as part of an accreditation or licence for purchase or use of chemicals, the assessor must meet the requirements of the issuing body.

This may include:

1. Accreditation with that issuing body.
2. Maintenance of current competency in this competency standard.
3. Involvement in professional development programs comprising technical and legislative updates on an annual basis.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

Certificate 4 in Production Horticulture (CEH) Controlled Environment Horticulture

RTF4004A	Develop a plant nutrition program
RTF4023A	Promote plant health
RTC4306A	Supervise maintenance of machinery and equipment
RTC4701A	Implement and monitor the enterprise OHS program
RTC4908A	Supervise work routines and staff performance
RTE4002A	Develop a crop regulation program
RTE4012A	Supervise horticultural product harvesting
RTE4609A	Implement, monitor and adjust irrigation schedules
RTE4913A	Analyse and interpret production data
RTE4915A	Implement and monitor quality assurance procedures
RTE5012A	Manage a controlled growing environment
RTE5702A	Develop and manage a chemical use strategy

RTF4004A   Develop a plant nutrition program

This competency standard covers the process of developing a plant nutrition program in the horticultural or agricultural industry. Planning requires consideration of site factors, plant species requirements, soil/substrate and plant tissue analysis, nutrient application procedures, and monitoring OHS hazards and environmental impacts.

Developing a plant nutrition program is likely to be undertaken without supervision, with only general guidance on progress by managers. Responsibility for and limited organisation of the work of others involved in the program may be required. Developing a plant nutrition program requires a broad range of skills and involves the application of extensive knowledge including plant biology, plant nutrition requirements, and soil/substrate and other growing systems.

Element		Performance Criteria	
1	Determine changes required by performing soil/substrate and plant testing	1.1	Appropriate **soil/substrate and plant tests** are determined according to the requirements of the plant species, climatic conditions, prevailing **growth media** and plant conditions, industry best practice, and enterprise guidelines.
		1.2	A soil/substrate and plant testing program is developed which defines field or greenhouse and off-site testing activities, task responsibilities, involvement of contractors, scheduling, and desired information outcomes.
		1.3	Testing tasks are implemented and monitored, liaison procedures with outside testing agencies are supervised, and remedial action is undertaken where necessary.
		1.4	Data and readings are compiled and presented in a form that can be easily read and interpreted.
		1.5	Seasonal issues are determined from published data on the species, historical records, own experience, industry best practice and enterprise guidelines.
		1.6	Nutritional status of the **plant species** is determined by analysing collected data and comparing to accepted standards.

2	Identify the requirements of a plant nutrition program	2.1	The plant nutrition program is developed to achieve the appropriate plant condition according to the enterprise production plan.
		2.2	The different nutritional requirements during a **range of conditions** over the growing cycle of the plant are identified according to published data on the species, historical records, own experience, and enterprise guidelines.
		2.3	**Resources, tools, equipment and machinery** required for the plant nutrition program are identified, costed, and availability confirmed with suppliers, contractors and appropriate personnel.
		2.4	The most cost-effective approach to **applying** the required nutrients is determined.
		2.5	**OHS hazards** associated with the implementation of the plant nutrition program are identified, risks assessed and **controls** developed according to enterprise guidelines, costed and documented in the plan.
		2.6	**Environmental implications** of the plant nutrition program are identified and documented in the plant nutrition program.
3	Prepare and document the plant nutrition program and specifications	3.1	Detailed plan, specifications and quotation are prepared based on the requirements of the program and presented to management for acceptance.
		3.2	Detailed on-site procedures and schedules required for the plant nutrition program are developed and documented.
4	Monitor the plant nutrition program	4.1	Implementation of the program is monitored by soil/substrate and plant testing to ensure requirements of the enterprise production plan are achieved.
		4.2	The nutrition program is reviewed and monitored to ensure it remains responsive to changing conditions.
		4.3	Appropriate courses of action are implemented to alleviate or overcome identified shortcomings in the program.
		4.4	**Remedial action** undertaken is documented and reported to management according to enterprise policy.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What **soil/substrates and plant tests** may be conducted as part of a plant nutrition program?	These may include on-site and off-site testing of growth media to determine physical characteristics such as colour, texture, structure, depth of rootzone and depth of watertable, and chemical characteristics such as pH, salinity (EC), nutrient, water and carbonate content, and testing the nutrient status of plants through plant tissue and nutrient drainage testing.
What **growth media** may be appropriate to this standard?	Growth media may include soil/substrate sites of existing planted areas, new areas to be planted, water (hydroponics), and other substrates.
What **plant species** may be included in a plant nutrition program?	Plant species may include tree, shrub and ornamental plant species, fruit, vegetables, herbs, flowers, foliage, bulbs, tubers, nuts, mushrooms, wild harvest and oil crops, containerised, field planted and stock specimens, indigenous and exotic species and varieties, pasture plants and turf species.
What **range of conditions** may affect crop nutrition?	Conditions may include weather, seasonal influences, growth media characteristics, crop load, cropping and fertiliser history, irrigation methods and scheduling, spraying program, and soil/substrate management practices.
What **resources** may be required for soil/substrate and plant treatments?	Physical resources may include materials to modify soil/substrate pH, soil/substrate ameliorants to improve soil/substrate fertility, and fertilisers to meet the nutritional requirements of plants.
	Human resources may include paid labour, contractors, suppliers and consultants.
What **tools, equipment and machinery** may be required for the implementation of the plant nutrition program?	Tools, equipment and machinery may include a hand or powered auger, backhoe, pH test kit or electronic pH testing device, hand held salinity or EC meter, tape measure, sample bags, plastic overlays, drain trays, aerial photographs, charts and tables of soil/substrate characteristics and plant soil/substrate parameters, as well as charts and illustrations of the symptoms of plant nutrient deficiencies and toxicities.
	Application equipment and machinery may include backpack spray equipment, tractors and trailed or 3 point linkage spreaders, seeders, rippers and spray equipment, pumps and pump fittings, and irrigation systems set up

	for fertigation. (inc greenhouses fertigation batching systems).
What methods of **applying** nutrients may be used?	Nutrient application methods may include banding, broadcasting, ripping, spraying and fertigation.
What **OHS hazards** may be identified as part of the plant nutrition program?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, air-, soil/substrate- and water-borne micro-organisms, working at heights, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, and slippery and uneven surfaces.
What **controls** may be introduced to minimise the risk of **OHS hazards**?	Controls should be introduced according to enterprise OHS policies and procedures and may include identifying hazards; assessing and reporting risks; cleaning, maintaining and storing tools, equipment and machinery; appropriate use of personal protective equipment including sun protection; safe operation of tools, equipment and machinery; safe handling, use and storage of chemicals and hazardous substances; correct manual handling; appropriate use of safety equipment such as signage and protective barriers; basic first aid available on site; personal hygiene, and reporting problems to supervisors.
What **environmental implications** may be associated with the implementation of a plant nutrition program?	Over-spraying or run-off into the external environment may result in nutrient overload or excess water to native plants, natural waterways, watertables and ecosystems, water erosion, water logging and salinisation. Beneficial impacts may include the minimisation of nutrient run-off and toxic side effects in soil/substrate and surrounding environment, from improved assessment and targeting of nutrient requirements, application techniques and rates, and the reduction of toxic side effects of applied nutrients in the crop plants. Responsible fertilisation and watering practices may help to reverse previous environmental degradation by allowing natural recovery and regeneration of native ecosystems.
What **remedial action** may be undertaken to improve plant nutrition?	Remedial action may include adjustments to irrigation scheduling and nutrient application rates and methods, the use of foliar sprays, and changes to soil/substrate management practices.

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in developing a plant nutrition program requires evidence that a person can analyse site factors, select suitable nutritional materials, determine techniques, resources and equipment for the application of nutritional materials, and prepare implementation plans, specifications and associated documents.

The skills and knowledge required to develop a plant nutrition program must be **transferable** to a different work environment. For example, this could include different workplace procedures, plant types and nutritional requirements.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• the relationship between growth media characteristics and the availability of nutrients, including macro and micro elements, to plants
	• the principles of fertigation batching for greenhouse systems
	• methods of nutrient uptake by plants and favourable conditions for the effective nutrient uptake by plants
	• nutrient cycling and its practical relevance to the specific plants and soil/substrates used in the enterprise
	• nutrients required by plants grown within the enterprise and the affects of nutrient deficiency and toxicity on individual plant species and varieties, including visual symptoms
	• the characteristics of soil/substrate and other growth media types, uses and additives to enhance the available nutrition for specific crops
	• soil/substrate ameliorants commonly required to treat the soil/substrate problems experienced by the enterprise
	• the main simple and compound fertiliser products available to the enterprise including analysis, solubility, salt index, application rates and costs
	• site evaluation techniques including methods of analysing soil/substrates and other growth media.
	• The impact of irrigation strategies on substrates and root-zone solutions

	The impact of nutritional management strategies in both 'open' and 'closed' greenhouse systems
	• practical understanding of the environmental issues associated with selecting nutritional materials, implementing a plant nutrition program, and the need to comply with legislation and ensure that the impact on the environment is minimal
	• OHS hazards associated with implementing a plant nutrition program and the controls necessary to remove or minimise associated risks
	• processes and techniques for preparing, costing and documenting a plant nutrition program.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• communicate and negotiate orally and in writing with the staff, managers, contractors and consultants
	• conduct literature and consultative research, and collate and analyse findings on plant nutritional requirements, the nutrients available from soil/substrates and other growth media, and the environmental implications of the program
	• record all relevant information according to enterprise and industry standards
	• comply with legislative requirements
	• document plans, specifications and work procedures, and write reports for the understanding of staff, managers and contractors
	• calculate the cost and spatial and logistical requirements of components of the plant nutrition program.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of**	Results of the analysis of plants and growth media,

ideas and information (3) be applied?	nutritional requirements, and selection of resources and equipment should be communicated with the manager orally and in writing. There is likely to be negotiation between the developer of the nutrition program and the manager to achieve the program objectives.	
2. How can **information be collected, analysed and organised (3)**?	Information will need to be obtained from test results, research, and/or suppliers of nutritional materials and plants. Information obtained about the specific nutritional requirements of plants should be analysed and outcomes discussed with the manager and other members of the work team. Information about the nutrition program should be organised and presented as a site plan, documented plans, written work procedures, a timeline chart, and schedules for implementation activities.	
3. How are **activities planned and organised (3)**?	The planning process should proceed in an orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. The plant nutrition program should reflect the activities required to implement the program.	
4. How can **team work (3)** be applied?	Developing a plant nutrition program will involve working with other members of a team to achieve the program objectives.	
5. How can the use of **mathematical ideas and techniques (3)** be applied?	Mathematical concepts will be required to measure quantities, distances, depth and calculate areas, resources, costs, ratios, scales and application rates.	
6. How can **problem-solving skills (3)** be applied?	Problems relating to testing, the nutritional requirements of plants, nature of the site, availability of resources, tools, equipment and machinery, costs, environmental issues and monitoring of the program may arise during development of the plant nutrition program and require remedial action.	
7. How can the **use of technology (3)** be applied?	Technology will be required to record, store and communicate ideas and information. It will also be used to research relevant information, obtain and analyse data from site evaluation tests, and to produce the plant nutrition program.	

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other

competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTF4023A   Promote plant health

This competency standard covers the process of promoting and maintaining plant and crop health.

Promoting plant health is likely to be undertaken without supervision, with only general guidance on progress by managers. Responsibility for and limited organisation of the work of others involved in the promotion and maintenance of plant health may be required.

Promoting plant health requires a broad range of skills and requires the application of extensive knowledge about weed, pest and disease recognition and control, irrigation systems and scheduling, soil/substrate management practices, and plant nutrition requirements.

Element		Performance Criteria	
1	Monitor factors that influence plant health	1.1	The **plant species** is identified to the lowest taxonomic level, and its region of origin stated.
		1.2	The seasonal growth stages of the plant are determined.
		1.3	Day to day cultural practices used on each horticultural species are recorded according to enterprise guidelines.
		1.4	Characteristics of the **growing environment** that affect the growth of a specific plant species are determined.
		1.5	Climatic data and environmental growing conditions are recorded according to enterprise guidelines.
		1.6	The presence (or numbers) of beneficial organisms is recorded according to enterprise guidelines.
2	Diagnose plant health problems	2.1	Environmental and cultural factors that predispose plants to attack by **pests and diseases** are identified.
		2.2	The symptoms and signs of commonly occurring plant health problems in selected species are identified using accepted nomenclature.
		2.3	The severity and extent of the problem in a plant species are assessed.
		2.4	Observations are compared with published data, historical records, own experience, and enterprise guidelines.
		2.5	The possible causes of the plant health problem are determined.

		2.6	A decision is made as to when the complexity or severity of the problem or rapid onset requires specialist consultation, and plant or soil/substrate specimens are sampled and dispatched for professional diagnosis according to enterprise guidelines.
		2.7	**Plant disorders and problems** are recorded and reported according to enterprise guidelines.
3	Remedy plant health problems	3.1	A **weed**, pest and disease **control program** is formulated according to the enterprise Integrated Pest Management (IPM) strategy and production plan.
		3.2	**Resources, tools, equipment and machinery** required for work activities to promote plant health are identified, costs/benefits analysed, and availability confirmed with suppliers, contractors and appropriate personnel.
		3.3	**OHS hazards** associated with work activities to promote plant health are identified, risks assessed and **controls** developed according to enterprise policy.
		3.4	A range of **modifications to growing conditions** that could be considered in a specific situation are identified.
		3.5	Modifications to growing conditions for a specific plant species are selected and implemented, having regard to cost of damage, marketing requirements and **sustainable horticultural practices.**
4	Evaluate treatment programs	4.1	Plants are monitored during treatment.
		4.2	Appropriate data is recorded according to enterprise guidelines.
		4.3	Observations are compared to expected results.
		4.4	Modifications to the treatment program are documented and recommended to management according to enterprise policy.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What **plant species** may be appropriate to this standard?	Plant species may include tree, shrub and ornamental plant species, fruit, vegetables, herbs, flowers, foliage, bulbs, tubers, nuts, mushrooms, wild harvest and oil crops, greenhouse & containerised, field planted and stock specimens, indigenous and exotic species and varieties, and turf species.
What characteristics of the **growing environment** may affect plant health?	Characteristics may include soil/substrate, nutrition, light exposure, water, humidity, temperature, wind, and weed, pest and disease populations.
What **pests and diseases** may be relevant to this standard?	Pests and diseases may include insects, viruses, bacterial or fungal diseases, mites and nematodes.
What **plant disorders and problems** may be relevant to this standard?	These may include any damage or deficiency caused by physical, biological, chemical, cultural or environmental agents.
What **weeds** may affect plant health?	Weeds include those plants occurring regionally, statewide or nationally that may present a high risk to the enterprises production, presentation or business goals.
What procedures may be included in a **control program** to promote plant health?	Control procedures may include chemical controls, greenhouse climate controls, biological controls, cultural methods and Integrated Pest Management.
What **resources** may be required to promote plant health?	Physical resources may include materials to modify soil/substrate pH & EC, soil/substrate ameliorants to improve soil/substrate fertility, fertilisers to meet the nutritional requirements of plants, and weed, pest and disease control materials. Human resources may include paid labour, contractors, suppliers and consultants.
What **tools, equipment and machinery** may be required to promote plant health?	Tools, equipment and machinery will vary widely to enable the implementation of soil/substrate and plant monitoring, weed, pest and disease control, irrigation and scheduling, application of nutrients, soil/substrate management, canopy management, controlled environments, data collection, analysis and recording.
What **OHS hazards** may be relevant to this standard?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, air-, water- and soil/substrate-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, working from heights, moving vehicles, machinery and machinery parts, and slippery and uneven surfaces.

What **controls** may be introduced to minimise the risk of **OHS hazards**?	Controls should be introduced according to enterprise OHS policies and procedures and may include identifying hazards; assessing and reporting risks; cleaning, maintaining and storing tools, equipment and machinery; appropriate use of personal protective equipment including sun protection; safe operation of tools, equipment and machinery; safe handling, use and storage of chemicals and hazardous substances; correct manual handling; appropriate use of safety equipment such as signage and protective barriers; basic first aid available on site; personal hygiene, and reporting problems to supervisors.
What **modifications to growing conditions** may be employed to promote plant health?	Modifications to growing conditions may include Regulated Deficit Irrigation, canopy management, controlled environments, soil/substrate cultivation, nutrition programs, soil/substrate ameliorants, and cover crops. Controlled environments may include: CO_2 enrichment, venting, heating, misting/fogging, humidity and VPD, radiation levels and screens, HAF Fans and climate management computers.
What **sustainable horticultural practices** may be considered when promoting plant health?	These may include horticultural practices which minimise detrimental environmental impacts (i.e. closed greenhouse systems) and optimise beneficial environmental impacts, such as IPM, targeted, irrigation and nutrition techniques, the minimisation of weed dispersal into the surrounding environment through effective weed control within the enterprise, and consideration of non-chemical products and/or cultural alternatives for pest control and plant nutrition.

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in promoting plant health requires evidence that a person is able to recognise and monitor the factors affecting plant health, diagnose plant health problems, implement suitable remedies and evaluate their effectiveness.

The skills and knowledge required to promote plant health must be **transferable** to a different work environment. For example, a person who can differentiate between pest and disease and nutrient associated symptoms in specific plant species, and implement treatment programs to

remedy the diagnosed health problems, should be able to develop a plant nutrition program and implement an IPM program within the same enterprise or after induction to a new workplace.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

- taxonomic descriptions, horticultural function, cultural and growth requirements, and target growth and performance characteristics of specific horticultural plants for the achievement of enterprise production and business plans
- plant nutrition issues associated with the growth media used, and horticultural region for specific plant species
- weeds, pests and disease detection methods, taxonomic identification, life cycle stages and characteristic symptoms for the specific horticultural plants of the enterprise
- chemical, cultural and biological control methods included in the IPM strategy of the enterprise
- chemical use, toxicity and compatibility with target plants, growth media, and environmental characteristics of the horticultural region
- sustainable horticultural practices relevant to the enterprise and/or horticultural region
- evaluation procedures, including cost/benefit analysis, for plant and growth media treatments in relation to plant health, enterprise budget and performance targets
- enterprise and industry record keeping and reporting policies and requirements
- OHS hazards associated with activties to promote plant health and the controls necessary to remove or minimise risks associated with them.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- communicate orally with staff, supervisors, contractors, suppliers and consultants
- research information about plant health problems, their diagnosis and remedial treatments available
- document plans and write reports for the understanding

of staff, supervisors and contractors

- calculate the cost and spatial and logistical requirements of components of the plant health program
- record all relevant information according to enterprise and industry standards
- comply with legislative requirements
- comply with OHS requirements of the workplace.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Proforma documentation and oral consultation procedures may be used to communicate with the manager, other team members, suppliers, contractors and consultants, about plant health requirements, analytical results, product selection, scheduling and treatment evaluation.
2. How can **information be collected, analysed and organised (3**)?	Information will need to be obtained from test results, research and/or suppliers of treatment materials and plants. Information addressing the specific requirements for plant health should be analysed and outcomes discussed with the manager, other team members, suppliers, contractors and consultants. Information about treatment activities should be organised and presented as written work procedures, with a timeline chart and schedules for the plant health program.
3. How are **activities planned and organised (3)**?	Organisation of self and others will be required to deliver timely and appropriate information from initial analytical activities to decision-making about causes, resources, treatments and their evaluation.
4. How can **team work (3)** be applied?	Work activities to monitor and maintain or improve plant health will involve working with other members of a team to achieve the desired outcomes.
5. How can the use of **mathematical ideas and**	Mathematical concepts will be required to measure quantities, distances, depth, and calculate areas,

techniques (3) be applied?	resources, costs, ratios and application rates.
6. How can **problem-solving skills (3)** be applied?	Problems relating to testing, the plant symptoms presented, the health requirements of plants, nature of the site, analytical and treatment techniques, availability of resources, tools, equipment and machinery, costs, environmental issues, and monitoring of the treatment program may arise during the promotion of plant health and require remedial action.
7. How can the **use of technology (3)** be applied?	Technology will be required to record, store and communicate ideas and information. It will also be used to research relevant information, obtain and analyse data from testing and treatment evaluation procedures, and apply treatments.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTC4306A   Supervise maintenance of machinery and equipment

This competency standard covers the functions involved in supervising the maintenance of property, machinery and equipment. It requires the application of skills and knowledge to develop and implement a maintenance plan which is cost efficient, and causes minimal disruption to enterprise operations. It involves determining and scheduling staff and resources and maintaining relevant legislative requirements, safe workplace and positive environmental practices. The work functions in this standard are likely to be carried out independently within enterprise guidelines.

Element		Performance Criteria
1	Prepare maintenance plan	1.1 **Maintenance requirements** for property, machinery and equipment are identified from relevant **information sources.**
		1.2 Maintenance costs are identified and quantified.
		1.3 Maintenance requirements are checked against warranty, insurance agreements and indemnity provisions.
		1.4 **Maintenance plan** is developed to promote and sustain performance and production systems in line with **enterprise requirements.**
		1.5 Effective workplace communication strategies are established with regard to maintenance plan, **environmental and OHS policies,** and enterprise requirements.
2	Implement maintenance plan	2.1 **Resource and supply** requirements are identified, secured and included in enterprise budgets and operational considerations.
		2.2 Prepared maintenance schedules and procedures are effectively communicated to staff, contractors and suppliers to minimise negative impacts on production and costs.
		2.3 Maintenance plan is implemented and scheduled to minimise disruption to enterprise operations.
		2.4 Potential risks are assessed with regard to staff and supply problems, and contingency plans prepared accordingly.
		2.5 Machinery and equipment are operated to manufacturers specifications, OHS and enterprise requirements.

3	Monitor maintenance plan	3.1	Maintenance activities and performance are monitored against maintenance plan for efficiency and effectiveness.
		3.2	Workplace **hazards** and environmental implications associated with maintenance procedures are monitored and controlled in line with OHS and enterprise requirements.
		3.3	Costs are monitored and controlled within enterprise budget requirements.
		3.4	**Relevant information** with regard to the maintenance plan is documented in accordance with enterprise requirements.
		3.5	Property, machinery and equipment are maintained in clean and safe operational conditions.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work situations available.

What factors may necessitate the **requirement for maintenance** procedures?	Wear, corrosion, design problems, equipment modifications, calibration schedules, incorrect use and accidents, acts of nature.
What **information sources** may be consulted?	Operational diaries, calibration schedules, staff comment and/or personal testing, observation of structures, machinery and equipment, manufacturers in-service updates, operator's manuals, property improvement groups, relevant government departments, other enterprise operators, contractors and service representatives.
What might be included in a **maintenance plan?**	Maintenance activities and schedules, maintenance costs and budget details, staff, resource and supply requirements, staff roles and responsibilities, enterprise production schedules, contingency plan for staff and supply problems, reporting requirements, hazard and risk control measures, OHS procedures, personal protective clothing and equipment requirements, and environmental impact control measures.

What **enterprise requirements** may be applicable to this standard?	Standard Operating Procedures (SOP), industry standards, production schedules, Material Safety Data Sheets (MSDS), legislative and licensing requirements, work notes, product labels, manufacturers specifications, operator's manuals, enterprise policies and procedures (including waste disposal, recycling and re-use guidelines), and OHS procedures.
What environmental impacts may be addressed in enterprise **environmental** policies?	Environmental impacts resulting from excessive noise and exhaust emissions, damage to native vegetation and animals, the unsafe use and disposal of maintenance debris (oil containers, chemical residues), and hazardous substances (fuel, oils). It may also include dust problems, soil/substrate disturbance and increased run-off flows from machinery use and unsafe cleaning and servicing activities.
What **OHS requirements** may be relevant to this standard?	Systems and procedures for the safe maintenance of property, machinery and equipment including hydraulics and exposed moving parts. Hazard and risk assessment of workplace and maintenance activities and control measures. Safe lifting, carrying and handling techniques including manual handling, and the handling and storage of hazardous substances. The appropriate use, maintenance and storage of personal protective clothing and equipment which may include overalls, gloves, eye and hearing protection, respirator or face mask and boots. Safe systems and procedures for outdoor work including protection from solar radiation, fall protection, confined space entry, the protection of people in the workplace, and the appropriate workplace provision of first aid kits and fire extinguishers.
What may be included in **resource and supply** provisions?	Machinery, equipment and materials including welders (arc, gas and MIG), lathes, bench presses, trolleys, multimeters and ohm meters, inspection pits, lifting and support equipment (jacks, overhead gantry, blocks), power tools (grinders, drills), hand tools (spanners, hammers, screw drivers). Workshop storage requirements may include racks for commonly used steel angle, rods, tube metal, wire, racks or boards for orderly placement of tools.

What **hazards** may be encountered in the workplace?	Exposure to loud noise and fumes, solar radiation, dust, mechanical vibration, and hazardous substances (fuel, oils), hazardous atmosphere, oil and grease spills, the presence of bystanders, working at heights, livestock and wildlife in the workplace, adverse weather conditions, electricity, powerlines, mechanical malfunctions and other machinery including hydraulics and exposed moving parts.
What **relevant information** may be documented?	This may include maintenance performance, costs, problems, priorities, solutions, schedules and completed work.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in supervising maintenance requires the ability to supervise maintenance covering all components of planning, costing and scheduling. It requires the ability to determine planning priorities and maintain schedules, overseeing costs within budgets, determine staff roles and supervise a maintenance team, apply estimations and calculations with regard to time and costs of repairs, replacement and servicing procedures, recommend alternative strategies in the event of staff or supply problems, and monitor and maintain maintenance records. Evidence must also be demonstrated in the employment of safe and environmentally responsible workplace practices. The skills and knowledge required must be **transferable** to a different work environment. For example, if competence is evident in maintenance procedures conducted on machinery in a workshop context, it must also be evident in supervising maintenance on a different property, or different machinery and equipment.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • Types of maintenance requirements with regard to property, machinery and equipment. • Maintenance and servicing cycles for property, machinery and equipment. • Relevant State/Territory legislation, regulations and Codes of Practice with regard to workplace OHS and environmental protection requirements, and the use and control of hazardous substances. • Hazards and risks and respective control measures. • Training and instruction techniques for directing the

	learning of staff.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- Plan, cost and schedule maintenance requirements
- Establish and monitor performance targets for maintenance team.
- Maintain accurate record and report keeping procedures.
- Monitor and assess performance of maintenance activities.
- Interpret maintenance requirements from information sources.
- Observe the emergence and supervise the removal of workplace hazards and risks.
- Document plans and write reports.
- Estimate and calculate resources requirements, machinery and servicing costings.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (1)** be applied?	Ideas and information with regard to maintenance requirements and costings may be discussed with staff, contractors and suppliers.
2. How can **information be collected, analysed and organised (1)**?	Information with regard to the performance and outcomes of maintenance activities may be documented and organised by records.
3. How are **activities planned and organised (2)**?	Maintenance activities may be planned and coordinated with staff around enterprise operations.
4. How can **team work (1)** be applied?	Team work may be applied in the coordination of methods and procedures to monitor and conduct maintenance activities to achieve maintenance plan.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical techniques may be applied to estimate and calculate maintenance and repair costings within budgetary guidelines.
6. How can **problem-solving**	Problems of staff, resources or supply may be

skills (2) be applied?	planned for and prepared in a contingency plan to minimise disruption to work schedules.
7. How can the **use of technology (1)** be applied?	To access information, communicate, monitor, measure and record information with regard to maintenance activities and performance.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC4701A   Implement and monitor the enterprise OHS program

This competency standard covers the process of implementing and monitoring the enterprise OHS program. It requires the ability to provide information to the work group about OHS, facilitate the participation of workers, implement and monitor enterprise procedures for identifying hazards and assessing and controlling risks, dealing with emergencies and hazardous events, and maintain occupational health and safety records. Implementing and monitoring the enterprise OHS program requires knowledge of hazards in the workplace, relevant OHS legislation and Codes of Practice, risk control measures, hierarchy of risk control, and relevant enterprise management systems and procedures.

Element		Performance Criteria	
1	Provide information about occupational health and safety	1.1	Relevant provisions of OHS legislation and Codes of Practice are accurately and clearly explained to the work group.
		1.2	Information on enterprise OHS policies, procedures and programs is provided in a readily accessible manner, and is accurately and clearly explained to the work group.
		1.3	Information about identified **hazards** and the outcomes of risk assessment and control procedures is regularly provided, and is accurately and clearly explained to the work group.
2	Facilitate the participation of workers in OHS observance and decision-making	2.1	Enterprise procedures for consultation over OHS issues are implemented and monitored to ensure that all members of the work group have the opportunity to contribute.
		2.2	Procedures whereby workers report OHS hazards, risks are assessed and action taken to **control risks**, are clearly described to the work group.
		2.3	Issues raised through consultation are dealt with and resolved promptly, or referred to the appropriate personnel for resolution in accordance with workplace procedures for issue resolution.
		2.4	The outcomes of consultation over OHS issues are promptly communicated to the work group.

3	**Implement and monitor** enterprise procedures for identifying hazards and assessing and controlling risks	3.1	Existing and potential hazards which are identified are reported so that adequate risk assessment and effective control measures are implemented.
		3.2	Work procedures to control OHS risks are implemented by the work group and regular monitoring occurs to ensure ongoing adherence and effectiveness of risk control.
		3.3	Inadequacies in existing risk control measures are identified in accordance with the **hierarchy of control,** and reported to designated personnel/management.
		3.4	Inadequacies in allocation of resources to ensure safe work practice are identified and reported to management.
		3.5	Existing risk control measures are monitored and results reported regularly in accordance with workplace procedures.
4	Implement workplace procedures for dealing with emergencies and hazardous events	4.1	Workplace procedures for dealing with OHS emergencies are implemented where necessary to ensure that prompt and **effective control** action is taken.
		4.2	OHS emergencies are **reported** in accordance with established enterprise procedures.
		4.3	Control measures to prevent recurrence and minimise risk of emergencies and hazardous events are implemented based on the hierarchy of control, or alternatively, referred to designated personnel for implementation.
5	Implement and monitor enterprise procedures for providing OHS training	5.1	OHS induction and training needs are identified accurately, specifying the gaps between OHS competencies required and those held by the work group.
		5.2	Arrangements are made for meeting identified OHS training needs in both on and off-the-job training programs in consultation with relevant parties.
6	Implement and monitor enterprise procedures for maintaining occupational health and safety records	6.1	OHS records for work area are accurately and legibly completed in accordance with workplace requirements for OHS records, and legal requirements for the maintenance of records of occupational hazards, risk control, injury and disease events.
		6.2	Aggregate information from OHS records is used to identify hazards and monitor risk control procedures within work area according to enterprise procedures and within scope of

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

Which **hazards** may be relevant to this unit?	Hazards in the workplace (e.g., uneven surfaces, confined spaces, heights, heating pipes), hazardous manual handling tasks, hazards associated with machinery, risks associated with plants and animals, risks associated with bystanders, plants, animal and the environment, levels of health and fitness, hazards for which personal protective clothing or equipment is required.
What methods to **control risks** may be included?	General duty of care, requirements for maintenance and confidentiality of records of occupational injury and disease, requirements for records relating to hazardous substances in the workplace, confined space entry, fall protection, workplace inspections for hazards, personal protective equipment, provision of information and induction and training, regulations and Codes of Practice including those relating to plant, hazardous substances, manual handling, noise, issue resolution, health and safety representatives and occupational health and safety committees in the larger enterprises.
What may be included to **implement and monitor** enterprise procedures?	Supervision of the application of occupational health and safety principles and conformity with relevant legislation and Codes of Practice in each state, incident investigations, regular inspections, training records, accident and dangerous occurrence record analysis including the duties and responsibilities of all parties.
What does **hierarchy of control** refer to?	The preferred order of risk control measures.
What protocols may be involved in **reporting** a major incident?	Supervisor, enterprise, Workcover or appropriate authorities may establish reporting protocols.
What may be included in **effective control** action?	The communication of the location, incident investigations, and directions to emergency personnel.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in implementing and monitoring the enterprise OHS program requires evidence that knowledge and skills has been applied in the implementation and monitoring of an enterprises OHS program as set out in the element and performance criteria of this competency standard, and according to enterprise guidelines and relevant acts. The skills and knowledge required to implement and monitor the enterprise OHS program must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, work teams and industry sectors.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below: • Hazards in the workplace. • Relevant OHS legislation and Codes of Practice. • Risk control measures. • The hierarchy of OHS risk control and its implementation for hazards in land-based industries. • Literacy levels and communication skills of workers. • Suitable communication techniques. • Relevant enterprise management systems and procedures. • Accident/incident investigation. • Participative work practices.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • Provide information to the work group about occupational health and safety. • Facilitate the participation of workers in OHS observance and decision-making. • Identify OHS hazards and controls relative to work practices and processes in work area. • Respond to OHS hazard identification in an appropriate and timely manner.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard.

Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (2)** be applied?	Provide regular updates on outcomes of risk assessment and control procedures.
2.	How can **information be collected, analysed and organised (2)**?	With hazard audits in the workplace, implementing relevant OHS procedures, analysis of accident/incident records, and providing accessible information on enterprise OHS policies, procedures and programs.
3.	How are **activities planned and organised (2)**?	By organising meetings to provide updates, and running OHS committee meetings.
4.	How can **team work (2)** be applied?	By consulting with staff on OHS implementation issues.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	By collecting and recording OHS related data/statistics.
6.	How can **problem-solving skills (2)** be applied?	By determining best possible options to reduce injury risk and identify training needs.
7.	How can the **use of technology (2)** be applied?	By using word processor/email for communications.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC4908A   Supervise work routines and staff performance

This competency standard covers the functions associated with the coordination and direction of staff. It requires the application of skills and knowledge to provide information and guidance to personnel in the conduct of their duties, facilitate staff discussions and agreements, and provide constructive evaluation to staff members. The work functions associated with this standard would usually be undertaken independently and with minimal reporting requirements.

Element		Performance Criteria	
1	Communicate work roles	1.1	**Roles and responsibilities** of staff are clearly defined and documented.
		1.2	Skills of staff are accurately identified and matched with available tasks and duties.
		1.3	Requirements of jobs are clearly identified and communicated to personnel.
		1.4	Information on activities are developed and provided to personnel.
		1.5	**OHS** policy and procedures are effectively communicated and implemented.
2	Coordinate activities	2.1	Work activities are prioritised to ensure completion of outcomes in accordance with available timelines.
		2.2	Work plans are developed to establish appropriate targets and objectives of activities.
		2.3	**Training and learning opportunities** are identified and incorporated into work activities.
		2.4	Supervisory and reporting responsibilities are clear and maintained in line with organisational requirements.
		2.5	Enterprise **environmental** policy and procedures are effectively communicated and implemented.
3	Maintain effective working relations	3.1	Problems are recognised and addressed through discussion with work group.
		3.2	Assistance is sought from work group members when difficulties arise in achieving allocated tasks.
		3.3	Discussion and information sharing is routinely used to communicate requirements of work activities through a participative approach.
		3.4	Disagreements and conflicts are managed

			constructively using appropriate conflict management strategies.
4	Provide feedback	4.1	Feedback is clear, constructive and provided promptly to individuals to support achievement of outcomes.
		4.2	**Difficult situations** are identified and negotiated to achieve results in line with organisational requirements.
		4.3	Team and individual performances are monitored regularly to ensure personnel are able to achieve goals.
		4.4	**Supervisory structures** and lines of reporting are maintained in accordance with organisational requirements.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work contexts.

How might staff **roles and responsibilities** be defined and communicated?	Duty statements, workplans, defined areas of decision-making, job description and employment arrangements, team structures, supervision and accountability requirements, and enterprise policy compliance.
What **OHS** requirements may be applicable to this standard?	• Systems and procedures for the safe operation and maintenance of machinery and equipment.
	• Assessment of hazards and appropriate control measures.
	• Procedures for safe lifting, carrying, working at heights and manual handling.
	• Safe systems and procedures for the handling and storage of hazardous substances, and grain.
	• The appropriate use, maintenance and storage of personal protective clothing and equipment.
	• Accident/incident investigation.
	• Working at heights and confined spaces.
	• Safe systems and procedures for outdoor work, basic first aid procedures.
	• Personal hygiene standards.
	• Protection from hazardous noise.
	• Mechanical vibration.

What **training and learning opportunities** might be identified for staff?	Coaching, mentoring and/or supervision, formal and informal learning programs, internal and external training, provision of work experience and exchange opportunities, personal study and career planning and development, performance appraisals, workplace skills assessment, recognition of prior learning, and self assessment.
What positive **environmental** practices associated with work activities may be implemented?	Measures to reduce excessive noise and exhaust emissions, the safe use and disposal of hazardous substances and debris associated with machinery and equipment, effective water re-use systems and effluent disposal systems, the incorporation of organic matter into the soil, and measures to avoid soil/substrate disturbance associated with machinery operation and the protection of ground cover in holding or confined areas with high density animal activity.
What **difficult situations** might arise for negotiation?	Conflicts in priorities, resource constraints, lack of information, supplier delays, differences in opinion, interpersonal conflict, hazardous events, time constraints, and shortfalls in expected outcomes.
What **supervisory structures** might be relevant to this standard?	Coach/mentor, supervisor or manager, and work colleagues.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence to supervise work routines and staff performance requires evidence of the ability to implement roles and responsibilities to efficiently and effectively achieve work activities within set timeframes. It involves the ability to communicate information and instructions, prioritise and schedule work activities, determine and implement training requirements, evaluate staff performance, and provide constructive feedback. Evidence must be demonstrated in providing leadership to the work team and the ability to promote and maintain effective relationships between staff.

The skills and knowledge required must be **transferable** to a different work environment. For example, this could include different workplaces, industries or work teams.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Enterprise personnel processes.

	• Enterprise organisational structure and responsibilities.
	• Techniques for building trust and relationships.
	• Principles of team work and negotiation.
	• Performance appraisal systems and procedures.
	• Principles of time management.
	• Conflict management techniques.
	• Enterprise training requirements and processes.
	• Relevant State/Territory legislation, regulations and Codes of Practice with regard to workplace OHS, environmental protection, and the use and control of hazardous substances and machinery and equipment.
	• Hazard identification, assessment and control.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These include the ability to:
	• Supervise and instruct staff to achieve work activities.
	• Delegate and allocate tasks.
	• Assess and evaluate staff competency.
	• Identify and provide training requirements.
	• Plan and monitor ongoing training needs.
	• Plan timesheets and timetables to meet deadlines.
	• Demonstrate effective time management.
	• Demonstrate safe workplace and environmentally responsible practices.
	• Solve problems (staffing, resources).
	• Communicate information and instructions, provide feedback and prepare reports and performance appraisals.
	• Calculate timesheets and measure productivity.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Information with regard to work tasks, their application and completion date may be communicated to staff.
2. How can **information be**	Information with regard to staff performance may be

collected, analysed and organised (3)?	observed and monitored and included in feedback via staff performance appraisals.
3. How are **activities planned and organised (3)**?	Training activities may be planned and coordinated around work schedules or sequenced as required.
4. How can **team work (3)** be applied?	Team work may be applied in methods and procedures to complete work tasks to achieve work plan requirements.
5. How can the use of **mathematical ideas and techniques (3)** be applied?	Mathematical techniques may be applied in the calculation of time sheets and the measurement of production outputs.
6. How can **problem-solving skills (3)** be applied?	Staffing or resource problems may require alternative options to be implemented or may be addressed through adjustments to work schedule.
7. How can the **use of technology (3)** be applied?	To communicate job tasks, develop staff training programs, measure productivity, and record staff performance appraisals.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is critical information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTE4002A   Develop a crop regulation program

This competency standard covers the process of developing a crop regulation program to control the yield and quality of horticultural crops. Developing a crop regulation program requires assessing and selecting cost effective techniques, resources and equipment for the regulation of horticultural crops, and preparing implementation plans, specifications and associated documents to achieve the crop production targets specified in the enterprise production plan.

Developing a crop regulation program is likely to be undertaken without supervision, with only general guidance on progress sought by managers. Responsibility for and limited organisation of the work of others involved in the program may be required. Developing a crop regulation program requires a broad range of skills and underpinning knowledge with depth in some areas, such as pruning and plant nutrition requirements.

Element		Performance Criteria	
1	Assess crop regulation methods	1.1	Production targets and production requirements in terms of **product** quantity and quality; and the availability of specified **crops** are identified from the enterprise production plan.
		1.2	**Research** is conducted into the characteristics and growing requirements of plant species and cultivars that may affect the crop regulation program.
		1.3	The benefits and limitations of available crop regulation **methods** for specified crops are assessed based on published data on the species and cultivars, historical records, own experience, and enterprise guidelines.
		1.4	A cost benefit analysis is conducted on available crop regulation methods, and the most cost effective approach to crop regulation is determined and submitted to management for approval.
2	Identify the requirements of a crop regulation program	2.1	The crop regulation program is developed to achieve the appropriate yield and quality specified in the enterprise production plan.
		2.2	**Resources, tools, equipment and machinery** required for the crop regulation program are identified, costed and availability confirmed with suppliers, contractors and appropriate personnel.

		2.3	**OHS hazards** associated with the implementation of the crop regulation program are identified, risks assessed and **controls** developed according to enterprise guidelines, budgeted and documented in the plan.
		2.4	**Environmental implications** of the crop regulation program are identified and documented in the plan.
		2.5	Staged implementation and development are outlined, where appropriate, according to the **range of conditions** over the growing cycle of the plant species and cultivars.
		2.6	Timelines for crop regulation activities are determined taking into account the needs of the plant species and cultivars, site conditions, and any other planning requirements.
3	Prepare and document the crop regulation program and specifications	3.1	Detailed plan, specifications and quotation are prepared based on the requirements of the program and presented to management for acceptance.
		3.2	Scaled site plan is produced which can be readily interpreted and understood by on-site personnel according to enterprise standards.
		3.3	Detailed on-site procedures and schedules required for the crop regulation program are developed and documented.
4	Monitor the crop regulation program	4.1	Implementation of the program is monitored to ensure requirements of the enterprise production plan are achieved.
		4.2	The crop regulation program is reviewed and monitored to ensure it remains responsive to changing conditions.
		4.3	Appropriate courses of action are implemented to alleviate or overcome identified shortcomings in the program.
		4.4	**Remedial action** undertaken is documented and reported to management according to enterprise policy.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available.

What **crops** may be regulated?	Crops may include flower, fruit and vegetable crops.
What are **products**?	Products include the harvested parts of crops (e.g. fruits and flowers)
What resources may be used for **research**?	Knowledge of plant species and cultivars, their uses, performance characteristics and growing requirements may be gained through consultation with team members, senior managers, own knowledge, specific industry, technical and research literature, supplier specifications, catalogues, enterprise sales figures and production records, local historical performance data, and industry best practice guidelines.
What crop regulation **methods** may apply to this standard?	Crop regulation methods may include manual thinning, chemical thinning, selective harvesting, training, summer and winter pruning, hedging, skirting, topping, trimming, Regulated Deficit Irrigation (RDI), and plant nutrition programs.
	Greenhouse crop regulation methods may include pruning by removal of flowers, leaves or fruit using hands, knives, secateurs and seasonal pruning; or encouraging additional flowers, leaves or fruit for plant steering. Plant steering may also be encouraged by manipulation of the climate, irrigation and fertigation setpoints.
What **resources** may be required for a crop regulation program?	Physical resources may include materials to modify soil/substrate pH, soil ameliorants to improve soil fertility and fertilisers to meet the nutritional requirements of plants, thinning agents, growth hormones and retardants, and trellising and training materials.
	Human resources may include paid labour, contractors, suppliers and consultants.
What **tools, equipment and machinery** may be required for the implementation of the crop regulation program?	Application equipment and machinery may include backpack spray equipment, tractors and trailed or 3 point linkage spreaders, seeders, rippers and spray equipment, pumps and pump fittings, and irrigation systems set up for fertigation.
	Pruning tools, equipment and machinery may include knives, handsaws, 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, trolleys, powered ladders and scissor lifts.
	Plant training equipment may include trellising and specialised training systems.
	Greenhouse regulation equipment may include climate management systems (manual or automatic) to control items such as ventilators, HAF fans, screens, lighting, fogging/misting, CO2 enrichment, heating/cooling and irrigation/fertigation.
What **OHS hazards** may be identified as part of the crop regulation program?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, air-, soil- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, working at heights, heating pipes, machinery and machinery parts, slippery and uneven surfaces, and flying objects.
What **controls** may be introduced to minimise the risk of **OHS hazards**?	Controls should be introduced according to enterprise OHS policies and procedures and may include identifying hazards; assessing and reporting risks; cleaning, maintaining and storing tools, equipment and machinery; appropriate use of personal protective equipment including sun protection; safe operation of tools, equipment and machinery; safe handling, use and storage of chemicals and hazardous substances; correct manual handling; appropriate use of safety equipment such as signage and protective barriers; basic first aid available on site; personal hygiene, and reporting problems to supervisors.
What **environmental implications** may be associated with the implementation of a crop regulation program?	Over-application or run-off into the external environment may result in nutrient overload or excess water to native plants, natural waterways, watertables and ecosystems, water erosion, water logging and salinisation.
	Beneficial impacts may include the minimisation of nutrient run-off and toxic side effects in soil and the surrounding environment from improved assessment and targeting of nutrient and irrigation requirements, application techniques and rates, and the reduction of toxic side effects of applied nutrients in the crop plants.
What **range of conditions** may affect the crop regulation program?	Conditions may include weather, seasonal influences, growth media characteristics, crop load, cropping and fertiliser history, irrigation methods and scheduling, spraying program, and growth media management practices.

What **remedial action** may be undertaken to improve the crop regulation program?	Remedial action may include adjustments to thinning and pruning rates and levels, irrigation scheduling and nutrient application rates and methods, the use of foliar sprays, and changes to soil/substrate management practices.
	Modification to the greenhouse climate management system set-points

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in developing a crop regulation program requires evidence that a person can assess and select cost effective techniques, resources and equipment for the regulation of horticultural crops, and prepare implementation plans, specifications and associated documents in line with the enterprises crop production plan.

The skills and knowledge required to develop a crop regulation program must be **transferable** to a different work environment. For example, this could include different crops types, horticultural management practices, and worksites.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• site evaluation techniques including analysis of the condition of soils, plants and the site for production activities
	• the characteristics of soil and other growth media types and the use of additives to enhance the available nutrition for specific plant species and cultivars
	• the relationship between enterprise crop regulation methods such as thinning, pruning, plant steering and RDI, and the yield and quality of specific crops
	• processes and techniques for preparing, costing and documenting plans for and scheduling crop regulation activities.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• communicate and negotiate orally and in writing with the staff, managers, contractors and consultants

- research and evaluate information
- record all relevant information
- comply with legislative requirements
- document plans, specifications and work procedures, and write reports for the understanding of staff, managers and contractors
- calculate the cost and spatial and logistical requirements of components of the crop regulation program.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Results of the cost benefit analysis of crop regulation methods and selection of resources and equipment should be communicated with the manager orally and in writing. There is likely to be negotiation between the developer of the crop regulation program and the manager to achieve the program objectives.
2. How can **information be collected, analysed and organised (3)**?	Information will need to be obtained from field results, research and/or industry experts. Information obtained about specific crop regulation methods should be analysed and outcomes discussed with the manager and other members of the work team. Information about the crop regulation program should be organised and presented as a site plan, documented plans, written work procedures, a timeline chart, and schedules for implementation activities.
3. How are **activities planned and organised (3)**?	The planning process should proceed in an orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. The crop regulation program should reflect the activities required to implement the program.
4. How can **team work (3)** be applied?	Developing a crop regulation program will involve working with other members of a team to achieve the program objectives.

5.	How can the use of **mathematical ideas and techniques (3)** be applied?	Mathematical concepts will be required to measure quantities, distances and depth, and to calculate areas, resources, costs, ratios, scales and application rates.
6.	How can **problem-solving skills (3)** be applied?	Problems relating to crop regulation techniques and procedures, nature of the site, availability of resources and equipment, costs, environmental issues, and monitoring of the program may arise during development of the crop regulation program and will require remedial action.
7.	How can the **use of technology (3)** be applied?	Technology will be required to record, store and communicate ideas and information. It will also be used to research relevant information, obtain and analyse data from site evaluation tests, and to produce the crop regulation program.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE4012A   Supervise horticultural product harvesting

This competency standard covers the work involved in supervising horticultural product harvesting operations.

It requires the application of skills and knowledge to estimate crop yield, assess risk, negotiate appropriate insurance, and schedule labour and equipment resources. It also requires an awareness of workplace safety, environmental protection, and licensing requirements associated with harvesting operations. The work is likely to be carried out under broad supervision within enterprise guidelines.

Element		Performance Criteria	
1	Prepare for harvesting	1.1	**Product** maturity and quality is **assessed** in readiness for harvesting.
		1.2	**Crop** pre-harvest treatments for the control and eradication of pests are determined and carried out according to **OHS** requirements.
		1.3	Requirements for licenses or permits are identified and complied with.
		1.4	**Insurance** requirements are assessed and risk management strategies planned and implemented as required.
2	Determine harvest strategy	2.1	Optimum timing to carry out harvest is estimated and calculated according to product maturity assessment.
		2.2	Resource requirements are assessed giving consideration to the size of the crop and estimated timing of harvest.
		2.3	Labour and **equipment** required to carry out harvesting operations is confirmed and arranged within budgetary constraints.
		2.4	Requirements for **fire prevention** and control are identified and arranged according to OHS requirements.
3	Co-ordinate the harvest strategy	3.1	Effective communication strategies are implemented to ensure smooth workflow operations and personnel safety.
		3.2	Harvesting operations are implemented and adjusted as required, according to weather, equipment and staff requirements.
		3.3	Equipment operation is co-ordinated for maximum efficiency and monitored for

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			performance effectiveness.
		3.4	Existing and potential **hazards** are identified and controlled according to OHS and **enterprise requirements.**
4	Complete harvest operations	4.1	**Storage resources** are located for efficient operations and strategies for drying crops are identified if necessary.
		4.2	Product is graded, packed and stored.
		4.3	Harvesting operations and outcomes are evaluated against harvest strategy.
		4.4	Relevant information is documented for continual analysis and effective planning management.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work situations available.

What **crop** may apply to this standard?	Crops may include flower, fruit, foliage and vegetable crops.
What are **products**?	Products include the harvested parts of crops. Products may include fruit, vegetables, herbs, flowers, foliage, bulbs, tubers, nuts, mushrooms, wild harvest plants and oils.
How may product maturity be **assessed**?	Growing area (e.g field or greenhouse), measurements for crop yield are primarily objective and may include sampling for size, maturity, colour or sugar content, past records, and visual assessment.
What **OHS** requirements may be relevant to this standard?	Safe systems and procedures for: - the operation and maintenance of machinery and equipment including hydraulics - guarding of exposed moving parts - ensuring loads are secure and within working specifications - the identification and avoidance of obstacles during harvesting operations - working within confined spaces - working at heights - hazard and risk control - mounting and dismounting - handling including lifting and carrying

- manual handling

- handling, application and storage of hazardous substances
- protection from solar radiation, noise, organic and other dusts
- the protection of people in the workplace
- the appropriate use and maintenance of personal protective equipment.

What **insurance** requirements may be identified?	Crop insurance is likely to cover events such as fire, storm & tempest, malicious damage, fusion, and transport damage.
What **equipment** may be required to carry out harvesting operations?	This may include trucks, trailers, tractors, picking trolleys, field bins, and contracted resources.
What **fire prevention** measures may be arranged?	This may include fire vehicles, fixtures such as dams, tanks, pumps and water mains, communication devices, personal protective equipment, and constructions such as firebreaks.
What **hazards** to health and safety may be applicable to this standard?	Hazards may include dust, working in confined and enclosed spaces, working at heights, working in the vicinity of pesticide residues, working with and close to vehicles and plant, and applying pre-harvest chemical treatments.
What **enterprise requirements** may apply to this standard?	SOP, industry standards, production schedules, MSDS, work notes and plans, product labels, manufacturers specifications, operator's manuals, enterprise policies and procedures (including waste disposal, recycling and re-use guidelines), and manager's oral or written instructions.
What **storage resources** may be arranged?	Storage resources may include temporary storage, field bins, cool rooms and cold storage.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in supervising the harvest requires evidence of the ability to organise resources, negotiate resource and labour contracts, estimate crop yield, arrange storage and delivery requirements.

The skills and knowledge required to supervise the harvest must be **transferable** to another environment. For example, this could include different crops, regions, soil types and

enterprise procedures.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• functions and limitations of harvesting equipment
	• crop measurement techniques and parameters
	• market information and sources
	• location and relative skills and abilities of available contractors
	• weather conditions which may affect the harvest
	• relevant legislation and regulations relating to OHS, contractor engagement, chemical use and application, and vehicle and plant use
	• environmental controls and codes of practice applicable to harvesting operations.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• organise and schedule the maintenance of plant and equipment
	• establish strategies, procedures and controls for product harvesting
	• prepare written plans and procedures for implementation by others
	• estimate and calculate volumes, quantities and maintain budgetary controls
	• interpret, analyse and extract information from a range of sources and discussions
	• negotiate and arrange contracts and agreements
	• explain and deliver instructions with regard to the harvest operations to both staff and contractors
	• implement safe workplace and positive environmental practices.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and

administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (2)** be applied?	Information and ideas with regard to aspects of the harvesting operations may be discussed with the full range of field staff, contractors and insurance agents.
2.	How can **information be collected, analysed and organised (2)**?	Information with regard to assessing the crop yield, value and resources may be documented and organised by reports for analysis.
3.	How are **activities planned and organised (2)**?	Labour and resources may be planned and organised to meet harvesting schedule.
4.	How can **team work (2)** be applied?	In the application of methods and procedures to complete harvesting operations within timeframes.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical techniques may be used to evaluate and assess crop yield and quality, and subsequent value.
6.	How can **problem-solving skills (3)** be applied?	Problems of resources or staffing may be resolved by appropriate adjustments to the harvesting strategy.
7.	How can the **use of technology (2)** be applied?	Technology may be used to communicate, calculate and measure during the harvesting operations.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE4609A   Implement, monitor and adjust irrigation schedules

This competency standard covers the process of implementing watering shifts, monitoring factors that influence water requirements and adjusting the irrigation schedule to accommodate changes in those factors, without supervision but with general guidance on progress. It requires the ability to use enterprise monitoring equipment, access irrigation data, plot and read graphic data, measure and interpret environmental data, estimate water availability for plants/crops, and read and apply map data to property features. Implementing, monitoring and adjusting irrigation schedules requires a knowledge of crop and plant health, weather patterns, greenhouse environment, irrigation monitoring procedures, soil/substrate water retention testing techniques, monitoring irrigation surface runoff and infiltration due to soil/substrate type and terrain, water quality monitoring methods and techniques, and water authority standards and procedures.

Element		Performance Criteria	
1	Monitor plant or crop **environment** for irrigation requirement	1.1	Plant or crop environment is **monitored** and results are interpreted according to enterprise policy and procedures.
		1.2	Plants or crops are routinely monitored for irrigation requirements.
		1.3	Changes to irrigation periods are recommended according to environmental conditions and plant or crop requirements.
2	Check water supply and availability	2.1	Water volume required to meet irrigation needs over specified period is determined.
		2.2	Water availability is confirmed, and if necessary, ordered, according to water management authority standards and procedures.
		2.3	Sufficient notice of water order is given, if necessary, to ensure water is available when required.
3	Implement irrigation schedule	3.1	Resources are co-ordinated and personnel briefed to deliver requirements.
		3.2	Agreed irrigation schedule is implemented.
4	Evaluate effectiveness of irrigation activities	4.1	Plant or crop environment is monitored according to enterprise policy and procedures.
		4.2	Plants and crops are routinely monitored for irrigation requirements..

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5	Monitor irrigation system process as specified by enterprise policy and procedures	5.1	Frequency of irrigation is recorded.
		5.2	Water usage is measured and recorded and does not exceed water allocation for a given period.
		5.3	Differences between estimated water use and actual water used are calculated.
		5.4	**Water quality** is measured according to enterprise **OHS** policy and procedures.
		5.5	Plant or crop growth and water use efficiency is assessed.
		5.6	Soil/substrate **chemical characteristics** are measured and soil/substrate moisture is assessed.
		5.7	Labour performance is measured.
		5.8	Greenhouse climate and weather conditions are recorded.
6	Record irrigation information and activities as specified by enterprise policy	6.1	Plant or crop environment **data** is **recorded**.
		6.2	Water orders and water usage is recorded.
		6.3	Irrigation periods are recorded.
		6.4	System process data is recorded.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What external factors in the **environment** might affect irrigation requirements?	These may be pests and vermin, organic material (leaves, slime, weeds, algae, sticks, crop residue), weather, channel regulators (if applicable), fire, mechanical damage (if applicable), power spikes, power failures, storm run off, or system breakage.
What environmental factors may be **monitored**?	These may include drainage, soil/substrate moisture, water table levels, soil/substrate salinity, rainfall, air temperature & humidity, frost risk, water quality, plant/crop and soil/substrate nutrient imbalance, and irrigation system maintenance requirements.
What might be measured to determine **water quality**?	Measurements may include salinity, pH level, and nutrient concentration (e.g. Na, Cl, HCO_3), clarity (e.g. T10), temperature, pathogen load, O_2,).

What **OHS** requirements may be relevant to this standard?	OHS requirements may include systems and procedures for protection from solar radiation, dust and noise, the operation of machinery and equipment, selection and use of relevant personal protective clothing and equipment, and protection against chemical residues including in/on foliage, water, soil/substrate and other items.
What **chemical characteristics** of the soil/substrate might be measured?	Chemical characteristics may include pH, CEC, salinity and carbonate content.
How might **data** be collected?	This may include direct methods such as physical appearance/texture and rain gauge, or indirect methods such as tensiometers, WET meters, neutron probes, runoff test stations, laboratory tests, weather reports and forecasts.
How might data be **recorded**?	Data may be recorded on graphs and charts, on paper and/or electronically.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in implementing, monitoring and adjusting an irrigation schedule requires evidence that a person can implement watering shifts, monitor factors that influence water requirements, and adjust the irrigation schedule to accommodate changes in those factors.

The skills and knowledge required to implement, monitor and adjust an irrigation schedule must be **transferable** to a different work environment. For example, if an irrigation schedule is implemented for a particular plant or crop in one type of soil/substrate, it should be evident that a schedule could be implemented for different plants in another type of soil/substrate.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• crop and plant health
	• weather patterns
	• irrigation monitoring procedures
	• environmental impacts of irrigation using water from any ground or underground source
	• soil/substrate water retention testing techniques
	• monitoring irrigation surface runoff and infiltration due

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to soil/substrate type and terrain
- water quality monitoring methods and techniques of potable and recyclable water
- water allocation
- water authority standards and procedures
- purchasing procedures, budget restrictions and limits
- enterprise policies and procedures.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • use enterprise monitoring equipment • identify adverse environmental impacts of irrigation activities and appropriate remedial action • access irrigation data • plot and read graphic data • measure and interpret environmental data • estimate water availability for plants/crops • read and apply map data to property features • implement and follow relevant enterprise OHS and environmental policies and procedures.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Briefing personnel on the irrigation schedule.
2. How can **information be collected, analysed and organised (2)**?	Collecting and interpreting data to adjust irrigation schedule.
3. How are **activities planned and organised (2)**?	Organising and monitoring irrigation activities.
4. How can **team work (2)** be applied?	Implementing the irrigation schedule.

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5.	How can the use of **mathematical ideas and techniques (2)** be applied?	Measuring and interpreting environmental data, plotting and reading graphic data, and estimating water availability for plants/crops.
6.	How can **problem-solving skills (2)** be applied?	Determining irrigation requirements in response environmental conditions.
7.	How can the **use of technology (2)** be applied?	Recording and accessing data electronically.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE4913A

Analyse and interpret production data

This competency standard covers the process of analysing and interpreting data for intensive horticultural production. It requires the ability to collect and organise production data, analyse, interpret and present data. Analysing and interpreting data for intensive horticultural production requires knowledge of the relevant legislation, industry and enterprise codes of practice, enterprise record keeping and recording practices, methods to collect and analyse production data, business equipment and principles of report writing and data presentation.

Element		Performance Criteria	
1	Collect and organise production data	1.1	Information is collected and organised in a format suitable for analysis and interpretation in accordance with **enterprise requirements**.
		1.2	Information held by the production unit is assessed for accuracy and relevance in line with enterprise requirements.
		1.3	Methods of collecting data are reliable and make efficient use of resources in accordance with organisational requirements.
		1.4	**Business equipment** is used to access, organise and monitor data in accordance with organisational requirements.
		1.5	Information is updated, modified, maintained and stored in accordance with organisational requirements.
2.	Analyse and interpret data	2.1	Objectives of analysis are clearly defined and consistent with enterprise requirements.
		2.2	Methods of **data analysis** are reliable and suitable to research purposes.
		2.3	Assumptions used in analyses are clear, justified and consistent with enterprise objectives.
		2.4	Conclusions are supported by evidence and contribute to the achievement of business objectives.
3	Present data	3.1	Data are prepared in an appropriate format, style and structure using suitable business technology.
		3.2	Structure and format of reports are clear and conform to enterprise requirements.
		3.3	Findings are reported and distributed in accordance with enterprise requirements.
		3.4	Feedback and comments on suitability and

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> sufficiency of findings is obtained in accordance with enterprise requirements.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **enterprise requirements** may be relevant to this standard?	Quality assurance and/or procedures manuals, biosecurity requirements, procedures for updating records, OHS policies, procedures and programs, production plans, systems and processes, and defined resource parameters.
What **business equipment** may be relevant to this standard?	Photocopier, computer (including handheld electronic loggers), greenhouse climate management and data recording systems, email, internet, software programs, answering machine, fax machine, telephone and radio communication systems.
What methods of **data analysis** may be used?	Feedback on results, review of previous data and production figures, peer review, data sampling and statistical analysis.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in analysing and interpreting intensive production data requires evidence that production data has been successfully and appropriately collected, analysed and maintained according to enterprise requirements. The skills and knowledge required to analyse and interpret intensive production data must be **transferable** to a range of work environments and contexts. For example, this could include different enterprises, data collection methods and production systems.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• the relevant legislation, industry and enterprise codes of practice and quality assurance procedures that impact on intensive production
	• knowledge of enterprise record keeping and recording practices

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- knowledge of enterprise policies and procedures relating to collection, analysis and maintenance of production data
- methods to collect and analyse production data
- data management systems and methods
- business equipment
- principles of report writing and data presentation.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: - collect and organise production data - analyse and interpret data - present data.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Through preparation and presentation of data to management.
2. How can **information be collected, analysed and organised (3)**?	Through collection and analysis of production data.
3. How are **activities planned and organised (3)**?	Through following enterprise and industry quality assurance procedures and best practice.
4. How can **team work (3)** be applied?	Through working with others in collecting and analysing data.
5. How can the use of **mathematical ideas and techniques (3)** be applied?	Through analysis of production data.
6. How can **problem-solving skills (3)** be applied?	Through identification of non-compliances in collected data.
7. How can the **use of technology (3)** be applied?	Through use of business equipment to collect, store and maintain data.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE4915A   Implement and monitor quality assurance procedures

This competency standard covers the process of implementing and monitoring quality assurance procedures in an agricultural or horticultural enterprise. It requires the ability to establish quality specifications for products, identify hazards and critical control points in production, and assist in planning and implementation of quality assurance procedures. Implementing and monitoring quality assurance procedures requires knowledge of market requirements for products, enterprise and industry quality assurance systems, HACCP techniques, strategies for control of hazards, work place training strategies, delegation and empowerment, and contingency management.

Element		Performance Criteria	
1	Establish **quality specifications** for product	1.1	Market specifications are **sourced**.
		1.2	**Legislated requirements** are identified.
2	Identify **hazards and critical control points** in the production of quality products	2.1	Critical control points impacting on quality are identified.
		2.2	Degree of risk for each hazard is determined.
3	Assist in planning of quality assurance procedures	3.1	Procedures for each identified control point are developed to ensure optimum quality.
		3.2	Hazards and risks are minimised through application of appropriate controls.
		3.3	Processes to monitor the effectiveness of quality assurance procedures are developed.
4	Implement quality assurance procedures	4.1	Responsibilities for carrying out procedures are allocated to staff and contractors.
		4.2	Instructions are prepared in accordance with the enterprise the quality assurance program.
		4.3	Staff and contractors are given induction training on the quality assurance policy.
		4.4	Staff and contractors are given in-service training relevant to their allocated procedures.

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Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **quality specifications** may be relevant to this competency standard?	Quality specifications will have a range of measurable dimensions depending upon the product and may include guarantees related to the source and non-contamination of the product.
From where can market specifications be **sourced?**	Relevant quality specifications will be sourced from purchasers of the product e.g., processors or end-use customers.
What **legislated requirements** may be relevant to this competency standard?	Relevant law may relate to the verification of product quality as part of consumer legislation or specific legislation related to product content or composition.
What **hazards and critical control points** should be considered?	Hazards and critical control points will be identified using the national HACCP procedures or a similar model for auditing the production process.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in implementing and monitoring quality assurance procedures requires evidence that quality assurance procedures have been successfully and appropriately implemented and monitored in an agricultural or horticultural enterprise.

The skills and knowledge required to implement and monitor quality assurance procedures must be **transferable** to a range of work environments and contexts. For example, this could include different rural enterprises and commodity areas.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below: • market requirements for product • enterprise and industry quality assurance systems • HACCP techniques

- strategies for control of hazards
- work place training strategies
- delegation and empowerment
- contingency management.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • establish quality specifications for product • identify hazards and critical control points in the production of quality product • assist in planning of quality assurance procedures • implement quality assurance procedures.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Through interaction with staff and management.
2. How can **information be collected, analysed and organised (3)**?	Through monitoring of quality assurance procedures according to enterprise standards.
3. How are **activities planned and organised (3)**?	According to enterprise quality assurance procedures.
4. How can **team work (3)** be applied?	In implementing quality assurance procedures in the enterprise, and in staff training and induction.
5. How can the use of **mathematical ideas and techniques (3)** be applied?	Through calculations associated with record keeping systems and monitoring records.
6. How can **problem-solving skills (3)** be applied?	By dealing with quality assurance contingencies as they arise.

7.	How can the **use of technology (3)** be applied?	In maintenance of records and use of computer software applications.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTF5012A   Manage a controlled growing environment

This competency standard covers the process of managing controlled growing environments. Management includes assessing a controlled growing environment to establish optimum parameters and resources for a chosen crop, preparing a management plan and monitoring outcomes.

Work is usually undertaken without supervision, with only general guidance on progress sought by senior management. Responsibility for the work of others may be involved and team co-ordination may be required. Management of controlled growing environments requires extensive horticultural knowledge and practical skills, particularly in plant physiology and growth needs, controlled environment systems, monitoring, reporting and forward planning.

Element		Performance Criteria	
1	Identify crop requirements	1.1	**Crop** growth and production requirements are determined according to enterprise production plan.
		1.2	**Environmental parameters** for optimal growing conditions for the specific crop are researched using **available information resources.**
		1.3	**Controlled growing environment factors** are identified and evaluated for their ability to provide optimal growing conditions throughout crop development.
2	Determine requirements for controlled growing environment	2.1	**Structures, machinery, equipment**, and **resources** required to control environmental conditions are identified, costed and availability confirmed.
		2.2	**OHS hazards** are identified, risks assessed and **controls** implemented.
		2.3	Detrimental **environmental impacts** associated with the controlled growing environment system are identified and controls sanctioned.
3	Prepare a management plan for controlled growing	3.1	**Management objectives** for controlled growing environment are determined, consistent with production plan.

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	environment		
		3.2	A schedule of environmental control procedures is developed according to controlled environment management objectives.
		3.3	Staff training needs are evaluated in regard to operation and maintenance of environmental control systems, and reported to senior management.
		3.4	A budget supporting the controlled environment management plan is documented and approval sought by senior management.
		3.5	The schedule of environmental control procedures is communicated clearly to staff.
4	Monitor environmental control systems	4.1	Controlled environment **indicators and thresholds** for **remedial action** are identified for monitoring, according to industry best practice.
		4.2	Monitoring frequency and schedule is developed according to the requirements of the production plan and communicated clearly to staff.
		4.3	All monitoring data is recorded, analysed and applied to management of the controlled environment system, to ensure optimal plant development.
		4.4	Remedial action undertaken is documented and reported to senior management according to enterprise policy.
		4.5	Costs of the controlled growing environment system are monitored against budget.

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Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **crop** plants are relevant to this standard?	Industry sectors involved in production may include nursery, floriculture and production horticulture.
	Plants may include flower, foliage or oil crops, vegetables, fruit, nuts, mushroom crops, containerised and open-rooted grown plants.

What **environmental parameters** may be identified for the specific crop plants?	These should include parameters for optimal range of temperature, light quality, air flow, humidity, substrate type and components, water quality, flow and components for the required crop performance and minimisation of conditions suitable to identified pests and diseases for the specific crop.
What **available information resources** may be used to research specific crop requirements?	Information resources may include the knowledge of team members, senior managers and self; specific industry, technical and research literature; government, university and library based literature and Internet resources; supplier specifications, catalogues, enterprise sales figures and production records, local historical performance data and industry best practice guidelines.
What **controlled growing environments** may require management for optimal growing conditions?	These may include partially or completely enclosed nursery, growing on, hardening up and hydroponic production and display systems.
What environmental **factors** of the site may need to be assessed?	Growing environment factors may include relevant aspects (greenhouse or external), of ambient humidity, light, growing substrate, temperatures, season and day length, air quality, nutrient and dissolved gas availability, toxicities and deficiencies, weeds, pests, diseases and beneficial organisms, site aspect and slope, and natural and artificial water supplies.
What **structures, machinery and equipment** may be required to manipulate environmental conditions?	Structures may include adjustable or fixed air vents, shade/thermal screens and windows. Machinery and equipment may include computerised, LED, or mechanically operated pumps, fans, humidifiers, generators, heaters, HAF Fans, horticultural lighting, misting or fogging systems, Pad & Fan, CO_2 distribution systems reticulation units; growth substrate, air, plant tissue and water analysis equipment.
What other **resources** may be required to manipulate environmental conditions?	These may include labour, technological qualification of team members, financial resources, and supply of services and materials.

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What **OHS hazards** may be identified in the work area?	Hazards may include hazardous chemicals; potentially hazardous substrates, heating pipes, working at heights, composts and organic products; water and dust and splashed or windborne inoculum; manual handling, moving equipment and vehicles, sharp hand tools, noise, pests, and slippery or uneven surfaces.
What **controls** may be introduced to minimise the risk of OHS hazards?	Controls should be introduced according to enterprise OHS policies and procedures and may include identifying hazards; assessing and reporting risks; 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 chemicals and hazardous substances; correct manual handling; appropriate use of safety equipment such as signage and protective barriers; basic first aid available on site; personal hygiene, and reporting problems to supervisors.
What detrimental **environmental impacts** may be considered for managing conditions of the controlled growing environment?	Environmental impacts may include nuisance noise and particulate and gaseous emissions associated with the operation of pumps, spray units and cooling/heating equipment.
What **management objectives** may influence the development of the management plan?	Management objectives may include financial, logistical, cultural, aesthetic, legal or environmental considerations; process or product specifications, company policy, OHS, existing equipment and structures, training, maintenance services, and timelines for the program.
What **indicators and thresholds** would apply when monitoring the controlled environment?	Indicators and thresholds may be included in enterprise quality standards and specifications, customer specifications and industry standards. They will relate to environmental parameters that may be set or adjusted in response to crop health and vigour, size, shape, colour, watering and nutritional requirements.
What **remedial action** may be required for crops that are below defined thresholds?	Remedial action may include watering, pest and disease control, and manipulation of environmental parameters.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

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Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in managing controlled growing environments requires evidence that the environmental requirements of plants can be determined, a management plan for a controlled environment system can be developed, the controlled environment system can be monitored and remedial actions implemented.

The skills and knowledge required to manage controlled growing environments must be **transferable** to a different work environment. For example, this could include different growing environments and systems, plant varieties and enterprise procedures and policies.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • legislation and regulations relating to the controlled environment systems • techniques and methods of implementing optimal growing conditions for a range of horticultural crops • controlled environmental conditions in regard to crop plant physiology, growth stages, and product quality and quantity • quality production methods and techniques for a range of controlled environment plants • market requirements for crop quantity and quality • monitoring, analysis and recording systems.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • communicate and negotiate verbally and in writing with staff, managers, suppliers, clients and consultants • research information using available technology • record information according to enterprise and industry standards • document plans, specifications and work procedures, and write reports

- prepare budgets
- use a range of financial analysis tools to determine viability of the system.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (**3**)** be applied?	Results of analysis and monitoring, and selection of resources and equipment should be communicated with the manager orally and in writing. There is likely to be negotiation with contractors, suppliers and members of the work team to achieve the program objectives.
2.	How can **information be collected, analysed and organised (3)**?	Information will need to be obtained from assessment of environmental factors and controls, and monitoring. Information obtained should be analysed and outcomes discussed with senior management and other members of the work team. Information about environmental control strategies should be organised and presented as a documented plan.
3.	How are **activities planned and organised (3)**?	The planning process should proceed in an orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. Work activities of self and others may need to be planned and organised in order to meet enterprise objectives within time constraints.
4.	How can **team work (3)** be applied?	Management of a controlled growing environment will involve working with other members of a team to optimise growing conditions and achieve enterprise objectives within time constraints.
5.	How can the use of	Mathematical concepts may be required to measure

mathematical ideas and techniques (3) be applied?	quantities, distances, depth, and calculate areas, resources, costs, ratios, scales and application rates, and analyse data from instruments and external agents.
6. How can **problem-solving skills (3)** be applied?	Problems relating to detrimental plant symptoms, changing conditions, availability of resources, tools, equipment and machinery, costs, environmental issues and monitoring may arise during management of the controlled environment and require problem-solving skills to rectify.
7. How can the **use of technology (3)** be applied?	Technology will be required to record, store and communicate ideas and information. It will also be used to research relevant information, obtain and analyse data from tests and production statistics, and to produce the plan.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTC5702A   Develop and manage a chemical use strategy

This competency standard covers the process of developing, implementing and managing a chemical use strategy. High level skills include risk analysis, risk control, risk management, use of Integrated Pest Management, Integrated Resistance Management, Animal Health Management and communication are required. Extensive knowledge of equipment and its use, legislation, regulations and safety procedures associated with chemical use is also needed.

NB: This competency standard may be deemed to have a time limit when used as part of an accreditation or licence to purchase or use chemicals.

Element		Performance Criteria	
1	Identify and evaluate need for chemical use	1.1	Integrated Pest Management (IPM) and Integrated Resistance Management (IRM) strategies are interpreted and the organisational chemical requirements are identified.
		1.2	**External requirements** for chemical use are identified and relevant information obtained and interpreted.
		1.3	Requirements for chemical use are **documented.**
		1.4	**Chemicals** available to meet requirements are identified and **information** concerning their application is reviewed.
2	Develop a chemical use risk management strategy	2.1	**Hazards** in the transportation, storage and handling of chemicals are identified and assessed.
		2.2	**Risk factors** associated with the use of chemicals are identified and documented.
		2.2	**Risk control measures** are identified and developed in accordance with regulatory requirements.
		2.4	A risk management strategy for chemical use is developed in accordance with **legislation** and Integrated Pest Management, Integrated Resistance Management, and Integrated Animal

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			Health Management principles.
		2.5	Appropriate insurance policies covering intended chemical use are researched and documented according to enterprise guidelines.
3	Develop and implement procedures for chemical management and use	3.1	**Procedures** for management and use of chemicals are developed in accordance with **directions and standards**.
		3.2	Required precautions and risk control measures are documented.
		3.3	Procedures for communicating and negotiating with the community are developed.
		3.4	Information on procedures and precautions in the management and use of chemicals is distributed to relevant staff.
4	Identify training and supervision needs and solutions for chemical use in the workplace	4.1	An appropriate strategy is developed for the **training, assessment** and supervision of staff involved in chemical use including correct use/fit of personal protective equipment.
		4.2	Suitable internal on-the-job training and monitoring of performance in the implementation of the chemical use strategy is organised and provided.
		4.3	Appropriate external training and assessment in the management and use of chemicals is organised.
5	Monitor and evaluate the implementation of a chemical use strategy	5.1	The implementation of the established chemical use strategy is monitored in terms of regulatory requirements and established **criteria**.
		5.2	The effectiveness of the established chemical use strategy is evaluated.
		5.3	Appropriate action is initiated where there are identified problems or where required procedures/precautions are not being correctly followed.

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Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What are **external requirements** for chemical use?	Chemical use regulations and legislation, best practice systems, mandatory Codes of Practice, chemical manufacturers instructions, labels and Material Safety Data Sheets (MSDS).
How might chemical use be **documented?**	Using computer records, log books, calendars or journals.
What **chemicals** may be considered for use?	Chemicals may include insecticides, fungicides, herbicides, bactericides, viricides, algaecides, biologicals, nematacides, rodenticides, fumigants, antimicrobial agents, anthelmintics, hormone growth promotants.
What **information** may be relevant to chemical application?	Information may include labels, MSDS, operator's manuals, industry standards, OHS manual or hazardous substances regulation.
What **hazards** may occur in the transportation, storage, handling and use of chemicals?	Hazards will be listed on labels and the MSDS for the chemical concerned and may include flammability, toxicity, health hazards, damage to non-target organisms, environmental damage, or residues in foods.
What **risk factors** may be relevant to this standard?	Risks to environment may include pollution of ground or surface waters, damage to habitats, damage to sensitive land, or damage to community amenity due to spray drift.
	Risks associated with the produce include chemical residue in plant produces, livestock or water.
	Risks associated with OHS include exposure to chemicals during handling and application, and public health risks.

What **risk control measures** may need to be applied in the transportation, storage, handling and use of chemicals?	Measures may include providing instructions for handling, transport, storage, obtaining appropriate insurance policies, application and disposal of chemicals in the workplace, ensuring workers read and follow instructions on product label and MSDS, ensuring use, maintenance and storage of correct personal protective equipment, training and accreditation of all staff using chemicals, and ensuring all staff using a chemical understand the specific risks involved and the associated precautions required.
What **legislation and regulations** may be relevant to this standard?	Legislation may include Pesticide Acts, OHS Acts regarding hazardous substances and application equipment, Dangerous Goods Act, Poisons Act, or Protection of the Environment Acts.
What **procedures** may need to be addressed in a chemical use management strategy?	Procedures may include identifying needs for specific chemical use as part of IPM/IRM, reading and interpreting product labels and MSDS, mixing chemicals, calibration of application equipment, application of specified products, disposal of unused product, checking, maintenance, repair and disposal of equipment and containers, procedures and precautions for transport and storage, emergency procedures in event of spillage, contamination, accidental contact or ingestion, procedures for keeping records (e.g., chemical inventory, details of chemical use), training and assessment strategy for staff.
What **directions and standards** may be relevant to this standard?	Directions and standards may include a risk management strategy, registration requirements and IPM/IRM strategies.
What **training and assessment strategies** may need to be established as part of chemical use management?	**Internal** training may include on-job coaching and instruction by qualified trainers, performance appraisal by supervisors, training programs conducted in the workplace by contracted registered training organisations. **External** training and assessment options may include training programs conducted by registered training organisations, or workshops organised by registered training organisations.

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What **criteria** may be established to evaluate chemical use strategy?	Criteria may include monitoring pest levels over time from an established benchmark.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Overall competence in this standard requires evidence that a person can identify and consider the requirements for chemical use at a workplace and develop a chemical use management strategy based on a consideration of the available suitable chemicals, and the hazards and risks in their use. The evidence will demonstrate that the person has an understanding of a range of chemicals and the factors that need to be taken into account when carrying out a risk management analysis.

Evidence will include a chemical use management strategy that details chemical use requirements, details of selected chemicals (including specific identification and justification for chemicals selected), any special accreditation requirements for the use of any chemicals identified in the strategy, procedures and precautions for the transport, storage, handling and application of the identified chemicals including disposal of unused product, emergency procedures including first aid and reporting requirements, training or assessment arrangements and record keeping arrangements.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• Hazards to human health, agricultural produce, and all aspects of the environment and non-target species of flora and fauna associated with the transport, storage, handling, application and disposal of chemicals.
	• Factors that contribute to spray drift, measures to assess the potential for spray drift and prevent or control its occurrence, and the elements of a spray drift management strategy.
	• Routes of entry of chemicals into the body and the implications of this on chemical use management strategies.

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- Safety procedures including the maintenance, use, fit and decontamination of personal protective clothing and equipment.
- Influence of meteorological (greenhouse climate), factors (radiation, temperature, humidity, rain) on quality of chemical application, drift potential, effectiveness and efficacy of use.
- Precautions and risk control measures that may be used to minimise risks and hazards associated with the use of chemicals.
- Principles of IPM/IRM/IAM and their benefits in terms of chemical use risk management.
- Emergency procedures for safety incidents involving chemicals.
- Requirements and options for the keeping of records on chemical use and equipment maintenance and repair.
- Correct wearing/fit of personal protective equipment.
- Principles of residue effects and their management including persistence in soil and water, accumulation in agricultural produce, rate of breakdown of residues in produce and in the environment, withholding periods, and ways in which residues can occur.
- Movement of and persistence and degradation of different types of chemicals in various areas of the environment such as soil, air and water.
- Industry waste agreements, for example drum MUSTER, and Chem Collect
- OHS legislative requirements and Codes of Practice.
- Appropriate insurances covering chemical use, transportation and storage.
- Use of chemicals as part of a comprehensive Quality Assurance (QA) system, Industry QA programs and performance standards.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: - Accurately read and interpret labels on chemicals and

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MSDS.

- Determine the level of hazard and risk associated with chemical use in terms of human health, environment, fauna, flora and produce.
- Apply risk management techniques.
- Develop and evaluate management plans and organisational procedures.
- Communicate management plans, strategies and procedures to staff.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (3)** be applied?	Informing staff about the details of a chemical use management strategy will involve high level communication processes.
2.	How can **information be collected, analysed and organised (3)**?	Identifying and analysing need for chemical use in a workplace. Accessing and interpreting information on chemicals, regulations and MSDS.
3.	How are **activities planned and organised (3)**?	Carrying out a risk management analysis on chemical use in a workplace requires multiple activities to be organised.
4.	How can **team work (3)** be applied?	Working with staff to ensure that a chemical use strategy fulfils the organisations needs, e.g., through health and safety meetings.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	Carrying out calculations required in chemical use management strategies, e.g., chemical mixture calculations.
6.	How can **problem-solving skills (3)** be applied?	Identifying risks and potential problems associated with chemical use and developing solutions.
7.	How can the **use of**	Developing effective strategies for the maintenance,

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| **technology (3)** be applied? | calibration and use of chemical application equipment. |

What are the special assessment conditions for this competency standard?

Where this competency standard is being used as part of an accreditation or licence for purchase or use of chemicals, the assessor must meet the requirements of the issuing body. This may include:

1. Accreditation with that issuing body.
2. Maintenance of current competency in this competency standard.
3. Involvement in professional development programs comprising technical and legislative updates on an annual basis.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

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Certificate 5 in Production Horticulture (CEH) Controlled Environment Horticulture

RTF5005A	Manage plant health
RTC5701A	Establish and maintain the enterprise OHS program
RTC5913A	Collect and manage data
RTC5914A	Prepare reports
RTE5016A	Develop production plans for crops
RTE5807A	Manage staff
RTE5901A	Develop a marketing plan
RTE5902A	Develop and review a business plan
RTE5903A	Plan, implement and review a quality assurance program
RTE5906A	Monitor and review business performance

RTF5005A   Manage plant health

This competency standard covers the process of managing plant health in a horticultural or agricultural enterprise. It requires the ability to develop a plant health and management program, implement a plant maintenance program, and prepare a nutrition program. Managing plant health in a horticultural or agricultural enterprise requires knowledge of strategic aspects of managing plant quality, performance and nutrition, management of weed, pest and disease infestations, planning water budgets and irrigation strategies, plant growth processes, and plant growth.

Element		Performance Criteria	
1	Develop a **plant** health and management program	1.1	Plant health issues are identified from published data, historical records and industry consultation.
		1.2	Management issues are defined relative to desired quality, quantity and productivity requirements of marketing and production plans.
		1.3	The program is developed which defines enterprise guidelines and specific responsibilities of operational elements to achieve required outcomes.
		1.4	The program is communicated effectively, and systems are established to monitor business goals.
		1.5	Professional assistance is sought where appropriate.
		1.6	**Information** is assessed to determine potential key information for input to planning decisions.
		1.7	The environmental implications of chemical use, alternative methods and non-chemical preventative methods are considered and documented.
		1.8	Information is assessed to determine potential key information for input to planning decisions.
2	Determine plant health strategies	2.1	Information gathered is analysed for suitable approaches to plant health management.
		2.2	Strategies are considered in the light of their **impacts.**
		2.3	Strategies for plant health management are determined to integrate the most suitable **methods** with the proposed plants and the existing soil types.
		2.4	Environmental controls are established and

			specifically included in the plan.
		2.5	**OHS** hazards are identified, risks assessed, and suitable controls are incorporated into the plan.
3	Provide input to other planning processes	3.1	Details regarding plant health management strategies are used as input to other organisational **planning processes.**
		3.2	Information regarding other planning processes is collected and used to inform the plant health management planning process.
		3.3	Information about the range of planning processes is communicated verbally and/or in writing according to the requirements of the circumstances and the people involved.
4	Determine scheduling and key responsibilities	4.1	**Scheduling** for plant health management is determined taking the range of seasonal, geographic, and resourcing factors into consideration.
		4.2	Key responsibilities for specific implementation processes are determined.
		4.3	Recordkeeping requirements are determined and procedures are put in place to ensure compliance with the range of applicable regulations.
		4.4	The plan, including scheduling and key responsibilities, is clearly documented.
		4.5	The plan includes the type, format, frequency and detail of any reporting required by both manager(s) and operators.
5	Monitor and adjust plant health management strategies	5.1	The effectiveness of the plant health management strategies is evaluated at key points and adjustments made as necessary.
		5.2	Environmental impacts and OHS hazards relating to plant health management are identified, monitored and assessed throughout the implementation process.
		5.3	Modifications are made to the strategy as and when necessary for environmental, OHS resourcing, or effectiveness reasons.
6	Evaluate plant health management strategies and record results	6.1	Data, observations and documentation from the implementation of plant health management program is analysed against the plan according to organisation guidelines.
		6.2	Recommendations for future strategies are prepared based on the analysis of the data.
		6.3	A report is prepared that documents the implementation of the strategies and includes: - any difficulties or issues faced

-   the methods used for treatment
-   impacts on environmental and OHS
-   any recommendations for future work
-   results
-   costs, and
-   any available data analysis.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **plants** may be relevant to this competency standard?	Plant species may include tree, shrub and ornamental plant species, fruit, vegetables, herbs, flowers, foliage, bulbs, tubers, nuts, mushrooms, wild harvest and oil crops, greenhouse & containerised, field planted and stock specimens, indigenous and exotic species and varieties, and turf species.
From where might **information** be sourced for input to the planning process?	Information may come from a range of internal and external sources that might include records of previous programs, industry journals, and industry seminars/workshops.
What are the **impacts** that might be considered when determining long-term strategies?	The impacts may be those that cause financial, environmental, labour, OHS, and opportunity costs to the organisation.
What are the **methods** that might be used in plant health management?	Control of plant and insect pests and diseases, plant nutritional programs and fertilizing, amendments to soil structure and characteristics, canopy management, pruning, watering, cultural practices, and plant selection.
What are the **OHS** issues that impact on plant health management?	They include safe systems and procedures for storage, handling and transportation of hazardous substances; chemicals selected taking into account toxicity levels and environmental effects; systems and procedures for the safe operation and maintenance of machinery and equipment, including hydraulics and guarding of exposed moving parts; working at heights, heating pipes, safe manual handling systems and procedures; safe systems and procedures including protection from solar radiation; selection, use and maintenance of relevant personal protective clothing and equipment; and fire risk.

What other **planning processes** may be considered when planning for plant health management?	The planning processes that deal with other discrete areas of the organisation include those such as production planning, irrigation planning, pasture and crop management planning, recreation/amenity use, property management planning, business planning, and marketing.
What might affect the **scheduling** of treatments?	Timing of treatments is planned to suit seasonal influences, market requirements (e.g. withholding periods), cultural requirements (e.g. greenhouse re-entry periods), weather and weather forecasts, as well as the local geography and the organisation's resource situation.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in managing plant health requires evidence that plant health has been successfully and appropriately planned and managed within an enterprise to industry standards. The skills and knowledge required to manage plant health must be **transferable** to a range of work environments and contexts. For example, this could include different plants, environmental parameters, treatments and enterprises.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• strategic aspects of managing plant quality, performance and nutrition
	• management of weed, pest and disease infestations
	• planning water budgets and irrigation strategies
	• plant growth processes such as photosynthesis, respiration, nutrient uptake, solute transport, and metabolism, water balance and osmotic pressure
	• plant growth and development and growth regulators
	• integrated pest management (IPM)
	• environmental controls and codes of practice applicable to the enterprise
	• relevant legislation and regulations relating to OHS contractor engagement, chemical use and application, and vehicle and plant use

	• environmental controls and codes of practice applicable to the business and to plant health management operations
	• sound management practices and processes to minimise plant health management control operations.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to:
	• develop a plant health and management program
	• determine plant health strategies
	• provide input to other planning processes
	• determine scheduling and key responsibilities
	• monitor and adjust plant health management strategies
	• evaluate plant health management strategies and record results.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	With the full range of staff and industry participants.
2. How can **information be collected, analysed and organised (3)**?	Through using the variety of sources available for input to decision-making.
3. How are **activities planned and organised (3)**?	In developing plans and directions for the long-term plant health management.
4. How can **team work (3)** be applied?	Through involvement of contractors, consultants and other staff in managing plant health.
5. How can the use of **mathematical ideas and techniques** (3) be applied?	Through analysing statistical data on plant growth and performance.
6. How can **problem-solving** skills (3) be applied?	Through recognition and diagnosis of symptoms of poor health and nutrition in plants.
7. How can the **use of**	Through use of computers and communication

technology (3) be applied?   systems.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTC5701A   Establish and maintain the enterprise OHS program

This competency standard covers the process of establishing and maintaining the enterprise Occupational Health and Safety (OHS) program. It requires the ability to develop OHS policies and procedures that demonstrate enterprise commitment to OHS, establish and maintain participative arrangements, develop OHS safety induction and training programs, and evaluate the enterprise OHS system. Establishing and maintaining the enterprise OHS program requires knowledge of significant hazards in the workplace, relevant OHS legislation and Codes of Practice, risk control measures, and relevant management systems and procedures.

Element		Performance Criteria	
1	Develop OHS policies and procedures	1.1	An OHS business plan and program is developed for the enterprise in consultation with designated personnel and/or management.
		1.2	OHS responsibilities and duties are clearly defined, allocated and included in job descriptions and duty statements for all relevant positions.
		1.3	Financial and human resources for implementation of OHS policies and procedures are identified, sought and/or provided as required.
		1.4	Information on the OHS system and procedures for the area of responsibility is provided and explained in a form which is readily understood by employees.
2	Establish and maintain **processes** to ensure the participation of all employees in the application of OHS	2.1	Consultation **processes** are established and maintained with employees and their representatives in accordance with relevant legislation and according to enterprise guidelines.
		2.2	Issues raised though participation and consultation are dealt with and resolved promptly and effectively in accordance with enterprise procedures for issue resolution.
		2.3	Information about the outcomes of participation and consultation is provided in a manner readily accessible to employees.

3	Establish and maintain procedures for identifying **hazards**	3.1	Existing and potential hazards within the area of responsibility are identified and confirmed in accordance with legislation, Codes of Practice, and trends identified from the OHS records system.
		3.2	A procedure for ongoing identification of hazards is developed and integrated within systems of work and procedures.
		3.3	Activities are appropriately monitored to ensure that this procedure is adopted effectively throughout areas of managerial responsibility.
		3.4	Hazard identification is addressed at the planning, design and evaluation stages of any change in the workplace to ensure that new hazards are not created.
4	Establish and maintain procedures for assessing risks	4.1	Risks associated with identified hazards are assessed in accordance with safe work practices, with information derived from workplace OHS records and industry wide information, and with relevant OHS legislation and Codes of Practice.
		4.2	A procedure for ongoing assessment of risks is developed and integrated within systems of work and procedures.
		4.3	Activities are monitored to ensure that risk assessment procedures are adopted effectively throughout the area of managerial responsibility.
		4.4	Risk assessment is addressed at the planning, design and evaluation stages of any change in the workplace to ensure that the risk from hazards is not increased.
		4.5	Accident and dangerous occurrences are investigated and recorded according to enterprise and OHS procedures.
5	Interim risk control measures are implemented until a better or permanent control measure is developed	5.1	Measures to control assessed risks are developed and implemented in accordance with the hierarchy of control, relevant OHS legislation, Codes of Practice, and trends identified from the OHS records system.
		5.2	When measures which **control a risk** at its source are not immediately practicable, interim solutions are implemented until a permanent control measure is developed.
		5.3	A process of ongoing hazard identification and risk assessment, and review of effectiveness of control programs is developed and integrated

			into enterprise management arrangements.
		5.4	Activities are monitored to ensure that the risk control procedure is adopted effectively throughout the area of managerial responsibility.
		5.5	Risk control is addressed at the planning, design and evaluation stages of any change in the workplace to ensure that adequate risk control measures are included.
		5.6	Systems are designed to reduce risk and administrative arrangements to ensure safe OHS work practices are put in place where elimination of a hazard is not possible.
		5.7	Effective OHS risk management measures are set in place during any modification of the buildings and structures, machinery and work activities.
		5.7	Inadequacies in existing risk control measures are identified and resources enabling implementation of new measures are sought and/or provided according to appropriate workplace procedures.
6	Plan and manage enterprise **procedures for dealing with hazardous events**	6.1	Potential emergencies posing risk to health and safety of workers and the public are correctly identified.
		6.2	Plans and procedures which control the risks associated with hazardous events and meet any legislative requirements as a minimum, are developed in consultation with appropriate emergency services.
		6.3	Appropriate information and training is provided to employees to enable implementation of correct emergency procedures.
		6.4	**Adequate numbers** of workers are trained in First Aid to ensure that first aid is applied to preserve life and minimise injury.
7	Establish and maintain an OHS safety induction and training program	7.1	An OHS induction program is developed to meet the occupational health and safety needs of new employees.
		7.2	An OHS training program is developed as part of supervisors and employee's general training.
8	Establish and maintain a system for OHS **records**	8.1	A system for keeping OHS records is established and monitored to allow identification of patterns of occupational injury and disease in the enterprise.
		8.2	Records are regularly updated and used to

			evaluate the effectiveness of the enterprise OHS program.
9	Evaluate the enterprise OHS system and related policies, procedures and programs	9.1	The effectiveness of the OHS system and related policies, procedures and programs is assessed according to enterprise aims with respect to OHS.
		9.2	Improvements to the OHS system are developed and implemented to ensure more effective achievement of enterprise aims.
		9.3	Compliance with OHS legislation and Codes of Practice is assessed to ensure that legal OHS standards are maintained as a minimum.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **processes** for consultation are relevant to this standard?	OHS committees, consultation with health and safety representatives, issue resolution procedures and participative/consultative procedures conducted by supervisory staff within the area of managerial responsibility.
Which **hazards** may be relevant to this unit?	Hazards in the workplace, risks associated with plants and animals, risks associated with bystanders/public, levels of heath and fitness, OHS emergencies in land-based workplaces.
What methods to **control a risk** may be included?	General duty of care, following regulations and Codes of Practice, use of protective clothing or equipment, handling hazardous substances carefully.
What **procedures for dealing with hazardous events** may be associated with this unit?	Provision of clear directions to the location of an emergency using relevant National, State and local references.
How can training of **adequate number** of workers be determined?	By completion of recognised first aid training and maintaining skill levels to ensure that injured workers receive effective treatment while awaiting medical attention.

What **records** may be included in this standard?	OHS audits and inspections, action taken to control OHS risk, OHS induction and training of workers, registers of hazardous substances (including pesticides), use of hazardous substances and health surveillance results, workers occupational injury and illness, and Material Safety Data Sheets (MSDS) of hazardous substances.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in establishing and maintaining the enterprise occupational health and safety program requires evidence that knowledge and skills has been applied in the establishment, maintenance and evaluation of an enterprise OHS system as set out in this competency standard, and according to enterprise guidelines and relevant acts. The skills and knowledge required to establish and maintain the enterprise occupational health and safety program must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, legislative frameworks and industry sectors.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• Significant hazards in the workplace.
	• All relevant OHS legislation and Codes of Practice consistent with the elements of competence, the hierarchy of OHS risk control and its implementation for hazards in land-based industries.
	• Risk control measures.
	• Hierarchy of control.
	• Relevant management systems and procedures.
	• Public safety issues.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:
	• Develop OHS policies and procedures which demonstrate enterprise commitment to OHS.
	• Establish and maintain arrangements to ensure the involvement of all employees in the management of OHS.

- Establish and maintain procedures for identifying hazards.
- Establish and maintain procedures for assessing risks.
- Establish and maintain procedures for controlling risks
- Establish and maintain enterprise procedures for dealing with hazardous events.
- Establish and maintain an OHS safety induction and training program.
- Establish and maintain a system for OHS records.
- Evaluate the enterprise OHS system and related policies, procedures and programs.
- Analyse recorded data to determine where the OHS program can better meet enterprise and employee needs.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	By establishing and maintaining participative processes for the management of OHS.
2. How can **information be collected, analysed and organised (3)**?	By evaluating the enterprise OHS system.
3. How are **activities planned and organised (3)**?	By ensuring compliance with OHS legislation and codes.
4. How can **team work (3)** be applied?	By providing information and training to staff.
5. How can the use of **mathematical ideas and techniques (3)** be applied?	By calculating costs, setting priorities and developing OHS business plan.
6. How can **problem-solving skills (3)** be applied?	By determining best possible options, setting priorities and overcoming difficulties to reduce injury risk.
7. How can the **use of**	By using a computer to communicate and record

technology (3) be applied?   OHS activities.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC5913A   Collect and manage data

This competency standard covers the process of collecting, analysing and managing data. It requires the ability to determine the type and extent of data to be collected, access and collate data, evaluate data, manage, analyse and retrieve data. Collecting and managing data requires knowledge of data collection techniques and procedures, data recording and evaluation techniques, data analysis and data storage and retrieval methods.

Element		Performance Criteria	
1	Determine the type and extent of data to be collected.	1.1	Data requirements are clearly defined and communicated to all staff involved in data collection.
		1.2	Relevant data sources are identified.
		1.3	Type and extent of data required is clearly defined.
		1.4	**OHS hazards** associated with data collecting are identified
		1.5	Data collection methods and techniques are clearly defined relative to data requirements
2	Access and collate data	2.1	Data collection sheets are formatted to assist collection.
		2.2	Data is researched and/or collected from field sources according to enterprise guidelines and with standard research approaches.
		2.3	Data is collated by appropriate electronic means.
		2.4	Appropriateness of data is monitored and recorded during collection.
		2.5	Information is researched using appropriate methods and technologies.
		2.6	Sources of information are regularly reviewed for usefulness, validity, reliability and cost.
		2.7	Channels and **sources of information** are used effectively.
		2.8	Opportunities are taken to establish and maintain contacts with those who may provide useful information.
		2.9	Appropriate **OHS requirements** and work practices are followed
3	Evaluate data	3.1	Data collected is relevant, valid and sufficient.

		3.2	Where data is unclear or difficult to interpret, clarification and assistance is sought.
		3.3	Where data is inadequate, additional data is obtained.
		3.4	Information is analysed for its validity and reliability.
4	Manage and retrieve data	4.1	Data is **stored** by appropriate electronic means.
		4.2	Data is presented using appropriate graphical aids and techniques
		4.3	Data is assembled and provided to the manager/client as required and in accordance with standard research approaches.
		4.4	Data is retrieved as required.
		4. 5	New methods of **recording** and storing data are suggested/introduced as needed.
5	Analyse and interpret data	5.1	Data is analysed using appropriate statistical and analytical techniques
		5.2	Data is interpreted to determine its significance, validity and reliability.
		5.3	Findings based on the analysis and interpretation of the data is reported
		5.4	Data is organised into a suitable report format to aid decision-making.
		5.5	Conclusions drawn are based on reasoned argument and appropriate evidence.

Range of Variables

The Range of Variables defines the different contexts, work environments and parameters governing the performance of this unit of competency. The variables chosen in training and assessment will need to reflect local industry and regional contexts.

What may be included in **sources of information**?	Data may be based on primary and secondary sources including field work and trials, greenhouse climate management and data recording systems, research materials, published books, academic reports, industry reports, colleagues, computer software, internet, newspapers, photographic data, journals, industry publications, industry specialists and experts.
What **OHS hazards** can be included in this standard?	Hazards may include manual handling, using tools and equipment, noise, dust, solar radiation, falls and tripping, spider and insect bites.

What **OHS requirements** may be relevant to this standard?	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; correct manual handling; basic first aid; and safety procedures for protection of others.
What methods of information **storage** may need to be accessed?	Methods of information storage may include hard copy files, electronic databases, spreadsheets, file systems, and library collections.
What types of **recording techniques** may be relevant to this standard?	Recording techniques may include written, audio, video, photographic and computers.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in collecting, analysing and managing data requires evidence that an individual has sourced, collected, analysed and evaluated data according to industry and enterprise standards and expectations. The skills and knowledge required to collect, manage and analyse data must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, types and sources of data, and reporting mechanisms.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this unit are listed below: • Data collection techniques and procedures. • Data recording and evaluation techniques. • Data analysis and interpretive techniques • Data storage and retrieval methods. • Data reporting methods.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • Determine the type and extent of data to be collected. • Access and collate data. • Evaluate data. • Manage and retrieve data. • Analyse the data

- Interpret the data
- Follow safe work practices.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (3)** be applied?	Through recording and presenting data to clients and enterprise personnel.
2.	How can **information be collected, analysed and organised (3)**?	Through identification of sources of information, and retrieval, analysis and collation of data..
3.	How are **activities planned and organised (3)**?	In accordance with standard research approaches in line with enterprise procedures and policies.
4.	How can **team work (2)** be applied?	Through participating in reviews, collaboration with colleagues and the evaluation of data.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	In compiling, analysing and evaluating data.
6.	How can **problem solving skills (3)** be applied?	Through dealing with inconsistencies in data, and difficulties in obtaining and collecting valid data.
7.	How can the **use of technology (3)** be applied?	Through the use of computers in sourcing, analysing, collating, reporting and storing data

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

RTC5914A   Prepare reports

This competency standard covers the process of preparing comprehensive reports for a rural, horticultural or land management setting. It requires the ability to research material., evaluate information, produce a document, and deliver an oral presentation. Preparing reports requires knowledge of information and research sources, report structure and presentation, and public presentation techniques and approaches.

Element		Performance Criteria	
1	Research material	1.1	Topic of the report is identified and described.
		1.2	**Sources of information** are determined.
		1.3	Information appropriate to the task is collected and organised according to enterprise standards.
2	Evaluate information	2.1	Information collected is relevant and sufficient to provide a full report.
		2.2	Where information is unclear or difficult to understand, clarification and assistance is sought.
		2.3	Where available information is inadequate, additional information is obtained.
		2.4	Information is assessed for its validity and reliability, and is organised into a suitable form to aid decision-making.
		2.5	Conclusions drawn from relevant information are based on reasoned argument and appropriate evidence.
3	Produce a document	3.1	Language is applicable to the task and audience.
		3.2	The document is organised logically, is structured and balanced according to purpose, audience and context.
		3.3	The document is formatted and presented according to business and enterprise standards.
		3.4	Conclusions reached reflect the stated objectives of the report.
		3.5	Preparation is completed within the specified timeframe.
		3.6	Enterprise and **OHS requirements** and procedures are followed.

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4	Deliver an oral presentation	4.1	Language is applicable to the task and audience
		4.2	Presentation is organised logically, is structured and balanced according to purpose, audience and context.
		4.3	Concise and well presented support materials are used in oral presentations to reflect industry standards.
		4.3	Efficient time use allows clear presentation of the desired topic.
		4.4	Oral presentation is delivered within a specified time

Range of Variables

The Range of Variables defines the different contexts, work environments and parameters governing the performance of this unit of competency. The variables chosen in training and assessment will need to reflect local industry and regional contexts.

What may be included in **sources of information**?	Sources of data may include field work, research materials, published books, academic reports, industry reports, colleagues, computer software, internet, newspapers, journals, industry publications, industry specialists and experts.
What **OHS requirements** may be relevant to this standard?	OHS requirements may include identifying hazards, assessing risks and implementing controls, cleaning, maintaining and storing equipment, appropriate use, maintenance and storage of PPE including sun protection, safe operation of equipment, correct manual handling, basic first aid, and safety procedures for protection of others.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in preparing reports requires evidence that an individual has prepared and presented a report according to industry and enterprise standards and expectations. The skills and knowledge required to prepare reports must be **transferable** to a range of work environments and contexts. For example, this could include different workplaces, subject matter, and reporting formats.

What specific knowledge is needed to achieve the	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The

performance criteria?	knowledge requirements for this unit are listed below:
	• Information and research sources.
	• Report structure and presentation.
	• Public presentation techniques and approaches.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to:
	• Research material.
	• Evaluate information.
	• Produce a document.
	• Deliver an oral presentation.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Through provision of written reports and oral presentations to clients and enterprise personnel.
2. How can **information be collected, analysed and organised (3)**?	Through identification of sources of information, and retrieval and collation of data.
3. How are **activities planned and organised (3)**?	In accordance with standard research approaches in line with enterprise procedures and policies.
4. How can **team work (2)** be applied?	Through participating in research and the preparation of reports and presentations.
5. How can the use of **mathematical ideas and techniques (3)** be applied?	In compiling and evaluating data for the report.
6. How can **problem-solving skills (3)** be applied?	Through making recommendations based on reasoned argument.
7. How can the **use of technology (3)** be applied?	Through the use of computers in preparing reports and use in presentations.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other

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competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

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RTE5016A   Develop production plans for crops

This competency standard covers the process of developing production plans for agricultural and horticultural crops. It requires the ability to prepare budgets and gross margins, source and interpret relevant benchmark information from consultants or peers, sample soils, nutrient runoff and plant tissue for testing, manage and monitor crop diaries and associated records, select crop species and variety, determine yield potential for crop, prepare individual growing area plans and a whole farm crop, and review production plan. Developing production plans for crops requires knowledge of determinants of crop yield, market prices, gross margins, cash flow budgets and disease and pest management for relevant crops.

Element		Performance Criteria	
1	Select crop species and variety	1.1	Crop types and varieties are assessed and selected for their market potential and gross margin returns for the farm environment.
		1.2	Most profitable cultural practices and rotations are selected consistent with disease and pest management strategies, available machinery resources, and management for sustainability of resources.
		1.3	Production risks are identified for each crop and strategies to address these are determined.
		1.4	Environmental risks are identified and strategies developed as appropriate.
2	Determine yield potential for crop	2.1	Relevant benchmark yields are sourced, where available, to assist setting target yields.
		2.2	Past production records are analysed to determine the key determinants of yield.
		2.3	Available models for calculating water use efficiency or other key determinants of yield are used, as appropriate, to assist in setting target yields.
		2.4	Quality specifications and target yields are established for all crops.
3	Prepare individual growing area plans and a whole farm crop production plan	3.1	Growing areas are **assessed** for their nutrient, pest and disease status, climate management characteristics, water reserves, tillage requirements, and other factors before selecting crop variety.
		3.2	**Records of chemical use** are used, as appropriate, to assist planning to reduce chemical resistance.
		3.3	Crop variety is selected and growing area

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preparation, planting, fertilising and other treatments are planned.

3.4 Optimum timing of planting, applications and treatments is determined and a calendar of operations is prepared.

3.5 Cash flow budget for the farm-cropping program is determined.

4	Review production plan	4.1	**Logistical arrangements** related to harvesting/transportation/marketing and other key operations are planned for the production cycle.
		4.2	Machinery and equipment requirements are planned and checked for the crop production cycle.
		4.3	Labour requirements are identified and planned for the crop production cycle.
		4.4	Seed, fertiliser, pest and disease treatments and other input requirements are identified.
		4.5	**Physical and financial record keeping system** is established to provide data for the analysis of crop performance, and to meet other statutory requirements including records of chemical use.
		4.6	Production plan is reviewed and amended where required.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

How might growing areas be **assessed**?	Assessment may include the use of objective soil tests, critical study of greenhouse climate modification technologies, current and previous observations/tests, and a range of other historical records. The process may involve professional support from agronomists and consultants.
What **records of chemical use** should be required?	These will be established by minimum legal requirements, but will also reflect target quality parameters set by the production plan.
What may be considered a **logistical requirement?**	These requirements will include planning the most cost effective mix of arrangements related to on-farm storage capacity, off-farm collection point alternatives, transport alternatives and opportunities for backfilling when transporting product, etc.

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What **physical and financial record keeping system** should be used to meet the requirement of this competency standard?	The system should include growing area records, input records, and may be computer or non-computer based.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in developing production plans for crops requires evidence that a production plan for a crop has been successfully and appropriately implemented and monitored in an enterprise. The skills and knowledge required to develop production plans for crops must be **transferable** to a range of work environments and contexts. For example, this could include different crops, enterprises and growing conditions.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below: • determinants of crop yield • cultural practices related to cropping • market prices, gross margins, cash flow budgets • benchmark performance indicators • disease and pest management for relevant crops • machinery and equipment requirements for cropping • record keeping systems (computer or non-computer).
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • prepare budgets and gross margins • source and interpret relevant benchmark information from consultants or peers. • sample soils, nutrient runoff and plant tissue for testing • manage and monitor crop diaries and associated records • select crop species and variety • yield potential for crop is determined • prepare individual growing area plans and a whole farm crop • ability to critically review production plans.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in

all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (3)** be applied?	Through record keeping of previous yields and other relevant data.
2.	How can **information be collected, analysed and organised (3)**?	Through evaluation and review of production plans, and comparison with collated data.
3.	How are **activities planned and organised (3)**?	According to standard planning processes for crops production.
4.	How can **team work (3)** be applied?	Through consultation with others involved in crop management.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	Through determining yield potential.
6.	How can **problem-solving skills (3)** be applied?	Through planning for unforeseen circumstances related to crop production and dealing with variables as they arise.
7.	How can the **use of technology (3)** be applied?	Through use of computer and communication systems.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE5807A   Manage staff

This competency standard covers the process of managing staff in an agricultural, horticultural or land management enterprise. It requires the ability to identify skill requirements, prepare task descriptions and person specifications, arrange employment of workforce members, and implement OHS priorities and procedures. Managing staff requires knowledge of job specifications, equal employment opportunity legislation, OHS legislation, relevant industrial awards, employee induction programs, interviewing procedures, contracts of employment and unfair dismissal legislation.

Element		Performance Criteria	
1	Prepare task descriptions and person specifications	1.1	Tasks are identified and described along with the range of conditions under which performance may need to occur.
		1.2	Most appropriate employment arrangements are determined based on employer and employee needs, and responsibilities and rights.
		1.3	Person specifications are prepared with due regard to **legislation, codes and national standards.**
2	Manage **workforce** performance	2.1	Induction programs are designed for each employee consistent with legislative requirements and enterprise guidelines.
		2.2	Terms of engagement for consultants and contractors are clarified and established.
		2.3	Induction programs are conducted for new appointees and appropriate records established.
		2.4	Strategies for communicating with workers are designed and implemented.
		2.5	Performance management strategies are designed and implemented.
		2.6	Processes for the termination of non-performing staff are identified and followed as necessary.
3	Support workforce training programs	3.1	Strategies to identify skill and knowledge gaps are designed and implemented with workers, and strategies to address these gaps are implemented.
		3.2	On-the-job training is provided to optimise worker performance and to ensure safety and fairness in the workplace.
		3.3	Off-the-job training requirements are identified and training is sourced and supported as appropriate.
4	Manage administrative	4.1	Processes and procedures for the administration of

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	support		staff records are implemented.
		4.2	Administrative procedures and processes to meet legislated requirements are implemented.
		4.3	Industrial relations are established and monitored, awards adhered to, enterprise agreements and/or contracts of employment negotiated, and disputes and conflicts resolved.
5	Implement OHS priorities and procedures	5.1	Safety policies are developed and communicated within the enterprise.
		5.2	Safe work practices are identified/designed for all aspects of the operation of the enterprise.
		5.3	Safe work practices are communicated and enforced among all members of the workforce.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What legislation, codes and national standards **are relevant to the workplace?**	These include award and enterprise agreements and relevant industrial instruments, relevant legislation from all levels of government that affects business operation, especially in regard to OHS and environmental issues, equal opportunity, industrial relations and anti-discrimination and relevant industry codes of practice.
What is included under **workforce** in this competency standard?	The workforce includes self, family members whether paid or unpaid, employees both permanent and casual, contractors, share-farmers, students on work experience, overseas workers on short-term visas and professional and technical support.
What may be considered under **contracts of employment**?	Contracts of employment include task specific as well as general contracts of employment.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in managing staff requires evidence that staff have been successfully managed within an enterprise according to the criteria outlined in this standard.

The skills and knowledge required to manage staff must be **transferable** to a range of work environments and contexts. For example, this could include different enterprises, staff numbers and profiles.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below:

- task descriptions and person specifications
- equal opportunity and equal employment opportunity legislation
- OHS legislation
- relevant industrial awards
- performance management approaches
- personnel management strategies
- employee induction programs
- contracts of employment
- unfair dismissal legislation.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to:

- prepare task descriptions and person specifications
- arrange employment of **workforce** members
- implement OHS priorities and procedures
- review labour productivity.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Through formal and informal processes established by the enterprise.
2. How can **information be collected, analysed and organised (3)**?	Through establishment and maintenance of filing systems and collection of data required of employers.
3. How are **activities planned and organised (3)**?	According to human resource management principles and legislative guidelines.
4. How can **team work (3)** be applied?	Through consultation in the preparation of job descriptions and OHS activities.
5. How can the use of	Through calculations associated with insurance and

mathematical ideas and techniques (3) be applied?	superannuation.
6. How can **problem-solving skills (3)** be applied?	Through resolving conflicting demands on management and dealing with different personality types amongst staff.
7. How can the **use of technology (3)** be applied?	Through the use of computers and communication systems.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE5901A   Develop a marketing plan

This competency standard covers the process of designing and co-ordinating a marketing plan. It requires the application of skills and knowledge to analyse market conditions and access and evaluate advice on market and potential distribution options. In addition, it requires an awareness of industry structures and business trends. The functions associated with this standard would be performed independently and under limited supervision.

Element		Performance Criteria	
1	Evaluate commercial information	1.1	Relevant **information** is **researched** and analysed to identify market trends.
		1.2	Competing products are identified and evaluated to determine **strengths and weaknesses of own products.**
		1.3	Collated information is presented in a manner which provides clear and concise information.
		1.4	Market and situation analysis is conducted using established techniques in accordance with available budget and the need for external assistance.
2	Identify marketing requirements	2.1	**Promotional materials** are created that enhance the product and commercial presentation.
		2.2	Priorities, responsibilities, timelines and budgets are recorded and communicated to appropriate colleagues.
3	Determine promotional strategies	3.1	Detailed plans for promotional activities are prepared and recorded according to enterprise guidelines.
		3.2	Outlined in the promotional plan are objectives, level of exposure to be achieved and available markets.
		3.3	Strategies take account of feedback from operational staff, time management and scheduling issues, and resource constraints.
		3.4	Marketing objectives are established based on new and retained business consistent with product and operational business plans.
4	Organise implementation	4.1	**Criteria** are established to measure impact and success of promotional activities.
		4.2	Adjustments to the promotional strategy product distribution are made promptly to ensure consistency of promotion.
		4.3	Required distribution channels are defined and

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established.

4.4   **Product documentation** is distributed on time in the specified quantities.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work contexts.

What **information** might be relevant to this standard	Sales data, expected revenues, expenditure, attributable costs, market share figures, trends in consumer purchases, demographic data, borrowing costs, transport costs, and delivery times.
How can information be **researched**?	Through Internet, trade magazines, commercial sources, newspapers, library searches, anecdote, and annual reports of companies.
What **strengths and weaknesses of own products** might be identified?	Packaging and presentation, relative prices, sales outlets and distribution, proximity to markets, customer feedback, complementarity of other products and services, technical support and warranties, availability of consumer information, and the provision of relevant OHS information.
What **promotional materials** might be created?	Mass media advertising, Internet advertising and distribution, leaflets and flyers, trade articles, and seminar materials. Information may include region branding, promotion of health benefits, celebrity endorsement, industry compliance, and quality certification.
What **product documentation** might be distributed?	Content and ingredient information, environmental protection information, food standards compliance, labelling, invoices and orders, discount offers and bulk buying options, enterprise profiles, longevity of suppliers, and company endorsements.
What **criteria** may be relevant to this standard?	Achieving or not achieving sales targets, increased access to new markets, customer/client feedback, level of public/purchaser awareness, increased recognition rates of products, and market penetration.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence to develop a marketing plan requires evidence of the ability to research, analyse and evaluate market information to compare and contrast data and plan appropriate programs. Evidence must be demonstrated in the presentation of data on markets and the capacity to make decisions. The skills and knowledge required must be **transferable** to a different work environment. For example, this could include different products, promotional strategies and enterprise procedures and policies.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • financial management and budgeting • rural organisations policies and procedures for marketing and promotions • sales and marketing principles and practices • sound knowledge of promotional activities including, trade shows, in-house promotions, advertising, public relations, familiarisations, signage and display • relevant State/Territory legislative requirements with regard to OHS and risk management procedures for management of promotional activities • legal issues that affect marketing activities (trade practices, Fair Trading Acts, Sales of Goods Acts) • industry and marketing knowledge including sales networks and distribution systems, and customer trends and preferences • demographic studies and their application in the development of a marketing plan.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These include the ability to: • analyse, research information and develop a marketing plan • implement and evaluate a marketing plan • ability to negotiate at all levels • research and determine the best marketing options in order to achieve the organisations objectives • problem solve to overcome impediments • manage time

- evaluate performance targets and recommend modifications or improvements
- collect and analyse data to assess marketing alternatives
- make presentations to groups
- plan to manage promotional activities
- communicate written and oral information, and prepare reports and documentation
- calculate data and manage budgets.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (3)** be applied?	Information and ideas with regard to the marketing strategy may be explained and discussed with other persons involved with planning.
2.	How can **information be collected, analysed and organised (3)**?	Findings and feedback on the results of the marketing plan may be collated and recorded for analysis, and organised by reports.
3.	How are **activities planned and organised (3)**?	Resources and materials necessary to the marketing plan may need to be scheduled to meet timetables and deadlines.
4.	How can **team work (3)** be applied?	The implementation of the marketing plan may need input and advice from others to meet timetables and deadlines.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	Estimation techniques may be necessary to determine returns expected from the marketing plan.
6.	How can **problem-solving skills (3)** be applied?	Problems may arise in the course of the program that need to be addressed through adjustments of the resources or timetables.
7.	How can the **use of technology (3)** be applied?	Technology may be used to monitor, record and distribute results of the marketing plan.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other

competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE5902A   Develop and review a business plan

This competency standard covers the process of developing and reviewing business for an agricultural, horticultural or land management business enterprise.

It requires the application of knowledge and skills to determine the scope of the business plan, prepare a business plan, determine goals, trial systems, and document, monitor and review the business plan. Competency must also be demonstrated in communicating business plan objectives to relevant parties.

The work in this standard will be carried out with limited or no supervision, within enterprise guidelines.

Element		Performance Criteria	
1	Determine scope	1.1	Scope of the business plan and associated systems is determined in consultation with **key** and **specialist personnel.**
		1.2	**Accurate information** is **accessed** to inform business plan development.
		1.3	**Trends and seasonal variations** are accounted for and incorporated into the business plan.
		1.4	**Strategic goals, targets and directions** of the enterprise are accounted for in the development of the business plan.
		1.5	**Legal obligations** are understood and complied with in developing the business plan.
2	Prepare business plan	2.1	**Operational goals and targets** that enhance opportunities to meet the enterprise strategic plan are developed.
		2.2	**Supply chains** are identified and incorporated into the business plan.
		2.3	**Risk management needs** are identified and addressed within the business plan.
		2.4	**Trial systems** are incorporated in order to test budgetary impact and operational potential prior to full implementation of the business plan.
		2.5	**Indicators of operational performance** are clear and measurable and allow for realistic analysis of performance.
3	Document and review business plan	3.1	**Fiscal and operational systems** that enhance performance management and suit enterprise requirements are included.
		3.2	**Resource considerations** are incorporated into

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the business plan.

3.3   Business Plan is accurately documented and clearly communicated to all **relevant parties.**

3.4   Performance against the business plan is **monitored** to identify strengths, weaknesses and areas for improvement.

3.5   Recommendations to improve the business plan and associated systems are made as required.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

Which **key personnel** might be consulted?	Other family members, partners, providers of finance, managers, staff, clients or suppliers may be consulted.
Which **specialist personnel** might need to be consulted?	Accountants, solicitors, tax agents; regulatory bodies and government authorities; and trade, professional or industry associations might need to be consulted.
What sort of **accurate data** may be accessed?	Previous business plans, business plan exemplars, equity evaluations, capital return analyses, enterprise gross margins, net present values, internal rates of return, cash flow estimates, profit and loss estimations, sales and product analysis, market information and trends, expense records, previous account records, taxation records, and annual and quarterly returns.
Where might data be **accessed** from?	Sources may be internal or external to the enterprise.
What **trends and seasonal variations** might need to be considered?	Markets, consumer trends, technological changes affecting production and sales, climatic conditions, weed, pest and disease outbreaks, water supply, resource and input availability, fluctuations in quantity and quality of crops and livestock quality could all be considered.
Where might **relevant strategic goals, targets and directions** be sourced from?	May be sourced from existing or complementary strategic plans or related consultations in business/strategic plan development.
What **legal obligations** might need to be understood and complied with?	State/Territory and Commonwealth taxation law, company and securities legislation and possibly legislation regarding wills and inheritance in regards to succession planning might need to be considered.

What might be covered by **operational goals and targets**?	Goals and targets may be short, medium or long term and may relate to marketing and production targets, resource and asset development and management, acquisitions, capital, property improvements, and operational systems. Operational goals and targets may link directly to the enterprise strategic plan and also to OHS, environment, quality and customer/market satisfaction key result areas.
What is included within a **supply chain**?	Supply chains relate to the network of facilities that procure raw materials, transform them into intermediate products (or services) and then finished goods (or services), and delivers them through a distribution system. It covers procurement production and distribution. Supply chains should be viewed as being interlinked as opposed to being discrete units and therefore any analysis should take account of the inter-connectivity within the supply chain.
What **risk management** needs might there be?	Compulsory formal insurance (third party, workers compensation, public liability, occupational superannuation), personal accident and sickness insurance, and compulsory superannuation need to be considered. The need for formal insurance cover on assets if loss cannot be reduced to an acceptable level through management practices, needs to be addressed. Assessing whether losses without insurance would be too financially great for enterprise to bear is also a consideration. Other areas of risk that need to be considered are market risk, production risk, resource risk, financial risk, personal risk and management risk. Environmental/climactic and OHS concerns also need to be considered, as do resource peaks and troughs.
What **trial systems** might be utilised?	Trial profit and loss statements, trial budgets, trial cash flow projections and reporting and operational systems.
What **indicators of operational performance** might there be?	May relate to a range of key result areas both operational and tactical including: OHS, environment, product quality, employee performance and satisfaction levels, customer/market satisfaction levels, market and product expansion, acquisitions and expansion projections, yields and efficiency expectations, cash flow and profit and loss statements, and production and delivery timelines.

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What needs to be considered when introducing **fiscal and operational systems**?	Systems need to be implemented and phased to take account of enterprise production cycles and financial reporting considerations.
What **resource considerations** might need to be considered?	Human, raw and processed materials, water, land, financial, plant and equipment, time and technological resources may be need to be addressed.
What **relevant parties** may need to be informed?	Key and specialist personnel.
How might performance be **monitored**?	By checking against key performance indicators and measuring inputs, throughputs and outputs using reliable and standardised measures incorporated into the business plan.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in develop and review a business plan requires evidence that demonstrates ability to scope the business plan and determine key objectives and targets. It also requires competence in specifying key performance targets, assessing the relevance of the business plan, and trial systems. The business plan also needs to be documented and reviewed.

The skills and knowledge required to develop and review a business plan must be **transferable** to a different work environment. For example, if competence is demonstrated in developing a business plan for a small enterprise, it must also be evident in reviewing a business plan in medium or large enterprise environment.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• budgeting
	• forecasting
	• operational systems
	• relevant industrial awards and agreements
	• communication techniques
	• logical and analytic methods
	• profit and loss and cash flow systems
	• working knowledge of environmental, OHS, industrial relations, taxation, corporate and industry legislation as they relate to the enterprise
	• capital investment analysis.

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What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- set realistic goals
- operate manual and/or electronic commercial systems
- consider and evaluate alternatives
- document and communicate plans
- design performance criteria, and operational and tactical plans that are incorporated into a business plan
- analyse information and results
- identify and design risk management and mitigation strategies
- identify and design appropriate operational plans.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (3)** be applied?	In discussing and formulating the business plan in consultation with key and specialist personnel.
2.	How can **information be collected, analysed and organised (3)**?	In gathering information for the business plan and in reviewing targets and business plan operation.
3.	How are **activities planned and organised (3)**?	In developing the business plan and reviewing and redesigning the system.
4.	How can **team work (3)** be applied?	In consulting with key and specialist personnel in trialling systems, and reviewing operational and business plan.
5.	How can the use of **mathematical ideas and techniques (2)** be applied?	To evaluate data and results and to ensure appropriate measurement systems are in place.
6.	How can **problem-solving skills (3)** be applied?	To improve existing systems, to solve communication barriers and to achieve targets and objectives.
7.	How can the **use of**	To improve systems performance and to calculate

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technology (2) be applied?   targets and collate data and budget forecasts.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

RTE5903A   Plan, implement and review a quality assurance program

This competency standard covers the process of planning, implementing and reviewing a quality assurance program for an agricultural or horticultural enterprise. It requires the ability to determine quality assurance objectives for the enterprise, plan the quality assurance program, develop implementation strategies, implement the quality assurance program, and review the quality assurance program. Planning, implementing and reviewing a quality assurance program requires a knowledge of market projections and customer requirements, cost/benefit of quality assurance implementation, system analysis, enterprise culture and values, leadership and administrative skills, human resource induction and performance monitoring practices.

Element		Performance Criteria	
1	Determine quality assurance objectives for the enterprise	1.1	**Future market requirements** for quality assured products are assessed.
		1.2	Premiums for quality assurance products are determined.
		1.3	Strategic benefits of a quality assurance program are assessed.
2	Plan the quality assurance program and develop implementation strategies	2.1	Product quality standards are defined.
		2.2	Current status of products and operations is audited.
		2.3	**Industry quality assurance programs** are evaluated and costed.
		2.4	Required processes and practices are documented in the quality assurance program manual and an implementation plan is prepared.
3	Implement the quality assurance program	3.1	Instructions are documented defining task and process requirements.
		3.2	Contractor and staff training is established and implemented.
		3.3	**Communication** takes account of social, cultural and ethnic backgrounds.
		3.4	Changes to **processes and practices** are introduced.
		3.5	Processes to monitor and verify product quality are established.
		3.6	**Recording systems** are introduced.
		3.7	Operating instructions are validated under **conditions** to verify their suitability.
		3.8	Problems and issues are analysed and resolved

			appropriately, promptly and decisively.
4	Review the quality assurance program	4.1	**Reporting formats** are established.
		4.2	**Mechanisms for gaining feedback** information are implemented.
		4.3	Preparation is made for quality assurance audits.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **future market requirements** may be relevant to this competency standard?	The assessment of market requirements for quality products should include trends and directions from regional, domestic and overseas markets.
What **industry quality assurance programs** can be included?	Industry quality assurance programs will include programs developed by a range of entities including industry organisations and marketing authorities, processors, wholesalers/retailers and other stakeholders. Relevant programs include Cattlecare, Flockcare, Freshcare, SQF2000, Graincare and Proven Perfect.
What **communication** may be relevant to this competency standard?	Communication will be through a range of strategies relevant to the workplace and will include workplace meetings, signage, memoranda, newsletters and interviews.
Which **processes and practices** are relevant?	All processes and practices impacting on the quality of product produced will be relevant.
What **recording systems** may be included?	Recording systems will be effective in meeting the quality assurance arrangements established and relevant to the enterprise. They may be computer or non-computer based.
What **conditions** could be relevant to this competency standard?	Validation should be conducted under the full range of workplace operating conditions and cover variations in work throughput, personnel involved and environmental parameters.
What **reporting formats** can be used?	Reporting formats will be the responsibility of the enterprise consistent with the quality assurance objectives.
What **mechanisms for gaining feedback** may be relevant to this competency standard?	Feedback will be sourced from customers/purchasers, internal stakeholders, suppliers and other service providers.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in planning, implementing and reviewing a quality assurance program requires evidence that quality assurance programs have been successfully and appropriately established and managed in an agricultural or horticultural enterprise. The skills and knowledge required to plan, implement and review a quality assurance program must be **transferable** to a range of work environments and contexts. For example, this could include different rural enterprises and commodity areas.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below: • market projections and customer requirements • cost/benefit of quality assurance implementation • system analysis, HACCP or related processes • enterprise culture and values • leadership and administrative skills • human resources induction practices • human resources performance monitoring practices.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • determine quality assurance objectives for the enterprise • plan the quality assurance program and develop implementation strategies • implement the quality assurance program • review the quality assurance program.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Through interaction with staff and financial service providers.

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2.	How can **information be collected, analysed and organised (3)**?	Through analysis of enterprise business records and characteristics.
3.	How are **activities planned and organised (3)**?	According to industry best practice and codes of practice.
4.	How can **team work (3)** be applied?	In implementing quality assurance practices in the enterprise.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	Through calculations associated with business record keeping systems and data analysis.
6.	How can **problem-solving skills (3)** be applied?	Through the review and assessment of quality assurance program.
7.	How can the **use of technology (3)** be applied?	In maintenance of records and use of computer software applications.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE5906A   Monitor and review business performance

This competency standard covers the functions associated with identifying and reviewing the business performance of an agricultural or horticultural enterprise.

It requires analysing and assessing market conditions and business data to determine the suitability of the business operational structures and the overall potential of the business. It requires an awareness of economic and accounting analysis methods. This work would be undertaken independently, and in some circumstances under broad supervision.

Element		Performance Criteria	
1	Evaluate commercial performance	1.1	**Data** relating to **enterprise** performance is gathered and analysed to identify **historical** and current performance.
		1.2	**Operational structures** are reviewed and analysed to determine the suitability of organisational processes to enterprise objectives.
		1.3	Enterprise **strengths and weaknesses** are evaluated against **market conditions** to determine current and future capacities.
		1.4	Enterprise objectives are evaluated to identify variations and scope for future development.
2	Allocate and co-ordinate business resources	2.1	Roles and responsibilities of personnel are identified and communicated.
		2.2	Resource requirements for enterprise are identified and costed using **standard financial analysis techniques.**
		2.3	Costs of ensuring **sustainability** of enterprise operations are calculated and factored into business planning for the enterprise.
3	Identify performance requirements	3.1	**Performance indicators** are developed and are realistic within available timeframes and resources.
		3.2	Factors inhibiting performance against objectives are identified and minimised.
		3.3	Market conditions are monitored and assessed based on relevant data and assumptions that are transferable and justifiable.
		3.4	Strategies and programs to promote the sustainability of operations are prepared and incorporated into enterprise procedures.
4	Review business	4.1	Enterprise operations are regularly reviewed to

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performance		identify opportunities for improvements in performance.
	4.2	Impact of **natural conditions** on enterprise are monitored and anticipated to assess **sustainability of resource** use.
	4.3	Costs and estimates are compared with resource allocation.
	4.4	Operational plans are reviewed to determine schedule of activities.

Range of Variables

The Range of Variables explains the range of contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work situations available.

What **data** may be gathered and analysed?	Sales data, expected revenues, expenditures, attributable costs, market share figures, trends in consumer purchases, borrowing costs, transport costs and delivery times.
What types of **enterprise** may be applicable to this standard?	Agricultural or intensive horticultural production enterprises
What **historical** information may be included for enterprise performance analysis?	Rainfall, fertiliser, plant density rates, plant health records, variety improvement history, soil/substrate tests, maintenance records, financial, enterprise plans and enterprise production records.
What **operational structures** may be included for review and analysis?	Management process, reporting arrangements, decision-making authorities, financial accounting procedures, promotional activities, and operational resources.
What enterprise **strengths and weaknesse**s may be evaluated?	Recording systems, work practices, attitudes to risk, market profile, debt to equity ratios, asset values, and productivity.
What **market conditions** may be included for analysis?	Product and service demand, availability of funds, cost of financing, supplier costs, delivery constraints, availability of substitutes and competitors.
What **standard financial analysis techniques** may be applied?	Cost benefit analysis, 'what if' analyses, time series and trend, expenditure and revenue ratios, break-even analysis, accounting standards and cash flow schedules.
How might a **sustainable** enterprise be determined?	Sustainable enterprises are economically viable enterprises that may be operated for an indefinite period without degrading natural resources.

What **performance indicators** may be developed?	Sales targets, revenue estimates, waste reduction, erosion replacement and reversal, environmental sustainability, variable cost ratios, investment returns, and diversification.
What impact of **natural conditions** may be monitored and anticipated?	Rainfall, soil erosion patterns, salinity, weather patterns (frost, fog), geographical aspect (sun), native vegetation, windbreaks, distance, natural pasture, water supply, and topography.
What **sustainable resource** practices may be considered by the enterprise?	Management of waste substrates, runoff water and plant residues

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence to select the type of enterprise requires evidence that the candidate can research, collate and manipulate business data in order to develop and present an image of the operations of rural businesses. Evidence must be demonstrated in forecasting and estimating resource use and determining opportunity costs. The candidate must be able to identify and track the effects of natural conditions on economic performance. The skills and knowledge required must be **transferable** to a different work environment. For example, the capacity to review performance indicators in this context will support the ability to identify performance indicators in other contexts, e.g. in evaluating the success of a marketing plan.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • market performance in commodities • rates of return for agri-products • financial analysis techniques • structure and operation of small businesses • statutory marketing requirements • regulations related to exports of Australian agricultural products • relevant State/Territory OHS legislative requirements • environmental conditions, positive environmental practices and negative impact minimisation measures • human resource requirements for the enterprise • transport requirements for the enterprise • enterprise/property improvement requirements

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- plant husbandry.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- analyse market requirements
- match the enterprise to resources
- set enterprise objectives and make financial and economic determinations
- monitor and manage resources (human, physical, environmental)
- evaluate land capability and natural resources
- research, analyse and evaluate enterprise information and requirements
- communicate orally to present information to and negotiate with management or clients
- document plans and write reports
- calculate and forecast financial and economic data.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Information about the enterprises performance may need to be explained to other persons.
2. How can **information be collected, analysed and organised (3)**?	Data used to evaluate the enterprises performance may need to be collated and recorded for analysis and organised in reports.
3. How are **activities planned and organised (3)**?	Specific analyses may need to be scheduled in tandem with related activities, e.g. raising of equity may commence at the same time as the performance evaluation.
4. How can **team work (3)** be applied?	The assessment of the enterprise may need input and advice from others.
5. How can the use of **mathematical ideas and**	Estimation techniques may be necessary to determine returns expected from sales.

	techniques (3) be applied?	
6.	How can **problem-solving skills (3)** be applied?	Problems may arise that need to be addressed through adjustments to resources or timetables.
7.	How can the **use of technology (3)** be applied?	Technology may be used to monitor and to record and distribute the benefits.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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Certificate 6 in Production Horticulture (CEH) Controlled Environment Horticulture

RTE6501A	Manage the production system
RTE6803A	Manage human resources
RTE6901A	Analyse business performance
RTE6903A	Develop and review a strategic plan
RTE6904A	Manage business capital
RTE6906A	Develop export markets for produce
RTE6907A	Manage capital works
RTE6908A	Design and manage the enterprise quality management system

RTE6501A   Manage the production system

This competency standard covers the process integrating the plans for each sector of the organisation with the strategic plan, developing risk management strategies, and analysing the organisations performance in terms of sustainability and profitability. It includes the need to understand and build sustainable management of the business and of the land into the overall management plans. It requires the need to analyse and extract information from a broad range of sources, and to comply with a variety of legislative and regulatory requirements.

Managing the production system is likely to be undertaken alone or in concert with other managers in the organisation. Managing the production system requires extensive knowledge in some areas such as sustainable land use principles and practices, and in business analysis and planning.

Element		Performance Criteria	
1	Integrate plans for pastures, crops, livestock, and infrastructure	1.1	Strategic, production, infrastructure and land management plans are examined to identify **interactions** between enterprises.
		1.2	Types of interactions and their impacts on **resources** and **production system** performance over time, are determined.
		1.3	Beneficial interactions are assessed and any potential additional benefits are identified for further improvements to the systems efficiency.
		1.4	Detrimental interactions are assessed and the production system is adjusted to minimise potential losses.
		1.5	Information on available **innovations** for potential use in the organisation is accessed and discussed with colleagues and integrated with operational plans.
2	Develop and implement risk management strategie**s**	2.1	The business is analysed to identify its strengths and weaknesses as well as any **threats to, or opportunities to improve**, the organisations **sustainability** and/or profitability.
		2.2	Potential results of threats are considered in terms of natural resources, business assets and infrastructure.
		2.3	**Preventative and reactive** contingency plans are developed to minimise threats and maximise opportunities.
		2.4	**Contingency plans** aim to ensure business

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			stability and profitability, while protecting and preserving natural resources and business assets.
3	Analyse the overall performance of the production system	3.1	Whole-business physical and **financial** analyses are undertaken to determine the long-term sustainability and profitability of the production system.
		3.2	Results of analyses are prepared and discussed with **colleagues** for input to future planning processes.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **interactions** between enterprises may be identified?	Interactions will include those with are complementary, supplementary, competitive, and/or have a by-product or joint-product relationship.
What **resources** may be impacted by interactions between the enterprises?	They include land resources such as soil, water and natural vegetation, as well as improvements to land such as soil and water conservation works, trees, shrubs and improved plant species, land forming, irrigation and drainage structures, laneways, roads and tracks, and all structures (including greenhouse and associated technology).
What might be encompassed in the **production system**?	The product, the production processes, the infrastructure and the land resource of each enterprise within the business, as well as the interactions and relationships between them.
What kind of **innovations** might be considered for use in the organisation?	Innovations to equipment, machinery, materials, practices, and systems – including those relating to environmental, OHS, and animal welfare practices and/or related equipment.
What **innovations** might be considered?	Those that relate to improved ways of working, new systems, new machinery and equipment, and/or new materials.
How might any **threats to, or opportunities to improve**, sustainability arise for the business?	They may arise from fluctuations in weather conditions, production processes, and market conditions.
What aspects of **sustainability** might be threatened?	The sustainability of both the business and the resources.

What **preventative and reactive** contingency plans might be put in place?	They might include preventative measures such as considering and adjusting the resourcing, investment or product balance for the business, or putting systems in place for unplanned events – e.g. insurance programs, emergency management plans.
Where might areas of risk be, and how might **contingency plans** mitigate them?	Risks may present in areas such as the market, production, resourcing, financing, management and personal risks. Strategies such as insurance policies, diversified investment, training and development programs, vital records strategies, or recruitment programs could mitigate such risks.
What **financial** data might be analysed?	Data relating to cash flow, profit, debt history, equity, gross margin, cost of production, target prices, and net worth figures.
Who are the **colleagues** with whom issues will be discussed?	They might be family members, fellow managers, employees, professional advisors, partners, allies, mentors, or people in businesses with similar issues.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in managing the production system requires evidence that all aspects of the operational plans are integrated to gain economic efficiencies, and that the performance of the production system is analysed and assessed against appropriate profitability figures.

The skills and knowledge required to manage the production system must be **transferable** to a different work environment. For example, across a range of product types and organisation sizes.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • marketplace in which the organisation operates • property planning, financial management and enterprise budgeting systems and procedures • relevant State/Territory legislation, regulations and codes of practice with regard to OHS and the use and control of hazardous substances • methods of measuring and implementing business and

environmental sustainability

- financial analysis tools and techniques for land based businesses
- sources of information to assist in analysis of operational plans, resourcing and financial analysis
- monitoring strategies for a range of operational plans
- the value and methods of risk assessment.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • integrate plans for different enterprises into sustainable land management and production systems • interpret historical data in relation to production, finances, environmental issues, staffing and land use • recognise potential opportunities to use or install more environmentally efficient systems or equipment • assess, then adopt profitable innovations • interpret, analyse and extract information from a range of sources such as professional literature, legal documents, discussions and workshops • assess financial strategies and prepare budgets • prepare enterprise budgets and calculate financial returns • converse and liaise with industry contacts, colleagues and family regarding the land/farm based business • write reports to be understood by all levels of the organisation • communicating detailed and complex information in written and oral form with people both inside and outside the organisation.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	In sharing, analysing and discussing information about research and innovations with a range of colleagues and researchers.

2.	How can **information be collected, analysed and organised (3)**?	In using a variety of available sources and information for input to business analyses.
3.	How are **activities planned and organised (3)**?	In preparing comprehensive contingency plans for the organisation.
4.	How can **team work (3)** be applied?	In working with colleagues and employees to provide and gain information on research needs and innovations.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	In conducting business analyses including the input of data from production, financial and performance figures.
6.	How can **problem-solving skills (3)** be applied?	When considering how to maximise beneficial interactions between business enterprises.
7.	How can the **use of technology (2)** be applied?	In operating equipment necessary for analysis and communication – communication technology, calculating equipment, word processing and spreadsheeting software, and specialist financial/accounting software.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE6803A   Manage human resources

This competency standard covers the process of managing human resources in an agricultural, horticultural or land management enterprise. It requires the ability to implement strategies for personal development and appropriate self-management, identify skill requirements, prepare task descriptions and person specifications, arrange employment of workforce members, implement OHS priorities and procedures, and review labour productivity. Managing human resources requires knowledge of personal development, time management, job specifications, EO legislation, OHS legislation, relevant industrial awards, employee induction programs, interviewing strategies and protocols, works compensation instance and superannuation, contracts of employment and unfair dismissal legislation.

Element		Performance Criteria	
1	Implement **strategies** for personal development and appropriate self-management	1.1	Own management strengths and weaknesses are regularly audited and addressed through training and family and professional support.
		1.2	Priorities in management and operations are determined, and time is allocated to achieve effective outcomes.
		1.3	Strategies for managing conflicting demands and pressure are investigated and implemented.
2.	Identify skill requirements and prepare task descriptions and person specifications	2.1	Tasks are identified and described along with the range of conditions under which performance may need to occur.
		2.2	Most appropriate employment arrangements are determined based on employer and employee needs, responsibilities and rights.
		2.3	Person specifications are prepared with due regard to Equal Opportunity Employment Legislation, OHS and work based harassment regulations.
		2.4	Opportunities to use **government-supported employment and training programs** are explored and applied as appropriate.
3	Arrange employment of **workforce** members	3.1	Options for filling job vacancies are assessed.
		3.2	Resources and materials for recruitment are prepared and placed with media and employment agencies as appropriate.
		3.3	Criteria for assessing job applicants is determined, and applicant evaluation processes and procedures are prepared.
		3.4	Applicants are assessed against the criteria and selection decision is finalised.

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		3.5	All applicants are advised appropriately.
4	Manage workforce performance	4.1	Induction programs are designed for each employee consistent with legislative requirements and effective management.
		4.2	Terms of engagement for consultants and contractors are clarified and established.
		4.3	Induction programs are conducted for new appointees and appropriate records established.
		4.4	Work plans are developed with all members of the workforce (family and non-family).
		4.5	Strategies for communicating with workers are designed and implemented.
		4.6	Performance management strategies are designed and implemented.
		4.7	Processes for the termination of non-performing staff are identified and followed as necessary.
5	Support personal development, training and career development of workers	5.1	Strategies to identify skill and knowledge gaps are designed and implemented with workers, and strategies to address these are implemented.
		5.2	On-job training is provided to optimise worker performance and to ensure safety and fairness in the workplace.
		5.3	Off-job training requirements are identified and training is sourced and supported as appropriate.
		5.4	Opportunities for career development are identified and provided and strategies for succession are designed and implemented.
		5.5	Prior learning, experience and training is recognised and rewarded where appropriate.
6	Manage administrative support	6.1	Processes and procedures for the administration of staff records are designed and implemented.
		6.2	Administrative procedures and processes to meet legislated requirements are designed and implemented.
		6.3	Industrial relations are established and monitored, awards adhered to, enterprise agreements and/or **contracts of employment** negotiated, and disputes and conflicts resolved.
7	Implement OHS priorities and procedures	7.1	Safety policies are developed and communicated within the enterprise.
		7.2	Safe work practices are identified/designed for all aspects of the operation of the enterprise.
		7.3	Safe work practices are communicated and enforced among all members of the workforce.
8	Review labour productivity	8.1	Strategies for monitoring labour costs are

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established.

8.2 Benchmarks for labour productivity are sourced and analysed to review the performance of the enterprise.

8.3 Opportunities to develop more efficient work practices are established by consulting peers, staff and consultants as appropriate.

8.5 Appropriate industrial relations are established and monitored, awards adhered to, enterprise agreements and/or **contracts of employment** negotiated, and disputes and conflicts resolved.

8.5 Strategies for improving labour productivity are implemented.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **strategies** may be selected for personal development and appropriate self-management?	Strategies for personal development include processes for self-assessment and benchmarking performance, analyses of strengths and weaknesses, initiation of personal training or coaching plans, and other sourcing of professional support. Strategies for self-management include techniques for priority setting, maintenance of diaries, health and lifestyle reviews.
What **government-supported employment and training programs** may be relevant to this competency standard?	Government-supported employment and training programs include all schemes in which the wage paid to new employees is subsidised for a period, and/or where special assistance is provided to participate in training programs.
What is included under **workforce** in this competency standard?	The workforce includes self, family members, whether paid or unpaid, employees both permanent and casual, contractors, share-farmers, students on work experience, and professional and technical support.
What may be considered under **contracts of employment**?	Contracts of employment include task specific as well as general contracts of employment.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in managing human resources requires evidence that self and staff have been successfully managed within an enterprise according to the criteria outlined in this standard. The skills and knowledge required to manage human resources must be **transferable** to a range of work environments and contexts. For example, this could include different enterprises, staff numbers and profiles.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below: • personal development • time management • task descriptions and person specifications • Equal Opportunity and Equal Employment Opportunity legislation • OHS legislation • relevant industrial awards • employee induction programs • interviewing strategies and protocols • works compensation instance and superannuation • contracts of employment • unfair dismissal legislation.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • implement strategies for personal development and appropriate self-management • identify skill requirements and prepare task descriptions and person specifications • arrange employment of workforce members • implement OHS priorities and procedures • review labour productivity • terminate employment of particular staff as necessary.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of**	Through formal and informal processes established

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	ideas and information (3) be applied?	by the enterprise.
2.	How can **information be collected, analysed and organised (3)**?	Through establishment and maintenance of filing systems and collection of data required of employers.
3.	How are **activities planned and organised (3)**?	According to human resource management principles and legislative guidelines.
4.	How can **team work (3)** be applied?	Through consultation in the preparation of job descriptions and OHS activities.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	Through calculations associated with insurance and superannuation.
6.	How can **problem-solving skills (3)** be applied?	Through resolving conflicting demands on management and dealing with different personality types amongst staff.
7.	How can the **use of technology (3)** be applied?	Through the use of computers and communication systems.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE6901A   Analyse business performance

This competency standard covers the process of analysing business performance for an agricultural or horticultural enterprise. It requires the ability to analyse financial reports, use financial analysis tools, identify profit drivers for the enterprise, and develop strategies for improving business performance. Analysing business performance requires knowledge of financial reports, financial analysis tools, performance benchmarking, issues related to production efficiency and marketing, and SWOT analysis and developing business strategies.

Element		Performance Criteria	
1	Analyse financial reports	1.1	Taxation reports are correctly interpreted and accounts are determined to be true and fair.
		1.2	**Management reports** generated by the enterprise are reviewed and interpreted.
		1.3	Distribution of profit is determined.
2	Use financial analysis tools	2.1	Gross margins and relevant **breakdowns of profit and loss** are calculated.
		2.2	Ratios related to production activity, solvency and liquidity, gearing and profitability are calculated.
		2.3	Relevant performance benchmarks are sourced and compared to the enterprise.
		2.4	Trends in production and profitability are identified and analysed.
3	Identify opportunities for increasing profit	3.1	Yield/production potential is assessed and current position determined.
		3.2	Key issues related to production efficiency are identified.
		3.3	Key issues related to market return are identified.
4	Develop strategies for improving business performance	4.1	SWOT approach is used to determine possible strategies for addressing production and marketing issues.
		4.2	Sensitivity analyses are performed to evaluate strategies.

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Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

Which **financial reports** may be relevant to this standard?	Financial reports will include annual taxation reports and reports generated within the business including profit and loss, sales reports, cash flow forecasts, transaction reports and balance sheets.
What **management reports** may be relevant to this competency standard?	Management reports may be computer or non-computer based and will include non-tax related financial and production reports customised for monitoring the business.
What **breakdowns of profit and loss** may be relevant to this competency standard?	Relevant breakdowns of profit and loss include EBIT, profit before interest, owners allowance and drawings.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in analysing business performance requires evidence that an analysis of business performance has been carried out for an enterprise and that sound strategies for improving business performance have been identified. The skills and knowledge required to analyse business performance must be **transferable** to a range of work environments and contexts. For example, this could include different enterprises, rural commodities, and financial and marketing climates.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below: - financial reports - financial analysis tools - performance benchmarking - issues related to production efficiency and marketing - SWOT analysis and developing business strategies.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: analyse financial reports

- use financial analysis tools
- identify profit drivers for the enterprise
- develop strategies for improving business performance.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Through record keeping on business performance.
2. How can **information be collected, analysed and organised (3)**?	Through interpretation of taxation records, enterprise accounts and management records.
3. How are **activities planned and organised (3)**?	By the use of financial tools in undertaking the analysis.
4. How can **team work (3)** be applied?	Through consultation with other stakeholders in analysing business performance.
5. How can the use of **mathematical ideas and techniques (3)** be applied?	Through calculations of gross margins.
6. How can **problem-solving skills (3)** be applied?	Through use of financial analysis tools.
7. How can the **use of technology (3)** be applied?	Through use of compute-based financial software applications.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE6903A   Develop and review a strategic plan

This competency standard covers the process of developing and reviewing a strategic plan.

It requires the application of knowledge and skills to determine the scope and desired business outcomes of the strategic plan. Competency must be demonstrated in preparing a strategic plan, evaluating opportunities, analysing the competitive environment and in documenting, monitoring and reviewing the strategic plan. The objectives of the strategic plan also need to be communicated to all relevant parties.

The work in this standard will be carried out with limited or no supervision within enterprise guidelines.

Element	Performance Criteria
1 Clarify goals and direction	1.1 **Focus**, **direction and structure** of the enterprise are considered and accounted for in the development and review of the strategic plan.
	1.2 Need for development and change is assessed and identified.
	1.3 Competitive and collaborative factors are identified.
	1.4 **Legal obligations** and **estate considerations** are identified and considered.
	1.5 Measurable goals and targets, which are enterprise consistent, are considered and developed.
2 Undertake strategic analysis	2.1 **Accurate data** is accessed using **reliable sources** for use in review and development.
	2.2 **Value chain analysis** is completed for the enterprise and **competitive implications** are identified.
	2.3 Competitive and collaborative opportunities are analysed and assessed.
	2.4 Expansion opportunities are assessed for viability and feasibility.
	2.5 Comprehensive analysis of all relevant data and information is undertaken to formulate a viable and realistic strategic plan.
3 Develop and document strategic plan	3.1 Performance measures are clear and address all key aspects of enterprise performance.
	3.2 The implications of the strategic plan for the enterprise are identified, documented and incorporated.

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3.3 Value adding activities and opportunities are systematically introduced.

3.4 Strategic plan initiatives and desired outcomes are clearly communicated to all relevant parties.

3.5 Strategic performance is evaluated for gaps and strengths, and appropriate remedial action implemented.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **focus, direction and structure** considerations might there be?	The size, composition and nature of enterprise, markets in which it operates and/or intends to operate, environment and market projections for sectors in which the business operates may need to be considered. Also, the long-term directions and purposes of the business and the personal goals of the people involved may need to be considered. Lifestyle, income level expectations, preference for various enterprise types, period of ownership, provisions for next generation and retirement are also relevant here.
What **legal obligations** and **estate considerations** might need to be understood and complied with?	State/Territory and commonwealth taxation law, company and securities legislation; OHS, environmental laws; competition policy; industrial relations and trade practices legislation; and possibly legislation regarding wills and inheritance in regards to succession planning might need to be considered. Succession arrangements, changes to estate company structure and family entitlements may also need to be considered.
What **accurate data** might be accessed?	Data may include demographic, social, political, economic technological, product and market segmentation data.
What **reliable sources** might be utilised?	Data might be sourced from own, commissioned or publicly available research and could be internal or external. It could be gathered from industry respected or trusted research sources such as ABS or other government research, valid studies, and/or trusted market analysis sources.

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What is included in **a value chain analysis**?	An analysis of a series of primary activities: inbound logistics, operations, outbound logistics, marketing and sales, service support and their support activities, firm infrastructure, human resource management, technological development, and procurement.
What **competitive implications** might there be?	May need to consider factors that give an enterprise an edge over its competitors, the variables and changes that may affect that competitive edge, and the resulting implications for the enterprise. The formation and/or maintenance of strategic alliances and co-operatives and the competitive nature of markets may need to be included. The organisations structure, resources, direction and market positioning could also be considered.
What **expansion opportunities** might exist?	Options for growth and/or diversification into feasible enterprises might need to be assessed to determine medium and long-term viability. The stability of own business and potential acquisitions may need to be assessed.
What might be worth considering when determining **viability and feasibility** of expansion?	Market access, availability and potential; managers/owners preferences; resource suitability and availability; risks involved; impact on land and water resources; relevant technological innovations and expected net profitability; need to be assessed to determine viability and feasibility of expansion opportunities.
What might be included as **performance measures**?	May be expressed as gap analysis, variance analysis, conformance reports, customer feedback, balanced scorecard measures, performance indicators, outcomes or key result areas.
What **key aspects** of enterprise performance might be relevant?	Liquidity, profitability, security and stability could all be included.
What **implications** might there be?	Implications might relate to enterprise structure, resources, acquisitions and market position.
What **value adding activities** and **opportunities** might need to be introduced?	Outsourcing, external supply or contracting out might be needed.

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Which **relevant parties** might need to be consulted?	Key personnel: other family members, partners, providers of finance, managers, staff, clients and suppliers may be consulted.
	Specialist personnel: accountants, solicitors, tax agents, regulatory bodies and government authorities, trade, professional or industry associations might also need to be consulted.
What **remedial action** might be needed?	Adjustments to strategic plan direction and related business plans, adjustment of performance expectations, changes in focus or direction, communication to key personnel of changes and initiatives.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in developing and reviewing a strategic plan requires evidence that demonstrates the ability to identify the direction and purpose of a strategic plan, analyse the competitive environment and enterprise, and formulate a strategic plan. It requires evidence of the ability to identify clear performance measures, communicate the strategic plan and review and monitor its performance.

The skills and knowledge required to develop and review a strategic plan must be **transferable** to a different work environment. For example, if competence is demonstrated in developing and reviewing a strategic plan for a small enterprise, it must also be evident in a medium or large enterprise environment.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
	• the external environment
	• working knowledge of market forces
	• resource availability and accessibility
	• feasible enterprises and opportunities
	• business structures
	• forecasting
	• value adding concepts
	• strategic planning methodologies
	• data collection and analysis methods
	• risk management techniques

- knowledge of legialstion codes and by-laws relevant to the organisations operation and potential expansion
- organisational design and change processes.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- set goals and directions for a business
- communicate with key and specialist personnel
- analyse information and results
- consider and evaluate alternatives
- document and communicate plans
- design performance criteria
- manage projects
- think logically and strategically.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	In discussing and formulating the strategic plan in consultation with key and specialist personnel.
2. How can **information be collected, analysed and organised (3)**?	In gathering information for the strategic plan, evaluating opportunities and in reviewing targets and strategic plan operation.
3. How are **activities planned and organised (3)**?	In evaluating opportunities and developing the strategic plan, and in reviewing and redesigning related systems.
4. How can **team work (3)** be applied?	In consulting with key and specialist personnel in developing the strategic plan and in evaluating the success of the strategic plan.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	To evaluate and collate performance data and results, and to ensure appropriate measurement systems are in place.
6. How can **problem-solving**	To improve existing systems, to solve communication

skills (3) be applied?	barriers and to rectify/remedy identified performance gaps.
7. How can the **use of technology (2)** be applied?	To improve strategic performance, to calculate targets, collate data and conduct a value chain analysis.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE6904A   Manage business capital

This competency standard covers the process of managing business capital in an agricultural or horticultural enterprise. It requires the ability to assess capital needs, assess appropriate equity levels for a business, establish and maintain appropriate financing arrangements, review the mix of liabilities, and monitor equity and return on equity. Managing business capital requires knowledge of the preparation of financial reports, impacts resulting from changes to various macro economic factors, sources of finance, negotiation techniques and concepts of equity and return on assets, and bank and lending institution policies and requirements.

Element		Performance Criteria	
1	Assess the **capital needs** of the business	1.1	Working capital and capital requirements for development is determined.
		1.2	Return on capital/opportunity cost of development capital determined.
2	Assess appropriate equity levels for the business	2.1	**Risks** associated with the business are assessed.
		2.2	Personal and business risk preferences are identified.
		2.3	Equity levels in comparable enterprises are analysed using benchmark data.
3	Establish and maintain appropriate financing arrangements for the business	3.1	Capacity to service debt/meet liabilities is determined.
		3.2	**Sources of funds** are identified and terms and conditions compared and evaluated.
		3.3	Negotiations are conducted to ensure the establishment of the most favourable terms and conditions.
		3.4	Loan funds are sourced and agreements checked.
		3.5	Costs of finance are monitored within defined budget limits.
		3.6	Relationships with finance providers are managed.
		3.7	The **economic environment** is monitored and implications for the business assessed.
4	Monitor and review the mix of liabilities	4.1	Regular reviews are conducted of the mix of liabilities and the costs and benefits associated with reconfiguring loans are determined.
		4.2	Loans are reviewed and renegotiated as appropriate.
5	Monitor equity, return on equity	5.1	Review valuations on assets and monitor the effect on equity.
		5.2	Returns on assets and returns on equity are

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calculated and used to assist business performance.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **capital needs** may be relevant to this competency standard?	Capital needs may be in relation to major fixed assets including machinery, land purchases, buildings, greenhouses and associated infrastructure and other equipment.
What **risks** should be considered?	Risks may include price risk, seasonal and other production risks, and other business and personal risks for example, those related to age and health factors and succession.
What **sources of funds** may be relevant to this competency standard?	Sources of funds may include debt financing through term loans, bank bills, overdraft facilities, bridging finance, hire purchase and private finance. Funds may also be derived through equity financing.
How might the **economic environment** be monitored?	Components of the economic environment to be monitored include trends in interest rates, credit availability, investment periods, and investment opportunities.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in managing business capital requires evidence that business capital has been appropriately managed and monitored in an enterprise. The skills and knowledge required to manage business capital must be **transferable** to a range of work environments and contexts. For example, this could include different capital management arrangements, amounts and enterprises.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below: • preparation of financial reports • impacts resulting from changes to various macro economic factors • sources of finance

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- negotiation techniques
- concept of equity, ROA, ROE, IRR
- bank and lending institution policies and requirements.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to:
	- assess capital needs
	- assess appropriate equity levels for the business
	- establish and maintain appropriate financing arrangements
	- monitor and review the mix of liabilities
	- monitor equity and return on equity.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	In assessing financing arrangements for the business.
2. How can **information be collected, analysed and organised (3)**?	Through evaluation of options for accessing business capital.
3. How are **activities planned and organised (3)**?	According to funding requirements, needs of the business and timelines associated with production.
4. How can **team work (3)** be applied?	Through consultation with others in establishing business capital requirements and assets.
5. How can the use of **mathematical ideas and techniques (3)** be applied?	Through calculations associated with business needs, equity levels and interest rate determinations.
6. How can **problem-solving skills (3)** be applied?	Through responding to additional requirements for information when making financial arrangements.
7. How can the **use of technology (3)** be applied?	Through use of computers and communication systems.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other

competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE6906A   Develop export markets for produce

This competency standard covers the processes of evaluating a product for export, developing an export market and implementing an export strategy. It requires the ability to identify, research and analyse markets, and determine the capability of a business to meet the market requirements. Developing export markets for produce requires knowledge of sources of information in respect to export requirements and requirements set out in standards, codes of practice, quality assurance processes and procedures, marketing plan formats, cash flow budgeting techniques, and sensitivity analysis and investment evaluation.

Element		Performance Criteria	
1	Evaluate export potential	1.1	Competitive advantages and disadvantages for the proposed **product** are identified in respect to the product's entry to overseas markets.
		1.2	Features of potential markets are analysed in respect to cultural factors, quality requirements, government regulations and other economic, political and social factors.
		1.3	**Business resources** are analysed for their appropriateness and capacity to contribute to the marketing effort.
		1.4	Available capital and time are identified for the development of the export plan.
2.	Develop export strategy	2.1	Sources of government support for the development of an export strategy are identified and pursued.
		2.2	Customer analysis is conducted and the market niche defined.
		2.3	Operational plan is developed to address the **market mix**.
		2.4	Budgets are prepared to address the investment required in the operational plan.
		2.5	Overseas visit is planned and conducted to confirm the target market and initiate negotiations.
3	Implement export strategy	3.1	Steps in an export transaction are identified and addressed.
		3.2	**Documentation requirements** for export is identified and prepared.

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Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **products** may be relevant to this competency standard?	A broad range of agricultural and horticultural products and services will be relevant to demonstrating achievement of this competency.
Business resources to be analysed include:	Experience and skills in research and development, experience in dealing with distant and different cultures, technology, location of facilities, experience in dealing with agents, managerial expertise and capacity.
What may be included under the **market mix**?	Place, promotion, price and packaging.
What **document requirements** may be relevant to this competency standard?	Document requirements may relate to the commercial transaction (payment arrangements, credit provision, insurance), and government requirements including customs requirements and quarantine requirements.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in developing export markets for produce requires evidence that export markets have been appropriately evaluated, developed and implemented to industry standards. The skills and knowledge required to develop export markets for produce must be **transferable** to a range of work environments and contexts. For example, this could include different commodities, enterprise arrangements and markets.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• sources of information in respect to export requirements
	• requirements set out in standards, codes of practice, QA processes and procedures
	• marketing plan formats
	• cash flow budgeting techniques
	• sensitivity analysis and investment evaluation.

What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • evaluate export potential • develop export strategy • implement export strategy.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be applied?	Through preparation of documentation for export.
2. How can **information be collected, analysed and organised (3)**?	In evaluation of potential markets.
3. How are **activities planned and organised (3)**?	According to requirements set out in export documentation.
4. How can **team work (3)** be applied?	Through discussions and consultation with others involved in export.
5. How can the use of **mathematical ideas and techniques (3)** be applied?	In calculations associated with pricing strategies.
6. How can **problem-solving skills (3)** be applied?	Through dealing with complexities involved in export as well as changing circumstances in trade agreements/arrangements.
7. How can the **use of technology (3)** be applied?	Through use of computers and communication systems.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the

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Assessment Guidelines. Further advice may also be sought from the relevant **sector booklet.**

RTE6907A   Manage capital works

This competency standard covers the process of managing the planning and construction of capital works. It requires the ability to negotiate with contractors and suppliers, and internal and external clients, design a strategy to achieve project outcomes and client requirements, monitor, evaluate and report on progress of works, resolve disagreements and disputes satisfactorily, analyse project outcomes, and evaluate project achievements. Managing capital works requires knowledge of human resource management and policies, capital works specifications and objectives, project management systems, project management tools and techniques, cost schedule control systems, enterprise procurement guidelines, enterprise project management policies, risk management techniques, business and commercial issues, basics of contract law, and physical resource management.

Element		Performance Criteria	
1	Identify scope of capital works	1.1	Analysis is undertaken as required and the results are analysed to determine the scope of the proposed capital works.
		1.2	**Planning** is initiated in accordance with organisational and other relevant **policies and guidelines** and the organisation's strategic direction in consultation with **stakeholders**.
		1.3	Conceptual and analytical skills are applied to develop a strategy to achieve objectives, outcomes and **client** requirements for the capital works.
		1.4	An effective risk management system is developed and applied to ensure objectives can be met within the enterprises allocated budget.
2.	Acquire resources	2.1	Resources, equipment and infrastructure are identified, acquired and allocated.
		2.2	Scope and objectives of works are analysed to determine the tasks to achieve agreed outcomes on time and within budget.
		2.3	Processes for monitoring, evaluating and reporting performance against objectives are developed and applied.
		2.4	Roles and responsibilities of team members and stakeholders are identified and agreed.
3	Manage construction activities	3.1	Tasks are implemented in accordance with plans and specifications.
		3.2	Communication process is established including responsibilities for conflict resolution.
		3.3	Progress is monitored to ensure time,

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			performance, cost and quality of works is achieved.
		3.4	Proposed variations are investigated and negotiated in consultation with stakeholders.
4	Complete capital works and evaluate and report on activities	4.1	Inspection is undertaken to ensure all outcomes are met.
		4.2	Evaluation of completed project is undertaken against agreed objectives and reported to stakeholders.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **plans** may be relevant to this competency standard?	Plans may include financial management processes, acquisition strategies, fraud control procedures, risk management strategies, integrated logistic support arrangements, human resource development / management strategies, resource requirements, task elements, test and evaluation procedures, intellectual property, industry impact, life cycle costs, specifications, engineering, preliminary estimate/budget and preliminary timeframes/milestones.
What may be covered under **policies and guidelines**?	Policies and guidelines may include government legislation, financial management and accounting regulations, government and organisational policies, guidelines and procedures including project management, security, recruitment, quality assurance, risk management, procurement and guidelines, and strategic plans.
Who may be included under **stakeholders?**	Stakeholders may include industry, other organisations, general public, relevant interest groups (internal and external), functional areas, principals/project director/project sponsor, organisation's senior management, government(s), insurance and underwriting.
Who might the **client** be?	Work may be performed on behalf of a client (internal or external) or on one's own behalf.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in managing capital works requires evidence that the planning and management of construction of capital works has been successfully undertaken. The skills and knowledge required to manage capital works must be **transferable** to a range of work environments and contexts. For example, this could include different enterprises, management approaches and capital works projects.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below: • human resource management and policies • capital works specifications and objectives • project management systems • project management tools and techniques • cost schedule control systems • enterprise procurement guidelines • enterprise project management policies • risk management techniques • business and commercial issues • basics of contract law • physical resource management.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to: • negotiate with contractors and suppliers, and internal and external clients • design a strategy to achieve project outcomes and client requirements • monitor, evaluate and report on progress of works • resolve disagreements and disputes satisfactorily • analyse project outcomes • evaluate project achievements.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (3)** be	Through plans and specifications for capital works, and regular meetings with clients and contractors.

	applied?	
2.	How can **information be collected, analysed and organised (3)**?	Through documentation of progress of works and contingencies arising.
3.	How are **activities planned and organised (3)**?	According to program schedules and work specifications.
4.	How can **team work (3)** be applied?	Through liaison between client, superintendent and contractors in progressing development works.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	Through calculations involved in detailing costs and timelines for programming and evaluating works.
6.	How can **problem-solving skills (3)** be applied?	Through dealing with contingencies as they arise in the construction process.
7.	How can the **use of technology (3)** be applied?	Through use of computers and communication systems.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet.**

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RTE6908A

Design and manage the enterprise quality management system

This competency standard covers the process of designing and managing the enterprise quality management system for an agricultural or horticultural enterprise. It requires the ability to compare enterprise systems and processes with industry benchmarks, identify areas for improvement within the enterprise and undertake continuous monitoring of systems and processes. Designing and managing the enterprise quality management system requires knowledge of quality management (QM) objectives, leadership strategies to design QM business culture, performance measurement, benchmarking strategies for analysing production and financial performance, and environmental standards and monitoring processes.

Element		Performance Criteria	
1	Compare enterprise systems and processes with industry benchmarks	1.1	Industry benchmarks for best practice are sourced and acquired.
		1.2	Production performance is examined using **comparative analysis techniques**.
		1.3	Relevant codes of practice are identified and implemented.
		1.4	**Business systems** are audited against best practice criteria.
		1.5	Marketing plans are analysed and **Quality Assurance (QA) schemes** evaluated.
		1.6	Human Resources management practices are audited against best practice criteria.
		1.7	**Environmental/natural resources parameters** are identified and assessed against best practice.
2	Identify areas for improvement within the enterprise	2.1	**Measurable targets and performance indicators** are established.
		2.2	Systematic strategic planning is implemented within the business.
		2.3	An ethos for producing quality products is embedded in the enterprise culture.
		2.4	**Quality standards** are defined for products, physical and natural resources, and inputs.
		2.5	Targets and performance indicators are established.
		2.6	Commitment to knowledge and learning is established.
		2.7	Effective **communication strategies** are

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			implemented with staff and other stakeholders.
3	Undertake continuous monitoring of systems and processes	3.1	**Mechanisms for gaining feedback** information are implemented.
		3.2	Performance is reviewed against targets and performance indicators in an appropriate **evaluation cycle**.
		3.3	Reporting and documenting procedures are designed.
		3.4	Improvements to systems and processes are implemented.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **comparative analysis techniques** may be relevant to this competency standard?	Relevant comparative analysis techniques will use current enterprise data and make comparisons with historical data from the enterprise, industry benchmarks and other enterprises.
What **business systems** can be included?	Planning, recordkeeping, financial accounting, performance monitoring, management of capital, and taxation.
What **Quality Assurance schemes** may be included in this competency standard?	Quality Assurance programs may include those designed by industry groups, processors and retailers.
Which **environmental/natural resource parameters** are relevant?	Environmental parameters may include water quality (supply and drainage), soil/substrate characteristics and features, biodiversity, and habitats.
What **measurable targets and performance standards** may be included?	Targets and performance standards will be relevant to the enterprise and may relate to yield/production potential, price objectives, and performance ratios.
What **Quality Standards** could be included in this competency standard?	Quality standards will be defined by the manager, with a focus on customer requirements.
What communication strategies can be used?	Communication strategies may include staff meetings, white boards, memos and emails.
What mechanisms for gaining feedback may be relevant to this competency standard?	Feedback may be obtained from customers/purchasers, internal stakeholders, suppliers and other service providers.

What would constitute an appropriate evaluation cycle?	An appropriate evaluation cycle will be documented and the frequency of evaluations will be determined according to the rate of improvement being sought and achieved, and the requirements of stakeholders.

For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in designing and managing the enterprise quality management system requires quality managed systems have been successfully and appropriately designed and managed in an agricultural or horticultural enterprise. The skills and knowledge required to design and manage the enterprise quality management system must be **transferable** to a range of work environments and contexts. For example, this could include different rural enterprises and commodity areas.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below:
	• Quality Management (QM) objectives
	• leadership strategies to establish QM business culture
	• analysis skills related to the product market, Quality Assurance (QA) programs
	• performance measurement
	• benchmarking strategies for analysing production and financial performance
	• environmental standards and monitoring processes
	• codes of practice
	• strategic planning processes
	• scanning techniques for strengths, weaknesses, opportunities and threats
	• techniques and formats for establishing measurable performance targets
	• recording and reporting systems
	• Human Resource management and training practices/systems related to continuous improvement standards.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, some complementary skills are required. These skills include the ability to:
	• compare enterprise systems and processes with industry

benchmarks

- identify areas for improvement within the enterprise
- undertake continuous monitoring of systems and processes.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1.	How can **communication of ideas and information (3)** be applied?	Through interaction with staff and financial service providers.
2.	How can **information be collected, analysed and organised (3)**?	Through analysis of enterprise business records and characteristics.
3.	How are **activities planned and organised (3)**?	According to industry best practice and codes of practice.
4.	How can **team work (3)** be applied?	In compiling data for comparative analysis.
5.	How can the use of **mathematical ideas and techniques (3)** be applied?	Through calculations associated with business recordkeeping systems and data analysis.
6.	How can **problem-solving skills (3)** be applied?	Through benchmarking and comparative analysis of industry best practice.
7.	How can the **use of technology (3)** be applied?	In maintenance of records and use of computer software applications.

Are there other competency standards that could be assessed with this one?

This competency standard <u>could</u> be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector**

booklet.