

RTF03

Amenity Horticulture

Training Package

Volume 1 of 4

Introduction

Qualifications Framework

Assessment Guidelines

National Competency Standards

(Amenity Horticulture Units of Competency)

Volume 2: Units of Competency Imported from RTD02 Conservation and Land Management Training Package and RTE03 Rural Production Training Package

Volume 3: Units of Competency Imported from other Training Packages

Volume 4: RTC Common Units of Competency

The contents of this volume refer only to the Endorsed Components of RTF03 Amenity Horticulture Training Package. This volume should not be read in isolation but in the context of the Training Package as a whole.

Endorsed by the National Training Quality Council on 10 April 2003.

This Training Package is to be reviewed by April 2006.

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Qualifications

RTF10103	Certificate I in Horticulture
RTF20103	Certificate II in Horticulture
RTF30103	Certificate III in Horticulture
RTF40103	Certificate IV in Horticulture
RTF50103	Diploma of Horticulture
RTF60103	Advanced Diploma of Horticulture
RTF20203	Certificate II in Horticulture (Arboriculture)
RTF30203	Certificate III in Horticulture (Arboriculture)
RTF40203	Certificate IV in Horticulture (Arboriculture)
RTF50203	Diploma of Horticulture (Arboriculture)
RTF20303	Certificate II in Horticulture (Floriculture)
RTF30303	Certificate III in Horticulture (Floriculture)
RTF40303	Certificate IV in Horticulture (Floriculture)
RTF50303	Diploma of Horticulture (Floriculture)
RTF20403	Certificate II in Horticulture (Landscape)
RTF30403	Certificate III in Horticulture (Landscape)
RTF40403	Certificate IV in Horticulture (Landscape)
RTF50403	Diploma of Horticulture (Landscape)

RTF20503	Certificate II in Horticulture (Retail Nursery)
RTF30503	Certificate III in Horticulture (Retail Nursery)
RTF40503	Certificate IV in Horticulture (Retail Nursery)
RTF50503	Diploma of Horticulture (Retail Nursery)
RTF20603	Certificate II in Horticulture (Wholesale Nursery)
RTF30603	Certificate III in Horticulture (Wholesale Nursery)
RTF40603	Certificate IV in Horticulture (Wholesale Nursery)
RTF50603	Diploma of Horticulture (Wholesale Nursery)
RTF20703	Certificate II in Horticulture (Parks and Gardens)
RTF30703	Certificate III in Horticulture (Parks and Gardens)
RTF40703	Certificate IV in Horticulture (Parks and Gardens)
RTF50703	Diploma of Horticulture (Parks and Gardens)
RTF20803	Certificate II in Horticulture (Turf)
RTF30803	Certificate III in Horticulture (Turf)
RTF40803	Certificate IV in Horticulture (Turf)
RTF50803	Diploma of Horticulture (Turf)

Important

Training Packages are living documents. Changes are periodically made to reflect the latest industry practices.

As a user of the Training Package, and before commencing any form of training or assessment, you must ensure delivery is from the current version.

Ensure you are complying with this requirement by:

- Checking the version identifier code of the version you currently have (located on the imprint page, just below the copyright statement).
- Accessing the Australian Training Products (ATP) website (www.atpl.net.au) and comparing the version identifier. This information is displayed in the sample of the Training Package.
- Where the ATP website shows a different version, the Modification History, again shown on the ATP website in the Training Package sample, will display the changes made in all versions.

The Modification History is also available on the Rural Training Council of Australia website (the developer of the Amenity Horticulture Training Package) www.rtca.com.au.

Changes in competency standards and packaging of qualifications are reflected on the National Training Information Service website (www.ntis.gov.au), which displays only current information

Modification History

MODIFICATION HISTORY – ENDORSED MATERIALS			
Please refer to the National Training Information Service for the latest version of Competency Standards and Qualification information (http://www.ntis.gov.au).			
RTF03 - Rural Production Training Package			Sheet: 1 of 1
Version	Date of Release	Authorisation:	Comments
1	22/09/2003	NTQC	Primary release

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

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VOLUME 2

PART G (cont)

Units of Competency Imported from RTD02 Conservation and Land Management Training Package

Units of Competency Imported from RTE03 Rural Production Training Package

VOLUME 3

PART G (cont)

Units of Competency Imported from other Training Packages

VOLUME 4

PART G (cont.)

RTC Common units of competency included in RTD02 Conservation and Land Management Training Package, RTE03 Rural Production Training Package and RTF03 Amenity Horticulture Training Package

Part A Introduction

1 What is a Training Package?

Training Packages are a key feature of vocational education and training in Australia. They are part of the National Training Framework that aims to make training and regulatory arrangements simple, flexible and relevant to the needs of industry.

Training Packages are developed by industry for industry

The Australian National Training Authority (ANTA) funds National Industry Training Advisory Bodies (ITABs) and Recognised Bodies to develop Training Packages. Extensive consultation occurs during development to ensure that the Training Package is relevant and useable. Before the completed Training Package is endorsed for use, the developer or ITAB must validate it and show that it has broad industry support.

Training Packages encourage flexibility in training

Training may occur at the workplace, off the job, at a training organisation, during regular work, or through work experience, work placement or work simulation. Usually it involves a combination of these methods, depending on what suits the learner and the type of learning and particular vocational outcome.

Training Packages provide many pathways to competency

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

1.1 Training Package Components

A Training Package comprises two components; endorsed material and support materials. The Australian National Training Authority's (ANTA) National Training Quality Council (NTQC) oversees the endorsed component.

Endorsed Materials

Endorsed components of a Training Package consist of three parts: Competency Standards, National Qualifications, and Assessment Guidelines. Each of these components is outlined below.

Competency Standards provide an industry benchmark for training and assessment. They specify the scope of knowledge and skills to be covered in the Training Package. They enable enterprises to define accurately particular roles within industry, and are a useful guide when designing job classifications, workplace appraisal and skill development. They are the basis for designing vocational education and training courses and assessment approaches for delivery off the job by registered training providers. Key features include:

- Each Unit of Competency identifies a discrete workplace requirement.
- Units incorporate the knowledge and skills that underpin competency. They encompass relevant values and attitudes, language, literacy and numeracy, and occupational health and safety requirements.
- Key Competencies are identified at the competency or qualification level.
- Units are flexible in how they can be applied, but they are sufficiently detailed to guide Registered Training Organisations (RTOs) and assessors, and to provide consistent outcomes.

National Qualifications within the Australian Qualifications Framework (AQF) are awarded when a learner (who might be an employee) has been assessed as achieving a combination of Competency Standards that provides a meaningful outcome at an industry or enterprise level. Each qualification consists of a number of core and/or elective Units of Competency that industry representatives consider workers require in order to perform a particular job. Where an individual achieves one or more Units of Competency without completing a qualification, a Statement of Attainment is issued that recognises their achievement. Key features include:

- Each qualification (comprising specified Units of Competency) is aligned directly against the AQF.
- The qualifications covered within a Training Package may range from Certificate I to Advanced Diploma, and will include the national title for each qualification.
- New Apprenticeship pathways will be identified within the Training Package.
- The Qualification will display the Nationally Recognised Training logo

A **Statement of Attainment** is issued to individuals who have been assessed and deemed competent against a Competency Standards. Statements of Attainment issued by one RTO must be recognised by other RTOs. Accrual of specified Statements of Attainment can eventually lead to a learner meeting all the requirements of a qualification. Key features include:

- Statements of Attainment will identify the Units of Competency for which the individual has been assessed and is deemed competent by the RTO.
- They will display the Nationally Recognised Training logo and identify the RTO.

Assessment Guidelines provide a framework for accurate, reliable and valid assessment of the applicable Competency Standards. They ensure that all assessments are thorough, consistent and valid. They provide important quality assurance in the issuing of qualifications. Endorsed components of a Training Package may be complemented and supported by the development of optional learning strategies, assessment tools and professional development materials.

Support materials

Support materials to be used in conjunction with Training Package can be produced by RTOs, private and commercial developers, Department of Education, Science and Training (DEST), State/Territory Training Authorities (STAs), or through ANTA. They can consist of:

- Learning strategies that assist training providers to design specific training programs that will help trainees attain the required competencies.
- Assessment materials that can be used by assessors to gather sufficient evidence of competency to make reliable judgements about whether a person has met the required Competency Standard.
- Professional development materials that provide information, hints and resources for trainers and assessors that will help them successfully implement the Training Package.



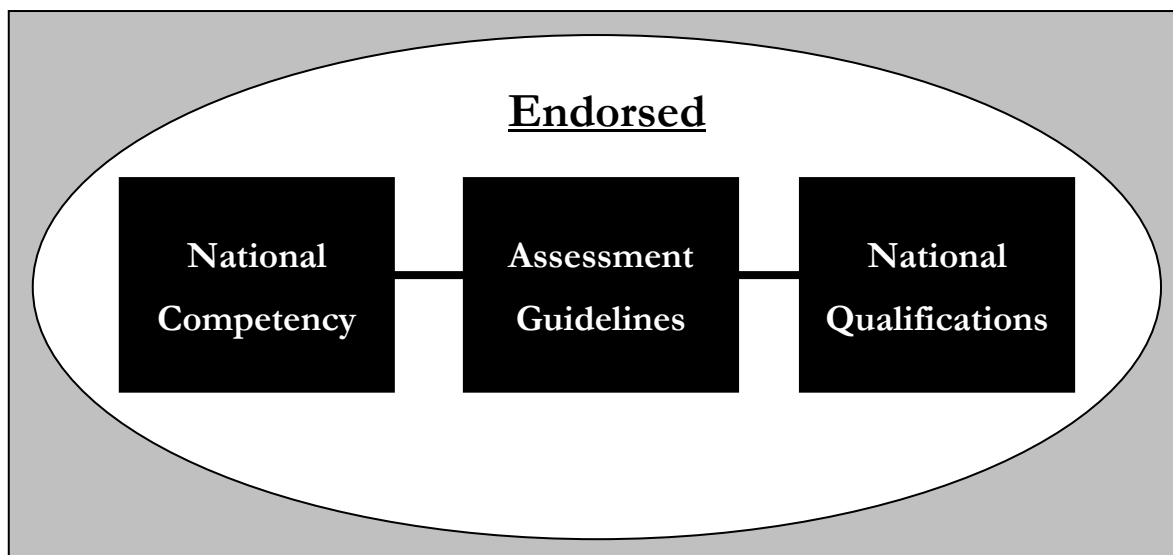
RTOs will usually develop their own supporting resources. They can also draw upon any other resources developed specifically to support the Training Package. Support materials that have passed successfully through ANTA's official "Noting" process can use the official logo to indicate that they meet specified quality criteria.

Noted support materials are listed on the National Training Information Service (NTIS), together with a detailed description and information on their availability and the type of product. NTIS can be located on <http://www.ntis.gov.au>.

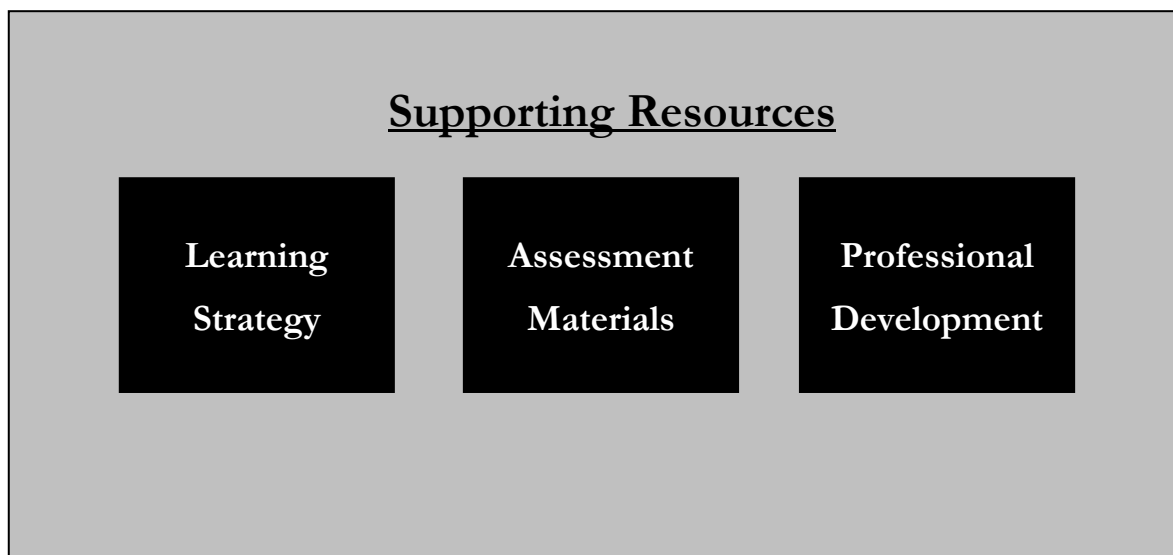
Although the noting process has been adopted as a guide to quality-assured supporting resources, it is not compulsory for RTOs to submit their support resources to ANTA. They are at liberty to use whatever resources are available to them to meet the requirements of a qualification or a Unit of Competency.

1.2 General Information

The components of an endorsed Training Package are illustrated in the following diagram.



Supporting resources are generally produced to directly relate to a single or multiple competency standards, industry sector, qualification, or the total Training Package. They tend to fall into one or more of the categories illustrated below.



Version Control

ANTA has a system for tracking changes across subsequent editions of Training Packages and their constituent components. Anyone using a Training Package should follow ANTA's recommended procedure for determining the currency of the information in their edition.

Training Package

Each Training Package has been assigned a unique five-character code, for example RTF02. The final two characters (the version identifier) represent the year the Training Package was initially endorsed. Units of Competency and qualifications originating in that Training Package will have their own longer codes, which will commence with the first three letters of the Training Package code (RTF in this example).

Units of Competency

Whereas the first three characters of the code assigned signify the Training Package, the last character will always be a letter representing the version identifier. The code for a Unit of Competency is assigned when the initial Training Package is endorsed, or when new sectors or new standards are added to an existing endorsed Training Package.

A typical code consists of up to 12 characters. These characters normally consist of a mixture of capital letters and numbers, for example RTF3407A. The first three characters are always letters and are the same letters used to code the original Training Package of which the unit was part. In the case of the Amenity Horticulture Training Package, two codes are used – RTF represents those units that are unique to Amenity Horticulture and RTC represents those units that are common to the Rural Production, Amenity Horticulture and Conservation and Land Management Training Packages.

The last letter (A) in the Unit of Competency code is the letter used for the version control. The "A" indicates that this is the original unit. If one lot of changes has been incorporated since the unit was first endorsed, but without any change to the unit outcomes, the version identifier will be a "B". The different version identifier usually means that minor changes have been incorporated without affecting the overall unit outcome. Typically this would mean that wording has changed in the Range Statement or the Evidence Guide, providing clearer intent. The next batch of minor changes would result in a "C", and so on throughout the life of the unit.

Any letters or numbers (this can be up to eight characters) between the first three characters and the version control letter are assigned by the developer of the unit and may relate to an industry sector, function or skill area. Where changes are incorporated that alter the unit outcome, a new code is assigned and changes are made to the unit title.

Differences in the version identifier of Units of Competency on Statements of Attainment issued by RTOs are not significant, as outcomes of the unit have not changed significantly.

Qualifications

All qualifications are assigned a unique eight-character code. The last two characters (version identifier) are always numbers and represent the year in which the qualification was endorsed. In all instances, qualifications included and endorsed in the original Training Package have an identical version identifier to those of the originating Training Package. In cases where qualifications are added after the initial endorsement of the Training Package, they are assigned a version identifier denoting the year they were endorsed.

Review Date

On the title page and in the footer of each Training Package page there is reference to a review date. This date is determined at the time of endorsement of the Training Package and indicates when the Training Package is to be reviewed in the light of changing technologies, circumstances, industrial relations, etc. The review date is not to be regarded as an expiry date, as the Training Package and its components remain current until they are reviewed or replaced.

2 What is the Australian Qualifications Framework?

The Australian Qualifications Framework (AQF) is a national framework for all education and training qualifications in Australia. There are twelve qualifications in the AQF. Six of these are relevant to the Vocational Education and Training (VET) sector.

The twelve qualifications are listed in the following table.

Schools sector	VET sector	Higher Education sector
Senior secondary certificate of education	Advanced Diploma Diploma Certificate IV Certificate III Certificate II Certificate I	Doctoral Degree Masters Degree Graduate Diploma Graduate Certificate Bachelor Degree Advanced Diploma Diploma

This categorisation of qualifications into these three sectors is in some ways misleading. In practice, it is not unusual for the Schools sector to be delivering Certificates I or higher, for the VET sector to deliver Graduate Certificates, and for the Higher Education sector to be involved in delivery of Certificate IV.

The adoption of the AQF for all vocational education and training ensures national consistency for all trainees, students, employers and providers in the VET sector. It permits national recognition of competency based training on endorsed competency standards. Competency is assessed in accordance with the endorsed Assessment Guidelines.

2.1 Statement of Attainment

Where competence has been achieved in accordance with the endorsed standards, but does not meet the requirements of a qualification, a Statement of Attainment can be issued for the competencies successfully achieved. These can be combined with any additional competencies achieved later. Together they will build towards the awarding of a qualification. RTOs must recognise the achievement of competencies recorded on a Statement of Attainment issued by another RTO.

2.2 AQF Level Descriptors

Certificate I

The worker will normally be engaged in a workplace in which they:

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

Certificate II

The worker will normally be engaged in a workplace in which they:

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

Certificate III

The worker will normally be engaged in a workplace in which they:

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

Certificate IV

The worker will normally be engaged in a workplace in which they:

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

Diploma

The worker will normally be engaged in a workplace in which they:

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

Advanced Diploma

The worker will normally be engaged in a workplace in which they:

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

3 Amenity Horticulture Training Package

3.1 Horticulture Training Package (RUH98)

The first Horticulture Training Package was endorsed in 1998, and since then has been the basis of vocational education and training for the horticultural industry in Australia. The Training Package was developed by the Rural Training Council of Australia and represented the culmination of an extensive consultation and documentation process covering a diverse and dispersed range of industries.

ANTA's policy, gained through experience and use of the Training Package, has led to a better understanding of the principles and practicalities of competency based training by both the industry and training providers, and changes in the industry itself, have required that the Training Package be reviewed. Gaps in available standards and the need to include more horticultural content in management training at AQF levels 5 and 6 had been identified for which competency standards needed to be developed. Greater consistency between competency standards within the Horticulture Training Package and with the Agriculture Training Packages needed to be established.

Some initiatives undertaken after the first Training Package RUH98 was endorsed contributed to the subsequent review. These included:

- A review of Competency Standards carried out by J Hargreaves in 1998/99.
- A study of the incorporation of environmental considerations in the National Horticulture (and Agriculture) Competency Standards.
- The development of draft qualifications and competency standards covering irrigation.
- A separate project to examine issues related to chemical use standards in the context of changes in regulatory requirements and inconsistencies between the Horticulture and Agriculture Training Packages.
- A study of the links that can be established between informal training schemes such as Property Management Planning (PMP), and the Agriculture Training Package and its implications for the Horticulture Training Package.

As a precursor to the review of the Horticulture and Agriculture Training Packages, a scoping project was undertaken to determine the parameters of the task, to consider coverage of the new Training Packages, and improvements to be made to the initial Training Packages. This was undertaken in 1999 and 2000 by Training and Development Consultants, David Rumsey and Associates Pty Ltd. The level of consultation and support from industry and RTOs in the development of the Amenity Horticulture Training Package has been very comprehensive and committed.

3.2 Coverage of the Horticulture Training Package

The Amenity Horticulture Training Package services several well-defined industry sectors, as well as a wide range of jobs and roles that are part of the broader Horticulture industry.

The Training Package covers all levels of work from inexperienced new entrants to the industry, skilled operators, supervisors and managers.

Key industry sectors include:

- Arboriculture
- Floriculture
- Landscape
- Nursery (Retail)
- Nursery (Wholesale)
- Parks and Gardens
- Turf

3.3 History of Development

The review of the Horticulture Training Package comprised two distinct stages.

Stage 1

All Training Packages endorsed by ANTA are reviewed as part of a process of ongoing continuous improvement. The first stage of the review of the Horticulture Training Package was an analysis of the endorsed Training Package RUH98 undertaken by David Rumsey and Associates Pty Ltd. This review included comprehensive consultation across all States and Territories. The process included consultation with:

- employers, employer associations and unions across the various horticulture sectors,
- peak horticulture commodity organisations and research and development bodies,
- State/Territory Training Departments of Horticulture, Primary Industry, etc.,
- State/Territory Rural ITABs,
- State/Territory Training and Recognition Authorities,
- RTOs including teachers, administrators and students,
- relevant licensing and regulatory bodies and authorities, and
- other persons and organisations with an interest in the Training Package.

The aims of the review were to:

1. Research the application and examine the suitability, effectiveness and uptake of the Horticulture Training Package as a basis for skill development and training for individuals and enterprises in the relevant horticulture sectors, including small, medium, and large organisations.
2. Identify any barriers or gaps affecting the full implementation of the former Horticulture Training Package.

3. Identify any improvements that could be made to the Horticulture Training Package.
4. Investigate whether the total range and quality of publicly available resource material developed to support the Horticulture Training Package (non-endorsed components) are appropriate, as well as the extent of their take up.
5. Report on any desirable minor revisions to the existing Horticulture Training Package.

The resulting report identified the strengths and weaknesses of the original Horticulture Training Package, indicating opportunities for addressing weaknesses and building on strengths through the review process. A series of recommendations provided advice on the changes that needed to be made. These included the need to improve the user-friendliness of the Training Package, new formatting of competency standards, eliminating duplication including the two sets of Production Horticulture standards, updating assessment guidelines, reducing the number of qualifications, reviewing and updating the core mandatory competency standards, and reviewing the chemical use competencies.

An extension of Stage 1 of the review produced a new and improved Competency Standard Template and Style Guide that have been used in the new Training Package development. A draft qualifications framework and draft packaging rules were also developed and used as a basis for industry discussion, as well as a draft of chemical standards in preparation for Stage 2 of the Review.

Stage 2

With ANTA funding and under RTCA management, the development process of this stage effectively commenced in January 2000.

The previous stage provided advice on a strategy for implementing the outcomes of the evaluation based on extensive consultation with stakeholders. This proved to be a sound basis for Stage 2 of the review, of which a significant part was implementing the recommendations emanating from Stage 1.

The consultations with stakeholders undertaken during Stage 1 identified several issues relating to the presentation and structure of the Horticulture Training Package RUH98. They included:

- Need to make the underpinning knowledge section of the Evidence Guides more explicit, but concise.
- Concern over the variability in size of standards.
- Need for further improvements in flexibility.
- Need to revise chemical standards.
- Need to include more horticultural content in management training, specifically at AQF Levels 5 and 6.
- Gaps in content of some standards.
- Gaps in sets of standards / qualifications.
- Need to review management qualifications.
- Need for a technical stream at AQF Levels 5 and 6.
- Technical issues with individual standards.
- Duplication of Production Horticulture Qualifications.

A systematic process was invoked that progressively converted the existing competency standards to a new format, reduced duplication, contextualised the Range of Variables, and updated the Evidence Guides.

The amendments to the Range of Variables and the Evidence Guide will provide for improved and more consistent assessment processes.

During consultation, Horticultural industry sectors recognised and agreed that there was a great deal of commonality in skills and knowledge between the sectors (which could be applied in different contexts). This has provided the opportunity to aggregate competency standards that now have the flexibility to cover similar jobs in a wide range of industry sectors. The commonality with the Agriculture Training Package and Conservation and Land Management Training Package has also been identified to eliminate duplication of competency standards, and most importantly, to allow people working across industries to gain recognition appropriate to their circumstances.

New Industry Sectors

There has been some reorganisation of some industry sectors in the re-development of the Horticulture Training Package. Floriculture, which in some places is considered to be part of the Production Horticulture industry and in others part of Amenity Horticulture, has been included in the Amenity Horticulture Training Package. Production Horticulture, previously included in both the Horticulture and Agriculture Training Packages, will now be part of the Rural Production Training Package. The nursery qualifications have been more specifically defined in two separate sets of qualifications, these being Nursery Retail and Nursery Wholesale.

3.4 Environmental, Health and Safety Implications

There is a need to ensure that all rural and related training participants are sensitive to the outcomes of their activities and actions in respect to the environment and the health and safety of their workplaces. At the same time, the enterprise must be profitable, sustainable and observe good industry practice.

To ensure that competency standards are written so that training will lead to the conduct of viable, sustainable and safe enterprises, particular attention has been given to these aspects of the standards during the development process.

3.5 Other Products

Concurrent with the conversion of competency standards to the new template, scoping and development projects, rationalisation of standards, and identifying sector gaps has been the development of draft sector booklets and qualifications framework.

3.6 Consultation and Validation of the Amenity Horticulture Training Package

Stage 1 of the project, that comprised a two-part review of the endorsed Horticulture Training Package undertaken between September 1999 and May 2000, involved extensive feedback across Australia from a wide range of people and organisations in regional and urban centres with an interest in the Training Package. This process has proved to be a valuable and essential part of the consultation process.

The re-development process described in the previous section resulted in a well-refined product for review by all stakeholders. The consultation process was devised to provide the maximum opportunity for stakeholders to respond to proposed Training Package changes, having regard for the best outcome from the resources available.

National Consultation

National ITABs, Recognised Bodies and the Australian Indigenous Training Advisory Council have been informed of the consultation process, and their involvement sought in workshops and comments invited on the re-developed Training Package. All Executive Officers of identified national peak industry bodies have been involved throughout the process.

Each State Training Authority (STA) has been briefed throughout the project and all relevant issues have been discussed. Copies of reports to ANTA at each reporting period have been supplied to each STA.

State Consultations

Each State / Territory ITAB of the Rural Training Australia Network convened a series of workshops to consider the amendments made to the Training Package. This has provided the relevant industries and organisations with the necessary opportunity to participate in a comprehensive consultation and gain an adequate understanding of the redeveloped Training Package. Care was taken to ensure that those sectors that are important to particular states were canvassed there, and that all sectors were covered across the whole of Australia.

The participants have taken the opportunity to express their opinions on the work undertaken and have indicated, where necessary, changes and modifications that need to be made. The comments have been carefully documented, assessed and processed.

As competency standards have been amended and new standards developed, they have been available for public review on the RTCA website. This provided the opportunity for further responses that have been accommodated where they have been relevant.

National Industry Steering Committee (NISC)

The NISC was established according to ANTA guidelines.

The Committee's role has been to ensure that:

- The project is effectively and ethically managed.
- The objectives defined in the contract are met.
- Sub-contracted consultants are capable of the tasks set and meet required deadlines.
- Contract reporting milestones are adhered to.
- The project produces a product of the required quality.
- The funds are spent and acquitted as specified in the contract schedules.
- All stakeholders are appropriately consulted throughout the work.

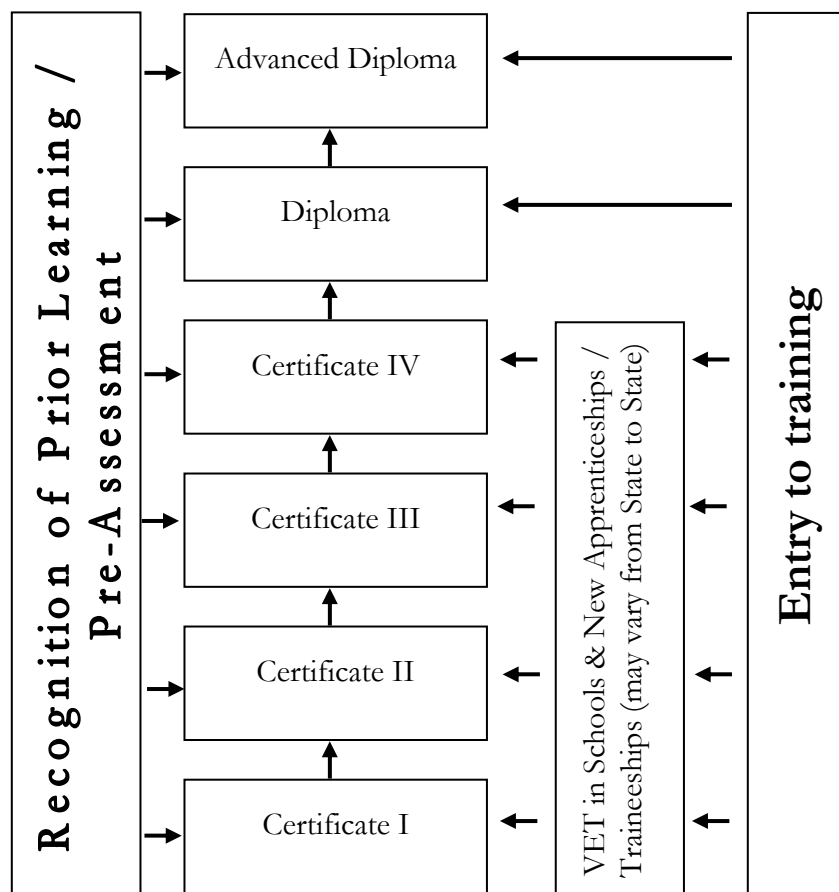
The Steering Committee agreed on the final version of the Training Package.

3.7 Composition of the Horticulture Training Package

The Horticulture Training Package is the framework for vocational education and training for those engaged in the horticulture industries. The Training Package supports a wide range of learning pathways. These include institution-based programs, workplace and school-based training, as well as other flexible combinations of workplace and off-the-job training and assessment.

Qualifications within the Horticulture Training Package can be achieved through a variety of pathways including New Apprenticeships (traineeships).

Below is illustrated the training pathways for qualifications contained within the Amenity Horticulture Training Package.



Training pathways for the Amenity Horticulture Industry

3.8 Characteristics of the Horticulture Industry Workforce

The Arboriculture Industry

The Arboriculture Industry is a specialist horticultural industry that can be found in all States and Territories across Australia. Many arborists operate as private contractors while others are employed by Local and State Government agencies.

The work of arborists can comprise the following:

- maintenance and management of trees in private and public gardens, parks and streetscapes,
- removal and transplanting of large trees,
- protection and rehabilitation of trees under structural or physical threat,
- provision of advice on tree planting and maintenance,
- evaluation and assessment of tree health and monetary value.

There are a number of associations at State and National level that represent the interests of arborists.

The Floriculture Industry

The Floriculture Industry is found in all States and Territories across Australia. There is a wide diversity in commodity areas and enterprises across the Floriculture sector.

The work undertaken by those employed in the Floriculture sector can comprise the following:

- growing and harvesting of commercial flowers, flower seed, foliage and essential oil crops,
- management and maintenance of field and controlled growing environments,
- post harvest treatments and production of plant products,
- wild harvesting and processing of commercial flowers, flower seed, foliage and essential oil crops.

The industry is expanding with the impact of greater mechanisation, improved marketing, and advances in plant breeding.

The Landscape Industry

The Landscape Industry is a diverse horticultural industry found in all States and Territories across Australia. There is a wide range of landscape operations across the sector with a key division between those who focus on hardscape construction, which is often linked to the construction industry, and softscape development with a more eclectic approach to plant use and landscape development.

The work undertaken by those employed in the Landscape sector can comprise the following:

- construction and maintenance of domestic and commercial landscapes,
- design of gardens and commercial landscapes,
- rehabilitation and maintenance of urban bushland,
- construction and installation of amenity and recreational landscape structures,
- provision of technical advice and forward estimates on landscape development proposals.

Landscape work is associated with commercial construction, hotel and resort construction, engineering projects along transport corridors, new housing developments, and improvements to residential, commercial and industrial properties.

The Nursery Industry

The Nursery Industry is a specialist horticultural industry that can be found in all States and Territories across Australia. There is a wide diversity of enterprises that comprise the Nursery sector with the major distinction being between production, wholesale and retail nurseries. Some nurseries are involved in two or three sectors.

The work undertaken by those employed in the nursery sector can comprise the following:

- propagation, production and maintenance of plants for sales and/or hire,
- wholesaling and retailing of plants and associated products,
- provision of advice on plant selection and garden design,
- marketing and promotion of plant products and services.

There are a number of associations at State and National level that represent the interests of the industry. Each State has a nursery industry association with affiliations to the national Nursery Industry Association of Australia.

The Parks and Gardens Industry

The Parks and Gardens Industry is a broad horticultural Industry found in all States and Territories across Australia. There is a wide diversity of enterprises in the Parks and Gardens sector.

The work undertaken by those employed in the Parks and Gardens sector can comprise the following:

- management and maintenance of public and private parks, reserves and gardens,
- management and maintenance of natural bushland and community recreation areas,
- management and maintenance of historic, cultural and special use areas such as botanic gardens, cemeteries, recreation parks and institutional lands,
- design and implementation of special plant displays,
- provision of advice for plant selection and use in commercial and domestic situations,
- contract administration and management.

Distribution of this industry is closely allied to centres of population. The industry is undergoing growth as tourism becomes more important and there is greater interest in public health and outdoor recreation.

The Royal Australian Institute of Parks and Recreation (RAIPR) is the predominant national body representing the Parks and Gardens industry and the more broadly-based Australian Institute of Horticulture (AIH) also represents many horticulturists from this sector.

The Turf Industry

The Turf Industry is a horticultural industry that operates in all States and Territories in Australia. It comprises two industry groups, the growing and sale of turf and the care and management of turf.

The work undertaken by those employed in the Turf Industry can comprise the following:

- establishment and maintenance of commercial and recreational turf,
- design and preparation of sports turf playing surfaces,
- domestic mowing and turf maintenance operations,
- commercial growing and supply of turf,
- management of recreational and sport turf facilities,
- provision of technical advice on turf irrigation, pest and disease control and turf management practices.

Turf management work is associated with golf courses, bowling greens, wicket and pitch preparation, racing clubs, institutional and recreational playing fields, commercial growing of turf operations and mowing contractors.

The industry is represented by a number of different State and National bodies, each related to various occupational groups and sectors within the industry.

3.9 New Apprenticeships (traineeships)

Participation in a traineeship can be undertaken at any AQF level. The Commonwealth Government provides incentives under prescribed conditions to employers to take on trainees, and State Governments provide funds for the delivery of training to trainees under 'User Choice' arrangements. These may vary from State to State, but the reality is that support from both Governments is limited to trainees at AQF levels 1-3 although it might include AQF level 4 under some circumstances. There are some constraints to the availability of funding, such as in at least one State an employee must commence a traineeship within three months of gaining employment.

3.10 Flexibility

The hallmark of the Amenity Horticulture Training Package is its flexibility. The diversity of the workforce requires a Training Package that can underpin high quality training in a wide range of environments, levels and contexts. This flexibility is achieved through:

- Flexible AQF packaging allowing wide-ranging choices in structuring a qualification.
- A limited number of compulsory standards at the lower levels.
- Open electives that enable incorporation of standards from other Training Packages, where appropriate.
- Options to customise standards to suit contexts, enterprises or stakeholder requirements.

3.11 Transition arrangements

Registered Training Organisations are responsible for planning the transition of trainees from training programs commenced as part of RUA98 Agriculture Training Package to training programs as part of RTE03 Rural Production Training Package. It is recommended that the transition process be completed within 12 months of the endorsement of RTE03.

Within this recommended transition period, it is expected that decisions to teach out or to transfer to the new Training Package will reflect the particular arrangements of each RTO and group of trainees. To assist this process, the relationships between units of competency from RUA98 and RTE03 have been mapped in a set of tables. These are to be found in the Rural Production Training Package User Guide which is available from the Rural Training Council of Australia or on the RTCA website <http://www.rtca.com.au>

Part B Qualification Packaging

1 Amenity Horticulture Qualifications

The Amenity Horticulture Training Package provides a mechanism for the acquisition of qualifications in the Vocational Education and Training (VET) sector. Under the Australian Quality Training Framework (AQTF), competencies within the Amenity Horticulture Training Package form the basis of recognised national qualifications.

The Rural Training Council of Australia, the National ITAB, has devised a qualifications model that is designed to provide maximum recognition, flexibility and portability for persons employed in the Amenity Horticulture industry. The thirty four qualifications are:

RTF10103	Certificate I in Horticulture
RTF20103	Certificate II in Horticulture
RTF30103	Certificate III in Horticulture
RTF40103	Certificate IV in Horticulture
RTF50103	Diploma of Horticulture
RTF60103	Advanced Diploma of Horticulture
RTF20203	Certificate II in Horticulture (Arboriculture)
RTF30203	Certificate III in Horticulture (Arboriculture)
RTF40203	Certificate IV in Horticulture (Arboriculture)
RTF50203	Diploma of Horticulture (Arboriculture)
RTF20303	Certificate II in Horticulture (Floriculture)
RTF30303	Certificate III in Horticulture (Floriculture)
RTF40303	Certificate IV in Horticulture (Floriculture)
RTF50303	Diploma of Horticulture (Floriculture)

RTF20403 Certificate II in Horticulture (Landscape)
RTF30403 Certificate III in Horticulture (Landscape)
RTF40403 Certificate IV in Horticulture (Landscape)
RTF50403 Diploma of Horticulture (Landscape)

RTF20503 Certificate II in Horticulture (Retail Nursery)
RTF30503 Certificate III in Horticulture (Retail Nursery)
RTF40503 Certificate IV in Horticulture (Retail Nursery)
RTF50503 Diploma of Horticulture (Retail Nursery)

RTF20603 Certificate II in Horticulture (Wholesale Nursery)
RTF30603 Certificate III in Horticulture (Wholesale Nursery)
RTF40603 Certificate IV in Horticulture (Wholesale Nursery)
RTF50603 Diploma of Horticulture (Wholesale Nursery)

RTF20703 Certificate II in Horticulture (Parks and Gardens)
RTF30703 Certificate III in Horticulture (Parks and Gardens)
RTF40703 Certificate IV in Horticulture (Parks and Gardens)
RTF50703 Diploma of Horticulture (Parks and Gardens)

RTF20803 Certificate II in Horticulture (Turf)
RTF30803 Certificate III in Horticulture (Turf)
RTF40803 Certificate IV in Horticulture (Turf)
RTF50803 Diploma of Horticulture (Turf)

Competency Standards within the Amenity Horticulture qualifications for Certificate I through to Advanced Diploma have been packaged together to form a meaningful work-related focus for key industry sectors or areas of specialisation.

The mechanism for accommodating each sector qualification has been achieved by developing three lists of competency standards in each stream:

- Groups A – these are the key technical work functions that have been designated for each sector specialisation. Standards that are compulsory for each qualification are shown in *Italics* in this group.
- Group B – these are the more generic work functions across a number of industry sectors.
- Group C – these include standards from the Amenity Horticulture Training Package not listed in Group A or B at that level, and relevant standards from other Rural Training Packages and other nationally endorsed Training Packages.

A qualification for each occupational stream is achieved by selecting competency standards from each of the above lists as set out in Section 10 below.

Competency standards imported from other Training Packages are known as ‘cross-industry’ or ‘imported’ competency standards, and the rules attached to these competency standards from their originating Training Package must be adhered to when they are incorporated into training programs or assessments.

Common units

A group of units has been developed to describe competency in areas that are common across the Conservation and Land Management, Rural Production and Amenity Horticulture Training Packages.

For convenience, these units are referred to as ‘Common units’ and are coded RTC, to distinguish them from units addressing competency relevant to some but not all industries, such as the RTD units that describe competency in the Conservation and Land Management industry.

The Common units are presented in one stand alone volume.

2 Amenity Horticulture Qualifications Codes

Each qualification within this Training Package is assigned a separate code for the purpose of listing on the National Training Information Service (NTIS) website www.ntis.gov.au. The code is defined through four indicators:

- a three letter alpha identifier representing the Training Package title (e.g. RTF),
- a single numeric identifier representing the nominal AQF Level (e.g. 2 for a Certificate II),
- a separate numeric identifier to establish the number of qualifications at that level,
- a numeric identifier to distinguish the year of endorsement.
- For example, the code for the Certificate II in Landscaping is RTF20403 where RTF stands for 'Rural – Amenity Horticulture' and is known as the Training Package identifier. The first '2' means it is a Certificate II qualification, '04' indicates it is the fourth qualification at this level in the Training Package, and the final '03' represents the year in which the qualification is endorsed.

3 Issuing Qualifications

Under the agreed arrangements of the Australian Quality Training Framework (AQTF) only Registered Training Organisations (RTOs) can issue qualifications and do so according to the AQTF Standards.

When a qualification is issued by an RTO, there will be an option to include the sector specialisation or occupational stream on the academic transcript, Statement of Attainment and the qualification parchment issued by the RTO.

4 Rules (Amenity Horticulture)

There is one rule that can be found detailed in each qualification, for example:

For a Certificate II in Horticulture (Arboriculture), at least 13 of the competency standards presented for this qualification must relate to arboriculture work procedures, activities or contexts.

This is designed to ensure that some at least 80% of competencies submitted for a qualification relate to the specific sector (arboriculture in the above example) and the integrity of the qualification is maintained.

4.1 Context of Assessment for Units

Due to the large number of generic standards in this Training Package, including imported standards and those that are common with the Conservation & Land Management and Rural Production Training Packages, there may be a need to indicate the context in which the competency standards have been assessed. For example, *RTF2023A Support turf establishment*.

This competency may refer to Landscape, Parks and Gardens or Turf. Where the competency is related to the Turf sector, the Registered Training Organisation may make a notation in the Competency record book to indicate the context in which the unit was achieved.

In the above example, the context of assessment for Turf would include:

- establishment and maintenance of commercial and recreational turf;
- design and preparation of sports turf playing surfaces;
- domestic mowing and turf maintenance operations;
- commercial growing and supply of turf;
- management of recreational and sports turf facilities; and
- provision of technical advice on turf irrigation, pest and disease control and turf management practices.

4.2 Statements of Attainment

Individuals who are assessed against a number of the competencies set out within a qualification are entitled to receive a Statement of Attainment that recognises partial achievement of a full qualification.

For example: A student may have completed the following competencies contained within the Certificate II in Horticulture (Arboriculture)

RTF2001A Apply a range of treatments to trees

RTC2005A Fell small trees

RTF2009A Perform above ground pruning

RTF2017A Prune shrubs and small trees

RTF2027A Undertake standard climbing techniques

In this case the student's Statement of Attainment would note:

In partial completion of the following:

Certificate II in Horticulture (Arboriculture)

5 Entry to qualifications and progression advice

There are no mandatory requirements for entry into any of the Amenity Horticulture Qualifications. It is expected that the RTO interview applicants before enrolment to determine the applicant's skill level, previous experience and other relevant attributes in order to enrol the applicant at the appropriate qualification level. In order to assist RTOs in determining the relationship between standards, a relationship table has been included in the User Guide.

When assessing to determine if a person has the required skills to be enrolled at a particular qualification level or particular competency standard, the following must be considered:

- OHS requirements

underpinning knowledge and skills

language literacy and numeracy requirements

levels of attainment of the Key Competencies.

Under the Australian Quality Training Framework (AQTF), the following requirements for Recognition of Prior Learning (RPL) are outlined:

- clear information about RPL must be given to applicants before enrolment

all applicants must be offered RPL upon enrolment.

It is a further AQTF requirement that the RPL process be:

- structured to minimise time and cost to applicants

clear, allowing applicants enough time to gather evidence to support their claims.

6 Pre-requisites and Co-requisites

There are **no pre-requisites** in the amenity horticulture units (coded RTF) in the Amenity Horticulture Training Package. This is a direct result of feedback from industry. During the training package reviews it was decided that each training package on implementation should:

- Ensure a person can undertake a program at a level that matches their learning needs and requirements

Allow for recognition of existing skills and knowledge, particularly in relation to OHS

Allow for standards to be transferred into other training packages and be used in qualifications contained in other training packages (in particular, but not exclusively, the Rural Common standards)

Allow for all pathways to obtain a qualification

Allow for optimum flexibility in delivery of training to achieve competency standard outcomes

Competency Standards from other Training Packages may have pre-requisites and/or co-requisites. Some units have been imported from other Training Packages and have been included in Group A or Group B of qualifications in this Training Package. Where these units have pre-requisites and/or co-requisites these are identified in the table on the following pages. If competency can be demonstrated in the pre-requisite and/or co-requisite standard(s), then there is no requirement to include them as part of the qualification. Where imported units are used as part of a qualification, RTOs are advised to check the assessment guidelines through the NTIS in case special assessment conditions apply.

Competency Standard	Pre-requisite / Co-requisite *
BCG3115A Lay segmental/unit paving	Pre-requisites: BCG1005A Use hand and power tools BCG1006A Use small plant and equipment BCG1010A Carry out concrete work to simple forms BCG2004A Carry out levelling BCG3011A Carry out basic setting out

** For further information about related standards for standards within other nationally endorsed Training Packages, please contact the developer of that particular Training Package.*

7 New Apprenticeships and Amenity Horticulture Qualifications

New Apprenticeships (Traineeships and Apprenticeships) provide one approach for achieving qualifications in the Amenity Horticulture Training Package. Other approaches include direct assessment against the competencies for people with relevant workforce experience, workplace training and assessment, and/or off-the-job training and assessment by a RTO.

All Certificate I to IV qualifications that have been identified in this Training Package are potentially accessible as New Apprenticeships. However, it is anticipated that most New Apprenticeships will be based around Certificate II and Certificate III outcomes.

The capacity to establish a New Apprenticeship for any of the qualifications will depend on industry demand, resources available at the State or Territory level, and any award requirements.

Where a New Apprenticeship structure is established for an Amenity Horticulture qualification, the following considerations must be met:

- All New Apprenticeship arrangements must reflect the qualification requirements and packaging arrangements for the relevant qualification as defined in this Training Package, including the content of the training agreement and training program.
- All New Apprenticeship arrangements must reflect the requirements for assessment as set out in the Assessment Guidelines of the Amenity Horticulture Training Package.
- All assessment for the purpose of issuing a qualification through a New Apprenticeship must be against the specified Competency Standards and in compliance with the packaging rules as set out for the relevant qualification.
- Any customisation of the qualification for a New Apprenticeship program must reflect the customisation advice set out in this guide.
- Estimation of time to complete a New Apprenticeship in Amenity Horticulture must be negotiated with the relevant State/Territory Training Authority (STA).

8 Licensing Arrangements

Some individual competency standards may be subject to licensing arrangements before training is commenced or before undertaking related work in the industry. Other standards may require licences for those responsible for delivery and assessment. Standards where licensing arrangements may be relevant include those dealing with:

- operation of vehicles, machinery and equipment such as chainsaws, motor vehicles, tractors, forklifts and earthmoving machinery
- waste water
- soil disturbance and conservation
- irrigation
- water allocations
- landscape construction
- underground water
- natural bush clearing
- driving or transporting of machinery and equipment on public roads
- firearms
- chemical purchase and use
- access to and activities on private or protected lands
- management activities related to particular animal and plant species.

Refer to the individual standards for further details on these matters, and to relevant State / Territory and/or Commonwealth legislation.

9 VET in Schools

There are no restrictions on the delivery or assessment of competency standards in schools. The Certificate I in Horticulture has been designed as a broad-based general qualification that will provide easy transition to Level 2 training in more specialised areas in Amenity Horticulture or Rural Production. It is expected that VET in Schools Programs will focus on delivery and assessment at Level 1 in the first instance, with eventual bridging into Level 2 specialisations.

10 Details of Qualification Packaging

The packaging rules for Amenity Horticulture qualifications are presented below and listed in the following order:

- General Horticulture
- Arboriculture
- Floriculture
- Landscape
- Retail Nursery
- Wholesale Nursery
- Parks and Gardens
- Turf

10.1 General Horticulture

RTF10103 Certificate I in Horticulture

A total of 6 units of competency must be completed

- Complete the 1 designated compulsory unit from Group A below
- Select 2 additional units from Group B below
- Select 3 additional units from Group B or C below

Units should be selected from Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)

RTC1801A	<i>Prepare for work*</i>

GROUP B

RTC1006A	Support nursery work
RTC1201A	Maintain the workplace
RTC1202A	Support landscape work
RTC1301A	Operate basic machinery and equipment
RTC1302A	Assist with routine maintenance of machinery and equipment
RTC1701A	Follow basic chemical safety rules
RTD1501A	Support natural area conservation
RTE1005A	Support horticultural production
RTE1601A	Support irrigation work
RTF1002A	Support arboricultural work
RTF1003A	Support turf work
RTF1004A	Support gardening work
RTF1007A	Support floricultural production

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate I or II outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate I in Horticulture at least 5 of the units of competency presented for this qualification must relate to general horticultural work procedures, activities or contexts. In addition, at least 5 of the total number of units selected to make up this qualification must be clearly aligned to a Certificate I outcome.

RTF20103 Certificate II in Horticulture

A total of 17 units of competency must be completed

- Complete the 4 designated compulsory units from Group A below
- Select 10 additional units from Group B below
- Select 3 additional units from Group B and/or C below

Units should be selected from Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC2701A	<i>Follow OHS procedures*</i>
RTC2702A	<i>Observe environmental work practices*</i>
RTC2705A	<i>Work effectively in the industry*</i>
RTC2801A	<i>Participate in workplace communications*</i>

GROUP B	
RTC2005A	Fell small trees
RTC2012A	Plant trees and shrubs
RTC2016A	Recognise plants
RTC2026A	Undertake propagation activities
RTC2203A	Conduct visual inspection of park facilities
RTC2209A	Install, maintain and repair fencing
RTC2210A	Maintain properties and structures
RTC2301A	Undertake operational maintenance of machinery
RTC2304A	Operate and maintain chainsaws
RTC2306A	Operate vehicles
RTC2307A	Operate machinery and equipment
RTC2309A	Operate tractors
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
RTC2706A	Apply chemicals under supervision
RTC2801A	Participate in workplace communications
RTD2022A	Carry out natural area restoration works
RTD2206A	Install aggregate paths
RTE2003A	Carry out postharvest operations
RTE2010A	Establish horticultural crops
RTE2018A	Regulate crops
RTE2021A	Support horticultural crop harvesting
RTE2028A	Undertake field budding and grafting
RTE2308A	Operate ride-on vehicles
RTE2503A	Observe and report on weather
RTE2601A	Assist with the operation of gravity-fed irrigation
RTE2602A	Assist with the operation of pressurised irrigation

RTE2603A	Lay irrigation and/or drainage pipes
RTE2604A	Maintain drainage systems
RTE2605A	Maintain gravity-fed irrigation systems
RTE2606A	Maintain pressurised irrigation systems
RTE2607A	Install a micro-irrigation system
RTE2707A	Follow site quarantine procedures
RTE2902A	Collect and record production data
RTF2001A	Apply a range of treatments to trees
RTF2008A	Maintain indoor plants
RTF2009A	Perform above ground pruning
RTF2013A	Pot-on plants
RTF2014A	Prepare and maintain plant displays
RTF2015A	Prepare turf surfaces for play
RTF2017A	Prune shrubs and small trees
RTF2019A	Renovate grassed areas
RTF2020A	Assist with turf construction
RTF2023A	Support turf establishment
RTF2024A	Tend nursery plants
RTF2025A	Transplant small trees
RTF2027A	Undertake standard climbing techniques
RTF2204A	Construct low-profile timber or modular retaining walls
RTF2207A	Protect trees during construction work
RTF2211A	Prepare a gravesite
RTF2215A	Assist with landscape construction work
RTF2311A	Undertake stump removal
RTF2504A	Determine basic properties of soil/growing media
RTF2208A	Lay paving
WRRCA1B	Operate retail equipment
WRRCA2B	Apply retail office procedures
WRRCS2B	Apply point of sale handling procedures
WRRS1B	Sell products and services

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate I, II or III outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate II in Horticulture at least 13 of the units of competency presented for this qualification must relate to general horticultural procedures, activities or contexts. In addition, at least 13 of the units selected to make up this qualification must be clearly aligned to Certificate II outcomes.

RTF30103 Certificate III in Horticulture

A total of 16 units of competency must be completed

- Complete the 1 designated compulsory unit from Group A below
- Select 12 additional units from Group B below
- Select 3 additional units from Group B and/or C below

Units should be selected from Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)

RTE3713A	<i>Carry out workplace OHS procedures</i>

GROUP B

BCG3115A	Lay segmental/unit paving
BSBEBUS302A	Use and maintain electronic mail system
BSBEBUS303A	Participate in a virtual community
BSBEBUS304A	Buy online
BSBEBUS305A	Sell online
RTC3016A	Provide information on plants and their culture
RTC3201A	Conduct operational inspection of park facilities
RTC3206A	Erect timber structures and features
RTC3211A	Implement a maintenance program for an aquatic environment
RTC3218A	Undertake a site assessment
RTC3310A	Operate specialised machinery and equipment
RTC3401A	Control weeds
RTC3404A	Control plant pests, diseases and disorders
RTC3701A	Respond to emergencies
RTC3704A	Prepare and apply chemicals
RTC3705A	Transport, handle and store chemicals
RTC3805A	Co-ordinate work site activities
RTD3034A	Implement revegetation works
RTE3002A	Co-ordinate a crop regulation program
RTE3003A	Co-ordinate horticultural crop harvesting
RTE3013A	Implement a post-harvest program
RTE3030A	Harvest horticultural crops mechanically
RTE3305A	Install and terminate extra low voltage wiring systems
RTE3307A	Co-ordinate machinery and equipment maintenance and repair
RTE3506A	Monitor weather conditions
RTE3601A	Install irrigation systems
RTE3603A	Install drainage systems
RTE3604A	Troubleshoot drainage systems
RTE3605A	Troubleshoot irrigation systems
RTE3611A	Operate pressurised irrigation systems
RTE3612A	Implement a maintenance program for an irrigation system
RTE3713A	Carry out workplace OHS procedures
RTE3714A	Maintain and monitor environmental work practices
RTE3801A	Provide on-job training support

RTE3819A	Process customer complaints
RTE3904A	Keep records for a primary production business
RTE3907A	Use hand held e-business tools
RTF3001A	Construct turf playing surfaces
RTF3004A	Implement a grassed area maintenance program
RTF3005A	Deliver and promote sales of plants
RTF3007A	Fell large trees
RTF3010A	Establish turf
RTF3011A	Implement a plant establishment program
RTF3012A	Implement a plant nutrition program
RTF3014A	Implement a propagation plan
RTF3015A	Implement a tree maintenance program
RTF3017A	Implement a tree pruning program
RTF3018A	Implement a tree transplanting program
RTF3019A	Remove trees in confined spaces
RTF3020A	Install and maintain interior plant displays
RTF3021A	Maintain nursery plants
RTF3023A	Monitor turf health
RTF3025A	Prepare specialised plants
RTF3026A	Receive and dispatch plants and other nursery products
RTF3027A	Renovate sports turf
RTF3028A	Perform specialist amenity pruning
RTF3031A	Undertake complex tree climbing
RTF3032A	Install cable and bracing
RTF3033A	Implement a maintenance program for hydroponic systems
RTF3035A	Implement a tree protection program
RTF3036A	Plan and establish plant displays
RTF3203A	Construct brick and/or block structures and features
RTF3204A	Construct concrete structures and features
RTF3207A	Implement a landscape maintenance program
RTF3208A	Install metal structures and features
RTF3215A	Install hydroponic systems
RTF3216A	Install water features
RTF3217A	Set out site for construction works
RTF3219A	Construct stone structures and features
RTF3220A	Implement a paving project
RTF3221A	Implement a retaining wall project
RTF3503A	Sample soils and analyse results
RTF3510A	Design and prepare growing media
RTF3702A	Undertake aerial rescue
WRRCS3B	Interact with customers
WRRF1B	Balance register/terminal
WRRM3B	Co-ordinate merchandise presentation
WRRS2B	Advise on products and services

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate II, III or IV outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate III in Horticulture at least 12 of the units of competency presented for this qualification must relate to general horticultural procedures, activities or contexts. In addition, at least 12 of the units selected to make up this qualification must be clearly aligned to Certificate III outcomes.

RTF40103 Certificate IV in Horticulture

A total of 12 units of competency must be completed

- Select 10 units from Group B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group B in accordance with local work undertaken and local industry advice.

GROUP B	
BSBCMN413A	Implement and monitor environmental policies
BSBCMN405A	Analyse and present research information
BSBEBUS405A	Conduct online financial transactions
BSZ404A	Train small groups
RTC4024A	Recommend plants and cultural practices
RTC4206A	Supervise landscape project works
RTC4306A	Supervise maintenance of machinery and equipment
RTC4701A	Implement and monitor the enterprise OHS program
RTC4702A	Minimise risks in the use of chemicals
RTC4703A	Plan and implement a chemical use program
RTC4905A	Cost a project
RTC4908A	Supervise work routines and staff performance
RTC4911A	Operate within a budget framework
RTD4020A	Plan the implementation of revegetation works
RTD4406A	Implement pest management action plans
RTD4510A	Supervise natural area restoration works
RTD4811A	Provide information on environmental issues and policies
RTD4910A	Report on project
RTE4002A	Develop a crop regulation program
RTE4012A	Supervise horticultural crop harvesting
RTE4511A	Develop a soil use map for a property
RTE4604A	Determine seasonal irrigation scheduling tasks
RTE4606A	Supervise on-site irrigation installation and construction work
RTE4607A	Plan on-site irrigation system installation and construction work
RTE4608A	Plan and co-ordinate gravity-fed irrigation systems
RTE4609A	Implement, monitor and adjust irrigation schedules
RTE4812A	Co-ordinate customer service and networking activities
RTE4913A	Analyse and interpret production data
RTE4914A	Participate in an e-business supply chain
RTE4915A	Implement and monitor quality assurance procedures
RTF4001A	Design plant displays
RTF4003A	Plan a plant establishment program
RTF4004A	Develop a plant nutrition program
RTF4005A	Develop a sports turf maintenance program
RTF4006A	Plan a tree pruning program
RTF4007A	Prepare a garden design
RTF4014A	Plan a growing-on program
RTF4015A	Plan a propagation program
RTF4016A	Plan a tree protection program

RTF4017A	Plan a tree transplanting program
RTF4019A	Prepare and implement plans to minimise tree stress
RTF4021A	Plan the removal of trees
RTF4023A	Promote plant health
RTF4514A	Develop soil survey maps
WRII4B	Buy merchandise
WRII5A	Maintain and order stock
WRRLP2B	Minimise theft
WRRLP4B	Maintain store security
WRO1B	Manage merchandise and store presentation
WRRS4B	Build relationships with customers
TDTR298B	Source goods/services and evaluate contractors

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate III, IV or Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate IV in Horticulture at least 10 of the units of competency presented for this qualification must relate to general horticultural procedures, activities or contexts. In addition, at least 10 of the units selected to make up this qualification must be clearly aligned to Certificate IV outcomes.

RTF50103 Diploma of Horticulture

A total of 10 units of competency must be completed

- Select 8 units from Group B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group B in accordance with local work undertaken and local industry advice.

GROUP B	
BSBEBUS501A	Evaluate e-business opportunities
BSBEBUS504A	Implement an e-business strategy
BSBEBUS505A	Implement new technologies for business
BSBEBUS506A	Plan and develop a business website
BSBMGT503A	Prepare budgets and financial plans
BSBMGT507A	Manage environmental performance
BSBMGT609A	Manage risk
BSBSBM405A	Monitor and manage business operations
RTC5011A	Collect and classify plants
RTC5201A	Conduct comprehensive inspection of park facilities
RTC5504A	Develop a management plan for a designated area
RTC5520A	Manage parks and reserves
RTC5701A	Establish and maintain the enterprise OHS program
RTC5702A	Develop and manage a chemical use strategy
RTC5801A	Provide specialist advice to clients
RTC5908A	Prepare estimates, quotes and tenders
RTC5913A	Collect and manage data
RTC5914A	Prepare reports
RTD5402A	Develop a strategy for the management of target pests
RTE5006A	Plan and manage long-term weed, pest and/or disease control in crops
RTE5015A	Manage the harvest of agricultural and horticultural crops
RTE5016A	Develop production plans for crops
RTE5304A	Implement a machinery management system
RTE5524A	Develop and implement sustainable land use strategies
RTE5525A	Manage trial and/or research material
RTE5601A	Audit irrigation systems
RTE5602A	Design irrigation system maintenance and monitoring programs
RTE5603A	Design irrigation, drainage and water treatment systems
RTE5606A	Manage water systems
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
RTE5912A	Plan and monitor production processes
RTE5920A	Negotiate and monitor contracts/commercial agreements
RTE5921A	Market products and services
RTF5001A	Develop a horticultural production plan
RTF5004A	Manage landscape projects

RTF5005A	Manage plant health
RTF5008A	Plan the establishment of sports turf playing surfaces
RTF5009A	Plan the restoration of parks and gardens
RTF5010A	Prepare a landscape project design
RTF5012A	Manage a controlled growing environment
RTF5013A	Manage plant cultural practices for amenity horticulture
RTF5018A	Assess trees
RTF5302A	Develop a plan for a hydroponic system
RTF5506A	Develop and implement a streetscape management plan
RTF5521A	Monitor and manage soils
SRXIND005A	Promote compliance with laws and legal principles
SRXRES007A	Undertake open space planning
SRXRES010A	Protect heritage and cultural assets
WRRO2B	Manage sales and service delivery
WRRO4B	Control store security/loss
WRRO5B	Control inventory
WRRO6B	Manage store facilities
WRRO7A	Profile a retail market
WRRPM2B	Recruit and select personnel
WRWPL508A	Improve supply and distribution chains

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate III, IV, Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Diploma of Horticulture at least 8 of the units of competency presented for this qualification must relate to general horticultural work procedures, activities or contexts. In addition, at least 8 of the units selected to make up this qualification must be clearly aligned to Diploma outcomes.

RTF60103 Advanced Diploma of Horticulture

A total of 8 units of competency must be completed

- Select 6 units from Group B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group B in accordance with local work undertaken and local industry advice.

GROUP B	
RTD6502A	Review management plans and strategies
RTD6902A	Monitor projects in a program
RTE6301A	Analyse machinery options
RTE6501A	Manage the production system
RTE6503A	Design and conduct a field-based research trial
RTE6802A	Lead and manage community or industry organisations
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

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For an Advanced Diploma of Horticulture at least 6 of the units of competency presented for this qualification must relate to general horticultural work procedures, activities or contexts. In addition, at least 6 of the units selected to make up this qualification must be clearly aligned to Advanced Diploma outcomes.

10.2 Arboriculture

RTF20203 Certificate II in Horticulture (Arboriculture)

A total of 17 units of competency must be completed

- Select 9 units from Group A below (including the 4 designated compulsory units)
- Select 5 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC2005A	Fell small trees
RTC2016A	Recognise plants
RTC2304A	Operate and maintain chainsaws
<i>RTC2701A</i>	<i>Follow OHS procedures*</i>
<i>RTC2702A</i>	<i>Observe environmental work practices*</i>
RTC2704A	Provide basic first aid
<i>RTC2705A</i>	<i>Work effectively in the industry*</i>
<i>RTC2801A</i>	<i>Participate in workplace communications*</i>
RTF2001A	Apply a range of treatments to trees
RTF2009A	Perform above ground pruning
RTF2017A	Prune shrubs and small trees
RTF2027A	Undertake standard climbing techniques
RTF2311A	Undertake stump removal

GROUP B	
RTC2012A	Plant trees and shrubs
RTC2301A	Undertake operational maintenance of machinery
RTC2307A	Operate machinery and equipment
RTC2401A	Treat weeds
RTC2404A	Treat plant pests, diseases and disorders
RTC2706A	Apply chemicals under supervision
RTE2503A	Observe and report on weather
RTE2707A	Follow site quarantine procedures
RTF2025A	Transplant small trees
RTF2207A	Protect trees during construction work
RTF2504A	Determine basic properties of soils/growing media

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to Certificate I, II or III outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate II in Horticulture (Arboriculture) at least 13 of the units of competency presented for this qualification must relate to arboriculture work procedures, activities or contexts. In addition, at least 13 of the units selected to make up this qualification must be aligned clearly to Certificate II outcomes.

RTF30203 Certificate III in Horticulture (Arboriculture)

A total of 16 units of competency must be completed

- Select 7 units from Group A below (including the 1 designated compulsory unit)
- Select 6 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC3016A	Provide information on plants and their culture
RTC3701A	Respond to emergencies
RTC3805A	Co-ordinate work site activities
<i>RTE3713A</i>	<i>Carry out workplace OHS procedures*</i>
RTE3714A	Maintain and monitor environmental work practices
RTF3007A	Fell large trees
RTF3017A	Implement a tree pruning program
RTF3019A	Remove trees in confined spaces
RTF3028A	Perform specialist amenity pruning
RTF3503A	Sample soils and analyse results
RTF3702A	Undertake aerial rescue

GROUP B	
BSBEBUS302A	Use and maintain electronic mail system
BSBEBUS304A	Buy online
RTC3404A	Control plant pests, diseases and disorders
RTC3704A	Prepare and apply chemicals
RTC3705A	Transport, handle and store chemicals
RTE3307A	Co-ordinate machinery and equipment maintenance and repair
RTE3506A	Monitor weather conditions
RTE3801A	Provide on-job training support
RTE3904A	Keep records for a primary production business
RTE3907A	Use hand held e-business tools
RTF3015A	Implement a tree maintenance program
RTF3018A	Implement a tree transplanting program
RTF3031A	Undertake complex tree climbing
RTF3032A	Install cable and bracing
RTF3035A	Implement a tree protection program

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.
Units selected must be aligned to Certificate II, III or IV outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate III in Horticulture (Arboriculture) at least 12 of the units of competency presented for this qualification must relate to arboriculture work procedures, activities or contexts. In addition, at least 12 of the units selected to make up this qualification must be aligned clearly to Certificate III outcomes.

RTF40203 Certificate IV in Horticulture (Arboriculture)

A total of 12 units of competency must be completed

- Select 5 units from Group A below
- Select 5 additional units from Group A and/or B below
- Select 2 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBCM413A	Implement and monitor environmental policies
RTC4024A	Recommend plants and cultural practices
RTC4701A	Implement and monitor the enterprise OHS program
RTC4908A	Supervise work routines and staff performance
RTF4006A	Plan a tree pruning program
RTF4019A	Prepare and implement plans to minimise tree stress
RTF4021A	Plan the removal of trees
RTF4023A	Promote plant health

GROUP B	
BSBCM405A	Analyse and present research information
BSBEB405A	Conduct online financial transactions
RTC4306A	Supervise maintenance of machinery and equipment
RTC4702A	Minimise risks in the use of chemicals
RTC4703A	Plan and implement a chemical use program
RTC4905A	Cost a project
RTC4911A	Operate within a budget framework
RTE4914A	Participate in an e-business supply chain
RTE4915A	Implement and monitor quality assurance procedures
RTF4016A	Plan a tree protection program
RTF4017A	Plan a tree transplanting program

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.
Units selected must be aligned to Certificate III, IV or Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES
For a Certificate IV in Horticulture (Arboriculture) at least 10 of the units of competency presented for this qualification must relate to arboriculture work procedures, activities or contexts. In addition, at least 10 of the units selected to make up this qualification must be aligned clearly to Certificate IV outcomes..

RTF50203 Diploma of Horticulture (Arboriculture)

A total of 10 units of competency must be completed

- Select 4 units from Group A below
- Select 4 units from Group A and/or B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A

RTC5011A	Collect and identify plants
RTC5701A	Establish and maintain the enterprise OHS program
RTC5801A	Provide specialist advice to clients
RTC5908A	Prepare estimates, quotes and tenders
RTE5304A	Implement a machinery management system
RTE5807A	Manage staff
RTF5005A	Manage plant health
RTF5018A	Assess trees

GROUP B

BSBEBUS501A	Evaluate e-business opportunities
BSBEBUS504A	Implement an e-business strategy
BSBEBUS506A	Plan and develop a business website
BSBMGT503A	Prepare budgets and financial plans
BSBMGT507A	Manage environmental performance
RTC5702A	Develop and manage a chemical use strategy
RTC5914A	Prepare reports
RTE5901A	Develop a marketing plan
RTE5902A	Develop and review a business plan
RTE5903A	Plan, implement and review a quality assurance program
RTE5920A	Negotiate and monitor contracts/commercial agreements
RTE5921A	Market products and services

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate III, IV, Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Diploma of Horticulture (Arboriculture) at least 8 of the units of competency presented for this qualification must relate to arboriculture work procedures, activities or contexts. . In addition, at least 8 of the units selected to make up this qualification must be aligned clearly to Diploma outcomes.

10.3 Floriculture

RTF20303 Certificate II in Horticulture (Floriculture)

A total of 17 units of competency must be completed

- Select 9 units from Group A below (including the 4 designated compulsory units)
- Select 5 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC2307A	Operate machinery and equipment
RTC2309A	Operate tractors
<i>RTC2701A</i>	<i>Follow OHS procedures*</i>
<i>RTC2702A</i>	<i>Observe environmental work practices*</i>
RTC2704A	Provide basic first aid
<i>RTC2705A</i>	<i>Work effectively in the industry*</i>
RTC2706A	Apply chemicals under supervision
<i>RTC2801A</i>	<i>Participate in workplace communications*</i>
RTE2003A	Carry out postharvest operations
RTE2010A	Establish horticultural crops
RTE2021A	Support horticultural crop harvesting
RTE2602A	Assist with the operation of pressurised irrigation
RTE2707A	Follow site quarantine procedures
RTF2504A	Determine basic properties of soils/growing media

GROUP B	
RTC2026A	Undertake propagation activities
RTC2210A	Maintain properties and structures
RTC2301A	Undertake operational maintenance of machinery
RTC2401A	Treat weeds
RTC2404A	Treat plant pests, diseases and disorders
RTE2018A	Regulate crops
RTE2028A	Undertake field budding and grafting
RTE2503A	Observe and report on weather
RTE2601A	Assist with the operation of gravity fed irrigation
RTE2603A	Lay irrigation and/or drainage pipes
RTE2604A	Maintain drainage systems
RTE2605A	Maintain gravity fed irrigation systems
RTE2606A	Maintain pressurised irrigation systems
RTE2902A	Collect and record production data

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate I, II or III outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate II in Horticulture (Floriculture) at least 13 of the units of competency presented for this qualification must relate to floriculture work procedures, activities or contexts. In addition, at least 13 of the units selected to make up this qualification must be clearly aligned to Certificate II outcomes.

RTF30303 Certificate III in Horticulture (Floriculture)

A total of 16 units of competency must be completed

- Select 7 units from Group A below (including the 1 designated compulsory unit)
- Select 6 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC3404A	Control plant pests, diseases and disorders
RTC3701A	Respond to emergencies
RTC3704A	Prepare and apply chemicals
RTC3805A	Co-ordinate work site activities
RTE3002A	Co-ordinate a crop regulation program
RTE3003A	Co-ordinate horticultural crop harvesting
RTE3013A	Implement a post-harvest program
RTE3030A	Harvest horticultural crops mechanically
RTE3307A	Co-ordinate machinery and equipment maintenance and repair
RTE3605A	Troubleshoot irrigation systems
<i>RTE3713A</i>	<i>Carry out workplace OHS procedures*</i>
RTE3714A	Maintain and monitor environmental work practices
RTF3011A	Implement a plant establishment program
RTF3012A	Implement a plant nutrition program
RTF3503A	Sample soils and analyse results

GROUP B	
BSBEBUS303A	Participate in a virtual community
BSBEBUS304A	Buy online
BSBEBUS305A	Sell online
RTC3401A	Control weeds
RTC3705A	Transport, handle and store chemicals
RTE3506A	Monitor weather conditions
RTE3601A	Install irrigation systems
RTE3603A	Install drainage systems
RTE3604A	Troubleshoot drainage systems
RTE3611A	Operate pressurised irrigation systems
RTE3801A	Provide on-job training support
RTE3904A	Keep records for a primary production business
RTF3014A	Implement a propagation plan
RTF3033A	Implement a maintenance program for hydroponic systems
RTF3215A	Install hydroponic systems
RTF3510A	Design and prepare growing media

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate II, III or IV outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate III in Horticulture (Floriculture) at least 12 of the units of competency presented for this qualification must relate to floriculture work procedures, activities or contexts. In addition, at least 12 of the units selected to make up this qualification must be aligned clearly to Certificate III outcomes.

RTF40303 Certificate IV in Horticulture (Floriculture)

A total of 12 units of competency must be completed

- Select 5 units from Group A below
- Select 5 additional units from Group A and/or B below
- Select 2 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBCM413A	Implement and monitor environmental policies
RTC4703A	Plan and implement a chemical use program
RTC4908A	Supervise work routines and staff performance
RTD4406A	Implement pest management action plans
RTE4002A	Develop a crop regulation program
RTE4012A	Supervise horticultural crop harvesting
RTE4604A	Determine seasonal irrigation scheduling tasks
RTE4915A	Implement and monitor quality assurance procedures
RTF4004A	Develop a plant nutrition program
RTF4023A	Promote plant health

GROUP B	
BSBEBUS405A	Conduct online financial transactions
RTC4306A	Supervise maintenance of machinery and equipment
RTC4701A	Implement and monitor the enterprise OHS program
RTC4702A	Minimise risks in the use of chemicals
RTC4911A	Operate within a budget framework
RTE4511A	Develop a soil use map for a property
RTE4608A	Plan and coordinate gravity-fed irrigation systems
RTE4913A	Analyse and interpret production data
RTE4914A	Participate in an e-business supply chain
RTF4014A	Plan a growing-on program
RTF4015A	Plan a propagation program

GROUP C	
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.	
Units selected must be aligned to Certificate III, IV or Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.	

QUALIFICATION RULES

For a Certificate IV in Horticulture (Floriculture) at least 10 of the units of competency presented for this qualification must relate to floriculture work procedures, activities or contexts. In addition, at least 10 of the units selected to make up this qualification must be aligned clearly to Certificate IV outcomes.

RTF50303 Diploma of Horticulture (Floriculture)

A total of 10 units of competency must be completed

- Select 4 units from Group A below
- Select 4 units from Group A and/or B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBMGT503A	Prepare budgets and financial plans
BSBMGT507A	Manage environmental performance
RTD5402A	Develop a strategy for the management of target pests
RTE5015A	Manage the harvest of agricultural and horticultural crops
RTE5016A	Develop production plans for crops
RTE5304A	Implement a machinery management system
RTE5807A	Manage staff
RTE5903A	Plan, implement and review a quality assurance program
RTF5001A	Develop a horticultural production plan
RTF5005A	Manage plant health
RTF5521A	Monitor and manage soils

GROUP B	
BSBEBUS501A	Evaluate e-business opportunities
BSBEBUS504A	Implement an e-business strategy
RTC5701A	Establish and maintain the enterprise OHS program
RTC5702A	Develop and manage a chemical use strategy
RTE5006A	Plan and manage long-term weed, pest and/or disease control in crops
RTE5524A	Develop and implement sustainable land use strategies
RTE5525A	Manage trial and/or research material
RTE5602A	Design irrigation system maintenance and monitoring programs
RTE5901A	Develop a marketing plan
RTE5902A	Develop and review a business plan
RTE5906A	Monitor and review business performance
RTE5921A	Market products and services
RTF5012A	Manage a controlled growing environment
RTF5302A	Develop a plan for a hydroponic system

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to Certificate III, IV, Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Diploma of Horticulture (Floriculture) at least 8 of the units of competency presented for this qualification must relate to floriculture work procedures, activities or contexts. In addition, at least 8 of the units selected to make up this qualification must be aligned clearly to a Diploma outcome.

10.4 Landscape

RTF20403 Certificate II in Horticulture (Landscape)

A total of 17 units of competency must be completed

- Select 9 units from Group A below (including the 4 designated compulsory units)
- Select 5 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC2012A	Plant trees and shrubs
RTC2016A	Recognise plants
RTC2307A	Operate machinery and equipment
<i>RTC2701A</i>	<i>Follow OHS procedures*</i>
<i>RTC2702A</i>	<i>Observe environmental work practices*</i>
<i>RTC2705A</i>	<i>Work effectively in the industry*</i>
<i>RTC2801A</i>	<i>Participate in workplace communications*</i>
RTD2704A	Provide basic first aid
RTE2603A	Lay irrigation or drainage pipes
RTF2023A	Support turf establishment
RTF2204A	Construct low-profile timber or modular retaining walls
RTF2208A	Lay paving
RTF2215A	Assist with landscape construction
RTF2504A	Determine basic properties of soils/growing media

GROUP B	
RTC2209A	Install, maintain and repair fencing
RTC2210A	Maintain properties and structures
RTC2301A	Undertake operational maintenance of machinery
RTC2304A	Operate and maintain chainsaws
RTC2306A	Operate vehicles
RTD2206A	Install aggregate paths
RTE2602A	Assist with the operation of pressurised irrigation
RTE2606A	Maintain pressurised irrigation systems
RTF2017A	Prune shrubs and small trees
RTF2019A	Renovate grassed areas
RTF2025A	Transplant small trees

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate I, II or III outcomes. These units must be relevant to work undertaken in the rural sector.

QUALIFICATION RULES

For a Certificate II in Horticulture (Landscape) at least 13 of the units of competency presented for this qualification must relate to landscape work procedures, activities or contexts. In addition, at least 13 of the units selected to make up this qualification must be aligned clearly to Certificate II outcomes.

RTF30403 Certificate III in Horticulture (Landscape)

A total of 16 units of competency must be completed

- Select the 8 compulsory units from Group A below
- Select 5 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
BCG3115A	<i>Lay segmental/unit paving*</i>
RTC3016A	Provide information on plants and their culture
RTC3206A	<i>Erect timber structures and features*</i>
RTC3701A	Respond to emergencies
RTC3805A	Co-ordinate work site activities
RTE3601A	<i>Install irrigation systems*</i>
RTE3713A	<i>Carry out workplace OHS procedures*</i>
RTF3203A	<i>Construct brick and/or block-structures and features*</i>
RTF3204A	<i>Construct concrete structures and features*</i>
RTF3207A	Implement a landscape maintenance program
RTF3216A	Install water features
RTF3217A	<i>Set out site for construction work*</i>
RTF3219A	<i>Construct block or stone structures and features*</i>
RTF3220A	Implement a paving project
RTF3221A	Implement a retaining wall project

GROUP B	
RTC3310A	Operate specialised machinery and equipment
RTC3401A	Control weeds
RTC3704A	Prepare and apply chemicals
RTE3305A	Install and terminate extra low voltage wiring systems
RTE3603A	Install drainage systems
RTE3714A	Maintain and monitor environmental work practices
RTE3907A	Use hand held e-business tools
RTF3010A	Establish turf
RTF3011A	Implement plant establishment
RTF3012A	Implement plant nutrition
RTF3208A	Install metal structures and features
RTF3503A	Sample soils and analyse results

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.
Units selected must be aligned to Certificate II, III and IV outcomes. These units must be relevant to work undertaken in the rural sector.

QUALIFICATION RULES

For a Certificate III in Horticulture (Landscape) at least 12 of the units of competency presented for this qualification must relate to landscape work procedures, activities or contexts. In addition, at least 12 of the units selected to make up this qualification must be aligned clearly to Certificate III outcomes.

RTF40403 Certificate IV in Horticulture (Landscape)

A total of 12 units of competency must be completed

- Select 5 units from Group A below
- Select 5 additional units from Group A and/or B below
- Select 2 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
RTC4024A	Recommend plants and cultural practices
RTC4206A	Supervise landscape project works
RTC4306A	Supervise maintenance of machinery and equipment
RTC4701A	Implement and monitor the enterprise OHS program
RTC4905A	Cost a project
RTC4908A	Supervise work routines and staff performance
RTE4606A	Supervise on-site irrigation installation and construction work
RTE4607A	Plan on-site irrigation system installation and construction work
RTF4003A	Plan a plant establishment program
RTF4007A	Prepare a garden design
TDTR298B	Source goods/services and evaluate contractors

GROUP B	
BSBCM405A	Analyse and present research information
BSBEBUS302A	Use and maintain electronic mail system
RTC4702A	Minimise risks in the use of chemicals
RTC4703A	Plan and implement a chemical use program
RTC4911A	Operate within a budget framework
RTD4510A	Supervise natural area restoration works
RTD4910A	Report on project
RTE4604A	Determine seasonal irrigation scheduling tasks
RTE4609A	Implement, monitor and adjust irrigation schedule
RTF4514A	Develop soil survey maps

GROUP C	
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.	
Units selected must be aligned to Certificate III, IV or Diploma outcomes. These units must be relevant to work undertaken in the rural sector.	

QUALIFICATION RULES

For a Certificate IV in Horticulture (Landscape) at least 10 of the units of competency presented for this qualification must relate to landscape work procedures, activities or contexts. In addition, at least 10 of the units selected to make up this qualification must be aligned clearly to Certificate IV outcomes.

RTE50403 Diploma of Horticulture (Landscape)

A total of 10 units of competency must be completed

- Select 4 units from Group A below
- Select 4 units from Group A and/or B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBMGT503A	Prepare budgets and financial plans
BSBSBM405A	Monitor and manage business operations
RTC5801A	Provide specialist advice to clients
RTC5908A	Prepare estimates, quotes and tenders
RTE5807A	Manage staff
RTE5921A	Market products and services
RTE5920A	Negotiate and monitor contracts/commercial agreements
RTF5004A	Manage landscape projects
RTF5010A	Prepare a landscape project design

GROUP B	
BSBMGT507A	Manage environmental performance
RTC5701A	Establish and maintain the enterprise OHS program
RTE5304A	Implement a machinery management system
RTE5525A	Manage trial and/or research materials
RTE5603A	Design irrigation, drainage and water treatment systems
RTE5906A	Monitor and review business performance
RTF5005A	Manage plant health
RTF5009A	Plan the restoration of parks and gardens
RTF5521A	Monitor and manage soils/growing media

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to qualifications with Certificate III, IV, Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the rural sector.

QUALIFICATION RULES
For a Diploma of Horticulture (Landscape) at least 8 of the units of competency presented for this qualification must relate to landscape work procedures, activities or contexts. In addition, at least 8 of the units selected to make up this qualification must be clearly aligned to Diploma outcomes.

10.5 Retail Nursery

RTF20503 Certificate II in Horticulture (Retail Nursery)

A total of 17 units of competency must be completed

- Select 9 units from Group A below (including the 4 designated compulsory units)
- Select 5 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC2016A	Recognise plants
<i>RTC2701A</i>	<i>Follow OHS procedures*</i>
<i>RTC2702A</i>	<i>Observe environmental work practices*</i>
RTC2704A	Provide basic first aid
<i>RTC2705A</i>	<i>Work effectively in the industry*</i>
<i>RTC2801A</i>	<i>Participate in workplace communications*</i>
RTE2707A	Follow site quarantine procedures
RTF2008A	Maintain indoor plants
RTF2024A	Tend nursery plants
RTF2504A	Determine basic properties of soils/growing media
WRRCA1B	Operate retail equipment
WRRCA2B	Apply retail office procedures
WRRCS2B	Apply point of sale handling procedures
WRRS1B	Sell products and services

GROUP B	
RTC2404A	Treat plant pests, diseases and disorders
RTE2308A	Operate ride-on vehicles
RTE2606A	Maintain pressurised irrigation systems
RTF2013A	Pot-on plants
RTF2014A	Prepare and maintain plant displays
RTF2017A	Prune shrubs and small trees

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.
Units selected must be aligned to Certificate I, II or III outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate II in Horticulture (Retail Nursery) at least 13 of the units of competency presented for this qualification must relate to retail nursery work procedures, activities or contexts. In addition, at least 13 of the units selected to make up this qualification must be aligned clearly to Certificate II outcomes.

RTF30503 Certificate III in Horticulture (Retail Nursery)

A total of 16 units of competency must be completed

- Select 7 units from Group A below (including the 1 designated compulsory unit)
- Select 6 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC3016A	Provide information on plants and their culture
RTC3701A	Respond to emergencies
RTC3805A	Co-ordinate work site activities
<i>RTE3713A</i>	<i>Carry out workplace OHS procedures*</i>
RTF3026A	Receive and dispatch plants and other nursery products
RTF3036A	Plan and establish plant displays
RTF3503A	Sample soils and analyse results
WRRCS3B	Interact with customers
WRRF1B	Balance register/terminal
WRRM3B	Co-ordinate merchandise presentation

GROUP B	
BSBEBUS304A	Buy online
RTC3404A	Control plant pests, diseases and disorders
RTC3704A	Prepare and apply chemicals
RTC3705A	Transport, handle and store chemicals
RTE3611A	Operate pressurised irrigation systems
RTE3714A	Maintain and monitor environmental work practices
RTE3801A	Provide on-job training support
RTE3819A	Process customer complaints
RTE3907A	Use hand held e-business tools
RTF3012A	Implement a plant nutrition program
RTF3020A	Install and maintain interior plant displays
RTF3021A	Maintain nursery plants

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.
Units selected must be aligned to Certificate II, III or IV outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES
For a Certificate III in Horticulture (Retail Nursery) at least 12 of the units of competency presented for this qualification must relate to retail nursery work procedures, activities or contexts. In addition, at least 12 of the units selected to make up this qualification must be aligned clearly to Certificate III outcomes.

RTF40503 Certificate IV in Horticulture (Retail Nursery)

A total of 12 units of competency must be completed

- Select 5 units from Group A below
- Select 5 additional units from Group A and/or B below
- Select 2 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A

BSBCMN413A	Implement and monitor environmental policies
RTC4024A	Recommend plants and cultural practices
RTC4701A	Implement and monitor the enterprise OHS program
RTC4908A	Supervise work routines and staff performance
RTC4911A	Operate within a budget framework
RTF4023A	Promote plant health
WRR14B	Buy merchandise
WRR15A	Maintain and order stock
WRRS4B	Build relationships with customers

GROUP B

BSBEBUS405A	Conduct online financial transactions
RTC4306A	Supervise maintenance of machinery and equipment
RTE4812A	Co-ordinate customer service and networking activities
RTE4914A	Participate in an e-business supply chain
RTF4001A	Design plant displays
RTF4007A	Prepare a garden design
WRR1P2B	Minimise theft
WRR1P4B	Maintain store security
WRR01B	Manage merchandise and store presentation

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate III, IV or Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate IV in Horticulture (Retail Nursery) at least 10 of the units of competency presented for this qualification must relate to retail nursery work procedures, activities or contexts. In addition, at least 10 of the units selected to make up this qualification must be aligned clearly to Certificate IV outcomes.

RTF50503 Diploma of Horticulture (Retail Nursery)

A total of 10 units of competency must be completed

- Select 4 units from Group A below
- Select 4 units from Group A and/or B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
RTC5011A	Collect and identify plants
RTC5701A	Establish and maintain the enterprise OHS program
RTC5801A	Provide specialist advice to clients
RTE5807A	Manage staff
RTF5005A	Manage plant health
WRO2B	Manage sales and service delivery
WRRO5B	Control inventory
WRRO6B	Manage store facilities

GROUP B	
BSBEBUS504A	Implement an e-business strategy
BSBEBUS506A	Plan and develop a business website
BSBMGT503A	Prepare budgets and financial plans
BSBMGT507A	Manage environmental performance
BSBSBM405A	Monitor and manage business operations
RTE5902A	Develop and review a business plan
RTE5903A	Plan, implement and review a quality assurance program
WRRO4B	Control store security/loss
WRRO7A	Profile a retail market
WRRPM2B	Recruit and select personnel

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.
Units selected must be aligned to Certificate III, IV, Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES
For a Diploma of Horticulture (Retail Nursery) at least 8 of the units of competency presented for this qualification must relate to retail nursery work procedures, activities or contexts. In addition, at least 8 of the units selected to make up this qualification must be aligned clearly to Diploma outcomes.

10.6 Wholesale Nursery

RTF20603 Certificate II in Horticulture (Wholesale Nursery)

A total of 17 units of competency must be completed

- Select 9 units from Group A below (including the 4 designated compulsory units)
- Select 5 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC2016A	Recognise plants
RTC2026A	Undertake propagation activities
RTC2307A	Operate machinery and equipment
RTC2401A	Treat weeds
<i>RTC2701A</i>	<i>Follow OHS procedures*</i>
<i>RTC2702A</i>	<i>Observe environmental work practices*</i>
RTC2704A	Provide basic first aid
<i>RTC2705A</i>	<i>Work effectively in the industry*</i>
<i>RTC2801A</i>	<i>Participate in workplace communications*</i>
RTE2308A	Operate ride-on vehicles
RTF2013A	Pot-on plants
RTF2024A	Tend nursery plants
RTF2504A	Determine basic properties of soils/growing media

GROUP B	
RTC2210A	Maintain properties and structures
RTC2309A	Operate tractors
RTC2404A	Treat plant pests, diseases and disorders
RTC2706A	Apply chemicals under supervision
RTE2602A	Assist with the operation of pressurised irrigation
RTE2604A	Maintain drainage systems
RTE2606A	Maintain pressurised irrigation systems
RTF2008A	Maintain indoor plants

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to Certificate I, II or III outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate II in Horticulture (Wholesale Nursery) at least 13 of the units of competency presented for this qualification must relate to wholesale nursery work procedures, activities or contexts. In addition, at least 13 of the units selected to make up this qualification must be aligned clearly to Certificate II outcomes.

RTF30603 Certificate III in Horticulture (Wholesale Nursery)

A total of 16 units of competency must be completed

- Select 7 units from Group A below (including the 1 designated compulsory unit)
- Select 6 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)

RTC3016A	Provide information on plants and their culture
RTC3404A	Control plant pests, diseases and disorders
RTC3701A	Respond to emergencies
RTC3704A	Prepare and apply chemicals
RTC3805A	Co-ordinate work site activities
RTE3605A	Troubleshoot irrigation systems
<i>RTE3713A</i>	<i>Carry out workplace OHS procedures*</i>
RTE3714A	Maintain and monitor environmental work practices
RTF3012A	Implement a plant nutrition program
RTF3021A	Maintain nursery plants
RTF3026A	Receive and dispatch plants and other nursery products
RTF3503A	Sample soils and analyse results

GROUP B

BSBEBUS302A	Use and maintain electronic mail system
BSBEBUS304A	Buy online
BSBEBUS305A	Sell online
RTC3401A	Control weeds
RTC3705A	Transport, handle and store chemicals
RTE3307A	Co-ordinate machinery and equipment maintenance and repair
RTE3611A	Operate pressurised irrigation systems
RTE3819A	Process customer complaints
RTE3907A	Use hand held e-business tools
RTF3005A	Deliver and promote sales of plants
RTF3014A	Implement a propagation plan
RTF3025A	Prepare specialised plants
RTF3036A	Plan and establish plant displays

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate II, III or IV outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES
For a Certificate III in Horticulture (Wholesale Nursery) at least 12 of the units of competency presented for this qualification must relate to wholesale nursery work procedures, activities or contexts. In addition, at least 12 of the units selected to make up this qualification must be aligned clearly to Certificate III outcomes.

RTF40603 Certificate IV in Horticulture (Wholesale Nursery)

A total of 12 units of competency must be completed

- Select 5 units from Group A below
- Select 5 additional units from Group A and/or B below
- Select 2 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBCMN413A	Implement and monitor environmental policies
RTC4024A	Recommend plants and cultural practices
RTC4703A	Plan and implement a chemical use program
RTC4908A	Supervise work routines and staff performance
RTC4911A	Operate within a budget framework
RTE4604A	Determine seasonal irrigation scheduling tasks
RTE4915A	Implement and monitor quality assurance procedures
RTF4014A	Plan a growing-on program
RTF4023A	Promote plant health
RTF4514A	Develop soil survey maps

GROUP B	
BSBEBUS405A	Conduct online financial transactions
RTC4306A	Supervise maintenance of machinery and equipment
RTC4701A	Implement and monitor the enterprise OHS program
RTC4702A	Minimise risks in the use of chemicals
RTC4905A	Cost a project
RTE4606A	Supervise on-site irrigation installation and construction work
RTE4812A	Co-ordinate customer service and networking activities
RTE4914A	Participate in an e-business supply chain
RTF4015A	Plan a propagation program

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.
Units selected must be aligned to Certificate III, IV or Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES
For a Certificate IV in Horticulture (Wholesale Nursery) at least 10 of the units of competency presented for this qualification must relate to wholesale nursery work procedures, activities or contexts. In addition, at least 10 of the units selected to make up this qualification must be aligned clearly to Certificate IV outcomes.

RTE50603 Diploma of Horticulture (Wholesale Nursery)

A total of 10 units of competency must be completed

- Select 4 units from Group A below
- Select 4 units from Group A and/or B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBMGT507A	Manage environmental performance
RTC5011A	Collect and identify plants
RTD5402A	Develop a strategy for the management of target pests
RTE5807A	Manage staff
RTE5921 A	Market products and services
RTF5001A	Develop a horticultural production plan
RTF5005A	Manage plant health
RTF5521A	Monitor and manage soils/ growing media

GROUP B	
BSBEBUS504A	Implement an e-business strategy
BSBEBUS505A	Implement new technologies for business
BSBEBUS506A	Plan and develop a business website
BSBMGT503A	Prepare budgets and financial plans
BSBSBM405A	Monitor and manage business operations
RTC5701A	Establish and maintain the enterprise OHS program
RTC5702A	Develop and manage a chemical use strategy
RTC5801A	Provide specialist advice to clients
RTC5908A	Prepare estimates, quotes and tenders
RTC5913A	Collect and manage data
RTE5525A	Manage trial and/or research material
RTE5602A	Design irrigation system maintenance and monitoring programs
RTE5606A	Manage water systems
RTE5901A	Develop a marketing plan
RTE5902A	Develop and review a business plan
RTE5906A	Monitor and review business performance
RTE5920A	Negotiate and monitor contracts/commercial agreements
RTF5012A	Manage a controlled growing environment
WRWPL508A	Improve supply and distribution chains

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.
Units selected must be aligned to Certificate III, IV, Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Diploma of Horticulture (Wholesale Nursery) at least 8 of the units of competency presented for this qualification must relate to wholesale nursery work procedures, activities or contexts. In addition, at least 8 of the units selected to make up this qualification must be aligned clearly to Diploma outcomes.

10.7 Parks and Gardens

RTF20703 Certificate II in Horticulture (Parks and Gardens)

A total of 17 units of competency must be completed

- Select 9 units from Group A below (including the 4 designated compulsory units)
- Select 5 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in <i>italics</i> are compulsory)	
RTC2012A	Plant trees and shrubs
RTC2016A	Recognise plants
RTC2301A	Undertake operational maintenance of machinery
RTC2401A	Treat weeds
RTC2404A	Treat plant pests, diseases and disorders
<i>RTC2701A</i>	<i>Follow OHS procedures*</i>
<i>RTC2702A</i>	<i>Observe environmental work practices*</i>
RTC2704A	Provide basic first aid
<i>RTC2705A</i>	<i>Work effectively in the industry*</i>
RTC2706A	Apply chemicals under supervision
<i>RTC2801A</i>	<i>Participate in workplace communications*</i>
RTE2308A	Operate ride-on vehicles
RTF2017A	Prune shrubs and small trees
RTF2504A	Determine basic properties of soils/growing media

GROUP B	
RTC2203A	Conduct visual inspection of park facilities
RTC2210A	Maintain properties and structures
RTC2306A	Operate vehicles
RTC2307A	Operate machinery and equipment
RTC2309A	Operate tractors
RTD2022A	Carry out natural area restoration works
RTE2602A	Assist with the operation of pressurised irrigation
RTE2606A	Maintain pressurised irrigation systems
RTE2607A	Install a micro-irrigation system
RTF2014A	Prepare and maintain plant displays
RTF2015A	Prepare turf surfaces for plans
RTF2019A	Renovate grassed areas
RTF2023A	Support turf establishment
RTF2211A	Prepare a gravesite

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate I, II or III outcomes. These units must be relevant to work undertaken in the rural sector.

QUALIFICATION RULES

For a Certificate II in Horticulture (Parks and Gardens) at least 13 of the units of competency presented for this qualification must relate to parks and gardens work procedures, activities or contexts. In addition, at least 13 of the units selected to make up this qualification must be aligned clearly to Certificate II outcomes.

RTF30703 Certificate III in Horticulture (Parks and Gardens)

A total of 16 units of competency must be completed

- Select 7 units from Group A below (including the 4 designated compulsory units)
- Select 6 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
<i>RTC3016A</i>	<i>Provide information on plants and their culture*</i>
RTC3401A	Control weeds
RTC3404A	Control plant pests, diseases and disorders
RTC3701A	Respond to emergencies
RTC3704A	Prepare and apply chemicals
<i>RTC3805A</i>	<i>Co-ordinate work site activities*</i>
<i>RTE3713A</i>	<i>Carry out workplace OHS procedures*</i>
RTE3714A	Maintain and monitor environmental work practices
RTF3004A	Implement a grassed area maintenance program
RTF3011A	Implement a plant establishment program
RTF3012A	Implement a plant nutrition program
RTF3015A	Implement a tree maintenance program
RTF3028A	Perform specialist amenity pruning
RTF3036A	Plan and establish plant displays
RTF3207A	Implement a landscape maintenance program
<i>RTF3503A</i>	<i>Sample soils and analyse results*</i>

GROUP B	
BSBEBUS302A	Use and maintain electronic mail system
RTC3201A	Conduct operational inspection of park facilities
RTC3211A	Implement a maintenance program for an aquatic environment
RTC3310A	Operate specialised machinery and equipment
RTC3705A	Transport, handle and store chemicals
RTD3034A	Implement revegetation works
RTE3605A	Troubleshoot irrigation systems
RTE3611A	Operate pressurised irrigation systems
RTE3907A	Use hand held e-business tools
RTF3010A	Establish turf

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to Certificate II, III or IV outcomes. These units must be relevant to work undertaken in the rural sector.

QUALIFICATION RULES

For a Certificate III in Horticulture (Parks and Gardens) at least 12 of the units of competency presented for this qualification must relate to parks and gardens work procedures, activities or contexts. In addition, at least 12 of the units selected to make up this qualification must be aligned clearly to Certificate III outcomes.

RTF40703 Certificate IV in Horticulture (Parks and Gardens)

A total of 12 units of competency must be completed

- Select 5 units from Group A below
- Select 5 additional units from Group A and/or B below
- Select 2 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBCMN413A	Implement and monitor environmental policies
RTC4024A	Recommend plants and cultural practices
RTC4306A	Supervise maintenance of machinery and equipment
RTC4701A	Implement and monitor the enterprise OHS program
RTC4702A	Minimise risks in the use of chemicals
RTC4703A	Plan and implement a chemical use program
RTC4905A	Cost a project
RTC4908A	Supervise work routines and staff performance
RTC4911A	Operate within a budget framework
RTF4023A	Promote plant health
RTF4514A	Develop soil survey maps

GROUP B	
BSBCMN405A	Analyse and present research information
BSZ404A	Train small groups
RTC4206A	Supervise landscape project works
RTD4020A	Plan the implementation of revegetation works
RTD4510A	Supervise natural area restoration works
RTD4811A	Provide information on environmental issues and policies
RTD4910A	Report on a project
RTE4606A	Supervise on-site irrigation installation and construction work
RTE4609A	Implement, monitor and adjust irrigation schedule
RTE4812A	Co-ordinate customer service and networking activities
RTE4915A	Implement and monitor quality assurance procedures
RTF4001A	Design plant displays
RTF4003A	Plan a plant establishment program
RTF4004A	Develop a plant nutrition program
RTF4006A	Plan a tree pruning program
TDTR298B	Source goods/services and evaluate contractors

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to Certificate III, IV or Diploma outcomes. These units must be relevant to work undertaken in the rural sector.

QUALIFICATION RULES

For a Certificate IV in Horticulture (Parks and Gardens) at least 10 of the units of competency presented for this qualification must relate to parks and gardens work procedures, activities or contexts. In addition, at least 10 of the units selected to make up this qualification must be aligned clearly to Certificate IV.

RTF50703 Diploma of Horticulture (Parks and Gardens)

A total of 10 units of competency must be completed

- Select 4 units from Group A below
- Select 4 units from Group A and/or B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBMGT503A	Prepare budgets and financial plans
BSBMGT609A	Manage risk
BSBSBM405A	Monitor and manage business operations
RTC5520A	Manage parks and reserves
RTC5701A	Establish and maintain the enterprise OHS program
RTC5702A	Develop and manage a chemical use strategy
RTC5801A	Provide specialist advice to clients
RTC5914A	Prepare reports
RTE5807A	Manage staff

GROUP B	
BSBEBUS504A	Implement an e-business strategy
BSBEBUS505A	Implement new technologies for business
BSBMGT507A	Manage environmental performance
RTC5201A	Conduct comprehensive inspection of park facilities
RTC5504A	Develop a management plan for a designated area
RTC5908A	Prepare estimates, quotes and tenders
RTC5913A	Collect and manage data
RTE5304A	Implement a machinery management system
RTE5902A	Develop and review a business plan
RTE5903A	Plan implement and review a quality assurance program
RTE5920A	Negotiate and monitor contracts/commercial agreements
RTF5004A	Manage landscape projects
RTF5009A	Plan the restoration of parks and gardens
RTF5010A	Prepare a landscape project design
RTF5013A	Manage plant cultural practices for amenity horticulture
RTF5506A	Develop and manage a streetscape management plan
SRXIND005A	Promote compliance with laws and legal principles
SRXRES007A	Undertake open space planning
SRXRES010A	Protect heritage and cultural assets

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate III, IV, Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the rural sector.

QUALIFICATION RULES

For a Diploma of Horticulture (Parks and Gardens) at least 8 of the units of competency presented for this qualification must relate to parks and gardens work procedures, activities or contexts. In addition, at least 8 of the units selected to make up this qualification must be aligned clearly to Diploma outcomes.

10.8 Turf

RTF20803 Certificate II in Horticulture (Turf)

A total of 17 units of competency must be completed

- Select 9 units from Group A below (including the 4 designated compulsory units)
- Select 5 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC2307A	Operate machinery and equipment
RTC2401A	Treat weeds
RTC2404A	Treat plant pests, diseases and disorders
<i>RTC2701A</i>	<i>Follow OHS procedures*</i>
<i>RTC2702A</i>	<i>Observe environmental work practices*</i>
RTC2704A	Provide basic first aid
<i>RTC2705A</i>	<i>Work effectively in the industry*</i>
<i>RTC2801A</i>	<i>Participate in workplace communications*</i>
RTE2606A	Maintain pressurised irrigation systems
RTF2015A	Prepare turf surfaces for play
RTF2019A	Renovate grassed areas
RTF2020A	Assist with turf construction
RTF2023A	Support turf establishment
RTF2504A	Determine basic properties of soils/growing media

GROUP B	
RTC2012A	Plant trees and shrubs
RTC2016A	Recognise plants
RTC2210A	Maintain properties and structures
RTC2301A	Undertake operational maintenance of machinery
RTC2304A	Operate and maintain chainsaws
RTC2306A	Operate vehicles
RTC2309A	Operate tractors
RTC2706A	Apply chemicals under supervision
RTE2308A	Operate ride-on vehicles
RTE2602A	Assist with the operation of pressurised irrigation
RTE2603A	Lay irrigation and/or drainage pipes
RTE2604A	Maintain drainage systems
RTE2707A	Follow site quarantine procedures

GROUP C

This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages.

Units selected must be aligned to Certificate I, II or III outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate II in Horticulture (Turf) at least 13 of the units of competency presented for this qualification must relate to turf work procedures, activities or contexts. In addition, at least 13 of the units selected to make up this qualification must be aligned clearly to Certificate II outcomes.

RTF30803 Certificate III in Horticulture (Turf)

A total of 16 units of competency must be completed

- Select 7 units from Group A below (including the 1 designated compulsory unit)
- Select 6 additional units from Group A and/or B below
- Select 3 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A (*units in italics are compulsory)	
RTC3310A	Operate specialised machinery and equipment
RTC3401A	Control weeds
RTC3404A	Control plant pests, diseases and disorders
RTC3701A	Respond to emergencies
RTC3805A	Co-ordinate work site activities
<i>RTE3713A</i>	<i>Carry out workplace OHS procedures*</i>
RTE3714A	Maintain and monitor environmental work practices
RTF3010A	Establish turf
RTF3023A	Monitor turf health
RTF3027A	Renovate sports turf
RTF3503A	Sample soils and analyse results

GROUP B	
BSBEBUS302A	Use and maintain electronic mail system
RTC3016A	Provide information on plants and their culture
RTC3704A	Prepare and apply chemicals
RTC3705A	Transport, handle and store chemicals
RTE3307A	Co-ordinate machinery and equipment maintenance and repair
RTE3601A	Install irrigation systems
RTE3603A	Install drainage systems
RTE3605A	Troubleshoot irrigation systems
RTE3611A	Operate pressurised irrigation systems
RTE3612A	Implement a maintenance program for an irrigation system
RTE3907A	Use hand held e-business tools
RTF3001A	Construct turf playing surfaces
RTF3004A	Implement a grassed area maintenance program
RTF3012A	Implement a plant nutrition program

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to Certificate II, III or IV outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate III in Horticulture (Turf) at least 12 of the units of competency presented for this qualification must relate to turf work procedures, activities or contexts. In addition, at least 12 of the units selected to make up this qualification must be aligned clearly to Certificate III outcomes.

RTF40803 Certificate IV in Horticulture (Turf)

A total of 12 units of competency must be completed

- Select 5 units from Group A below
- Select 5 additional units from Group A and/or B below
- Select 2 additional units from Group A, B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBCM413A	Implement and monitor environmental policies
RTC4024A	Recommend plants and cultural practices
RTC4701A	Implement and monitor the enterprise OHS program
RTC4905A	Cost a project
RTD4406A	Implement pest management action plans
RTE4604A	Determine seasonal irrigation scheduling tasks
RTE4606A	Supervise on-site irrigation installation and construction work
RTF4004A	Develop a plant nutrition program
RTF4005A	Develop a sports turf maintenance program
RTF4023A	Promote plant health

GROUP B	
BSBCM405A	Analyse and present research information
BSBEBUS405A	Conduct online financial transactions
RTC4306A	Supervise maintenance of machinery and equipment
RTC4702A	Minimise risks in the use of chemicals
RTC4703A	Plan and implement a chemical use program
RTC4908A	Supervise work routines and staff performance
RTC4911A	Operate within a budget framework
RTE4607A	Plan on-site irrigation system installation and construction work
RTE4914A	Participate in an e-business supply chain
RTE4915A	Implement and monitor quality assurance procedures
RTF4514A	Develop soil survey maps
TDTR298B	Source goods/services and evaluate contractors

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to Certificate III, IV or Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Certificate IV in Horticulture (Turf) at least 10 of the units of competency presented for this qualification must relate to turf work procedures, activities or contexts. In addition, at least 10 of the units selected to make up this qualification must be aligned clearly to Certificate IV outcomes.

RTF50803 Diploma of Horticulture (Turf)

A total of 10 units of competency must be completed

- Select 4 units from Group A below
- Select 4 units from Group A and/or B below
- Select 2 additional units from Group B and/or C below

Units should be selected from Group A and Group B in accordance with local work undertaken and local industry advice.

GROUP A	
BSBMGT503A	Prepare budgets and financial plans
RTC5908A	Prepare estimates, quotes and tenders
RTE5304A	Implement a machinery management system
RTE5602A	Design irrigation system maintenance and monitoring programs
RTE5807A	Manage staff
RTF5005A	Manage plant health
RTF5008A	Plan the establishment of sports turf playing surfaces

GROUP B	
BSBEBUS501A	Evaluate e-business opportunities
BSBEBUS504A	Implement an e-business strategy
BSBEBUS506A	Plan and develop a business website
BSBMGT507A	Manage environmental performance
RTC5011A	Collect and identify plants
RTC5701A	Establish & maintain the enterprise OHS program
RTC5702A	Develop and manage a chemical use strategy
RTC5801A	Provide specialist advice to clients
RTC5914A	Prepare reports
RTE5525A	Manage trial and/or research material
RTE5601A	Audit irrigation systems
RTE5603A	Design irrigation, drainage and water treatment systems
RTE5902A	Develop and review a business plan
RTE5903A	Plan, implement and review a quality assurance program
RTE5912A	Plan and monitor production processes
RTE5920A	Negotiate and monitor contracts/commercial agreements
RTE5921A	Market products and services
RTF5001A	Develop a horticultural production plan
RTF5521A	Monitor and manage soils/growing media

GROUP C
This group includes other units of competency from RTD02 Conservation and Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture and/or other endorsed Training Packages. Units selected must be aligned to Certificate III, IV, Diploma or Advanced Diploma outcomes. These units must be relevant to work undertaken in the horticulture sector.

QUALIFICATION RULES

For a Diploma of Horticulture (Turf) at least 8 of the units of competency presented for this qualification must relate to turf management work procedures, activities or contexts. In addition, at least 8 of the units selected to make up this qualification must be aligned clearly to Diploma outcomes.

Part C Assessment Guidelines

Introduction

These Assessment Guidelines provide the endorsed framework for assessment of the Units of Competency in the Amenity Horticulture Training Package.

They are designed to ensure that assessment activities are consistent with the Australian Recognition Framework Standards for Registered Training Organisations and that the assessment processes and outcomes are valid, reliable, flexible, and fair.

The Assessment Guidelines comprise five sections. These are:

- Section 1: Assessment system overview.
- Section 2: Assessor requirements.
- Section 3: Designing assessment resources.
- Section 4: Conducting assessment.
- Section 5: Further sources.

Assessment is the process of collecting evidence and making judgments about whether competency has been achieved. That is, it is a confirmation that an individual can perform to the standards expected in the workplace, as expressed in the competency standards contained in the Amenity Horticulture Training Package.

Assessment must be conducted or auspiced by a Registered Training Organisation (RTO) acting in accordance with the AQTF, and the quality assurance arrangements approved by the State / Territory Recognition Authority under which the RTO is registered. RTOs must ensure that they possess the appropriate scope of registration to undertake this work.

RTOs must ensure that they recognise the Qualifications and Statements of Attainment under the Australian Qualifications Framework (AQF) as issued by any other RTO. This is regardless of how or where assessment was conducted.

RTOs may enter into partnership arrangements with non-registered organisations (such as schools, industry organisations, government agencies and business enterprises), for the purposes of delivering training or conducting assessments against qualifications on behalf of the RTO (refer to AQTF Standard 1.6).

The RTO that issues the Qualification or Statement of Attainment is responsible for the recording, storing, retrieval and accessibility of the assessment outcomes for the duration specified by the AQTF standards.

RTOs involved in the assessment of the Competency Standards and Qualifications within the Amenity Horticulture Training Package are required to develop and maintain a quality assurance framework for assessment.

The Amenity Horticulture Training Package incorporates two assessment pathways:

- *Assessment Only Pathways* that occur where assessment is conducted independently of a structured training program.
- *Training and Assessment Pathways* occur where an individual undertakes a structured program of training and assessment in a mix of on- and/or off-the-job environments.

Assessment pathways in the Amenity Horticulture Training Package must provide for the recognition of competencies of individuals regardless of how, when or where they were achieved.

The Assessor must ensure that the evidence presented for assessment is authentic, valid, reliable, current and sufficient. Under the Amenity Horticulture Training Package, individuals who are able to present sufficient evidence of prior learning must be given recognition for the relevant competency standards by the RTO.

The Rural Training Council of Australia is responsible for the ongoing monitoring and review of the Assessment Guidelines detailed in this document. This process will be incorporated in the general review and maintenance of the Amenity Horticulture Training Package.

Assessor Requirements

Assessors must hold formal recognition of competence in the following standards from the Training Package for Assessment and Workplace Training [BSZ98]: Plan Assessment (BSZ401A), Conduct Assessment (BSZ402A) and Review Assessment (BSZ403A). They must also be competent (and where possible hold formal recognition of competence), in the specific competency standards.

RTOs issuing Qualifications and Statements of Attainment under the Amenity Horticulture Training Package must meet the requirement to use qualified Assessors, and ensure that all assessments are conducted in accordance with the procedures outlined in Section Four.

All Assessors who are engaged in assessing against the Amenity Horticulture Training Package must be either:

- employed by a RTO, or
- acting under the registration of a RTO (e.g. an Assessor working in an enterprise which has a partnership arrangement with a private or public RTO).

Designing Assessment Tools

Assessment Tools assist Assessors in the collection and evaluation of evidence in order to make judgments about whether candidates have achieved competency. If using prepared materials, Assessors should ensure that the materials are “noted” materials that have met quality criteria as determined by ANTA. A key reference for Assessors engaged in developing Assessment Tools is the competency standard *BSZ507A - Develop assessment tools*.

Conducting Assessments

The industry-preferred process for conducting assessments is based on eight steps:

- Step 1 Establish the assessment context.
- Step 2 Prepare the candidate.
- Step 3 Plan and prepare the evidence gathering process.
- Step 4 Collect the evidence and make the assessment decision.
- Step 5 Provide feedback on the assessment.
- Step 6 Record and report the result.
- Step 7 Review the assessment process.
- Step 8 Participate in the reassessment and appeals process.

Assessors will need to be aware of, and in some cases possess, licences and permits to not only effectively carry out the assessment, but to protect themselves professionally.

Environmental and industry best practice, profitability and sustainability are themes that have been incorporated into the Amenity Horticulture Training Package and are essential components of the assessment process.

Where high levels of language, literacy and numeracy are not integral to successful completion of a work function (i.e. competency standard), the Assessor should provide options for determining a person's competence.

The Assessor's role is not to evaluate the language, literacy and numeracy skills of the individual, but to judge whether they are able to perform the required work function to a workplace standard as defined by the competency standards.

In Amenity Horticulture, Occupational Health and Safety (OHS) is an integral part of every work function. When assessing an individual, consideration must be made of the OHS aspects of evidence tendered for assessment.

When assessing people with different cultural backgrounds, Assessors will need to be aware of cultural protocols and approaches that will help facilitate the assessment process.

Section 1 - Assessment System Overview

1.1 Benchmarks for Assessment

The Competency Standards in the Amenity Horticulture Training Package are benchmarks for assessment and are the basis of the nationally recognised Australian Qualifications Framework (AQF), qualifications, and Statements of Attainment issued by Registered Training Organisations (RTOs).

Assessment within the National Training Framework is defined as the process of collecting evidence and making judgements about whether competency has been achieved. The purpose of assessment is to confirm whether an individual can perform to the standards expected in the workplace, as expressed in the Competency Standards in the Training Package.

When conducting assessments, assessors must ensure that they are familiar with the full text of the Unit(s) of Competency being assessed. In particular, they must ensure that the assessment arrangements:

- cover all elements of the Unit of Competency being assessed;
- address the four dimensions of competency: task skills, task management skills, contingency management skills and job/role environment skills;
- are consistent with the Evidence Guide for each relevant Unit of Competency, as this specifies the context of assessment, the critical aspects of competency, the required underpinning knowledge and skills, and the identification of Key Competencies and their performance level. In some cases there will be reference to having access to real workplace conditions and infrastructure.

1.2 Australian Recognition Framework Assessment Requirements for RTOs

Assessment for national recognition purposes must meet the requirements of the Australian Recognition Framework (ARF). Assessment must be conducted by an RTO formally registered under Australian Recognition Framework Standards for Registered Training Organisations with the specific Competency Standards or Training Package within its scope of registration. The RTO must meet the requirements of the relevant assessment standards in the Australian Recognition Framework Standards for Registered Training Organisations as set out below.

The RTO's assessments for national recognition, regardless of whether this is through a training and assessment pathway or an assessment-only pathway must:

- comply with the Assessment Guidelines included in nationally endorsed Training Packages;
- lead to the issuing of a Statement of Attainment or qualification under the AQF when a person is assessed as competent against nationally endorsed Unit(s) of Competency;
- be underpinned by an assessment process that complies with the principles of validity, reliability, fairness and flexibility;
- provide for applicants to be informed of the context and purpose of the assessment and the assessment process;
- focus on the application of knowledge and skill to the standard of performance required in the workplace and cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job/role environment skills;
- involve the evaluation of sufficient evidence to enable professional judgements to be made about whether competency has been attained;
- provide for feedback to the applicant about the outcomes of the assessment process and guidance on future options;
- provide for reassessment on appeal, and
- be equitable for all groups or persons, taking account of cultural and linguistic needs.

Reasonable adjustments are to be made to ensure equity in assessment for people with disabilities. This means that wherever possible, 'reasonable' adjustments are to be made to meet the individual needs of a person with a disability. Adjustments are considered 'reasonable' if they do not impose an unjustifiable hardship on a training provider or employer. When assessing people with disabilities, assessors are encouraged to apply good practice assessment methods with sensitivity and flexibility.

The RTO's Recognition of prior Learning (RPL) process must be accessible to all applicants upon enrolment and must:

- be structured to minimise the time and cost to applicants;
- provide adequate information and support to enable applicants to gather reliable evidence to support their claim for recognition of competencies currently held, regardless of how, when or where the learning occurred.

The RTO must ensure that, in developing, adapting or delivering training and assessment products and services:

- methods used to identify learning needs, and methods for designing training and assessment materials are documented;
- language, literacy and numeracy requirements are consistent with the essential requirements for workplace performance specified in the relevant Units of Competency and that they develop the learning capacity of the individual;
- the requirements of the Training Package are met;
- core and elective units, as appropriate, are identified; and
- customisation meets the requirements specified in the Training Package.

The RTO must document its plans for delivery and assessment of each Training Package qualification and accredited course within the its scope of registration. These plans must ensure that:

- the delivery modes and training materials meet the needs of a diverse range of clients;
- assessment plans, including proposed validation processes, are developed in consultation with enterprises/industry, and that they are documented at the point of registration and on application for extension of scope;

- where assessment or training is conducted in the workplace, the RTO negotiates the delivery and assessment plan with the employer and learners, works with the employer to integrate on-the-job and off-the-job training and assessment, and schedules workplace visits to monitor/review the training and assessment;
- where a New Apprenticeship Training Contract is in place or being negotiated, individual Training plans encompassing both off-the-job training and structured on-the-job training are developed, documented, implemented and monitored for each apprentice or trainee.

The RTO must validate its assessment plans by:

- reviewing, comparing and evaluating the assessment processes, tools and evidence contributing to judgements made by a range of assessors against the same standards¹, at least annually; and
- documenting any action taken to improve the quality and consistency of assessment.

The RTO must have access to the staff, facilities, equipment, training and assessment materials necessary to provide the training and/or assessment within its scope of registration, and to accommodate client numbers and client needs (including off-campus and on-line delivery and assessment requirements).

RTOs may operate in partnership with other organisations (see below) but, in doing this, are still responsible for the quality of their services and service outcomes.

In order to deliver and/or assess Units of Competency or qualifications and issue nationally recognised qualifications under the AQF, RTOs must have those Units of Competency and/or qualifications within their scope of registration.

1.3 Mutual Recognition

Under the Australian Recognition Framework Standards for Registered Training Organisations, every RTO must recognise and accept Statements of Attainment and qualifications issued by any other RTO.

¹ These may be internal processes with stakeholder involvement or external validations with other providers and/or stakeholders.

1.4 Partnership Arrangements

Under the ARF, RTOs may enter into partnerships with non-registered organisations, such as schools, industry organisations and enterprises, for delivery and assessment within the RTO's scope of registration.

Where this is done, the RTO must have a formal agreement with the organisation that provides the training and/or assessment under its name. The agreement must specify how all parties will discharge their responsibilities for ensuring the quality of the training and/or assessment conducted on its behalf, including the qualification requirements for delivery and assessment.

The RTO has full responsibility for the quality and outcomes of any training or assessment conducted on its behalf, and it must maintain a register of all such agreements.

1.5 Recording Assessment Outcomes

The RTO that issues the AQF Qualification or Statement of Attainment is responsible for recording, storing, retrieval and accessibility of the assessment outcomes specified in Australian Recognition Framework Standards for Registered Training Organisations.

1.6 Reporting Assessment Outcomes

Statements of Attainment and qualifications issued under the AQF must comply with the relevant provisions in the current Australian Qualifications Framework Implementation Handbook.

AQF qualifications must be issued once the full requirements for a qualification, as specified in the Qualifications Framework of the Training Package, have been met. A Statement of Attainment is to be issued where the individual achieves a qualification or is assessed as competent against fewer Units of Competency than are required for a qualification and the individual has completed their study or assessment process. Qualifications and Statements of Attainment issued must comply with the format specified in the current AQF Implementation Handbook.

1.7 Quality Assurance Mechanisms

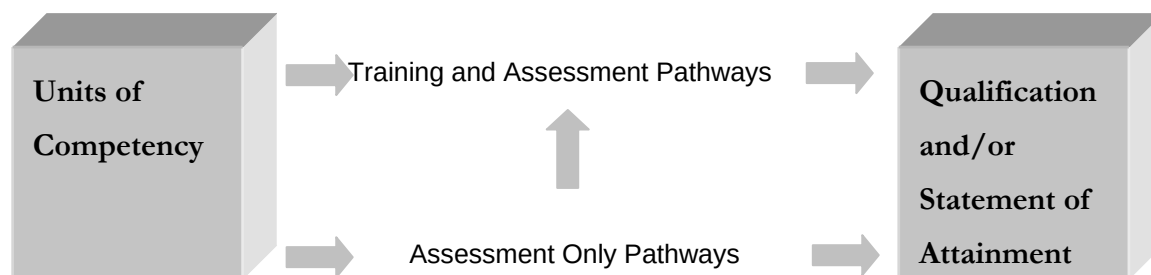
Under the provisions of the AQTF, RTOs involved in the assessment of the Units of Competency and qualifications within the Amenity Horticulture Training Package are required to establish and use quality assurance mechanisms in line with their registration requirements.

It is recommended that RTOs include the following procedures within a quality assurance framework:

- establishment of a standard procedure for the selection of assessors;
- conduct of regular professional development for assessors;
- ongoing recording, monitoring and review of the assessment process, including the assessment plan, assessment outcomes and participant feedback;
- development of a comprehensive bank of resources for participants and assessors including:
 - information about the assessment process;
 - assessment instruments, where appropriate;
 - standardised reporting and recording forms for participants, assessors, trainers and employers;
 - guidelines for assessors on the preparation of the assessment plan, and conduct and review of the assessment process.

1.8 Assessment Pathways

The Amenity Horticulture Training Package incorporates a number of assessment pathways that lead to the recognition of competencies and the issuing of a Qualification or Statement of Attainment. These pathways are illustrated in the following diagram.



As indicated above, assessment under the Amenity Horticulture Training Package leading to an AQF qualification or Statement of Attainment may follow a training and assessment pathway, an assessment only pathway, or a combination of the two. All assessments, by any pathway, must comply with the AQTF assessment requirements for RTOs (see above). Each of these assessment pathways leads to full recognition under the AQF – the critical concern is that the candidate is competent, not how the competency was acquired. Each of the above pathways is detailed below.

Training and Assessment Pathways

For most candidates assessment and training are integrated, with assessment evidence being collected progressively and feedback being provided to the candidate. The candidate may undertake a structured program of training and assessment while on the job, while off the job, or in a combination of on-the-job and off-the-job environments.

This pathway is particularly suited to New Apprenticeships, as trainees can be provided with a mix of formal training, structured workplace experience, and formative assessment activities. Through this combination of training and assessment the candidate can acquire and demonstrate the practical skills and knowledge identified in the relevant Competency Standards.

Assessment Only Pathway

In some circumstances an assessment only (skills recognition) pathway will be warranted. The candidate provides current, quality evidence against the relevant Units of Competency, and the outcomes of the assessment process indicate that the candidate is competent and that structured training is not required.

This pathway can operate in both on-the-job and off-the-job environments. It is likely to be most appropriate for students enrolling for qualifications who want recognition for prior learning or current competencies, for existing workers, for individuals with overseas qualifications, for recent migrants with established work histories, for people returning to the workplace, and for people with disabilities or injuries requiring a change in career.

Candidates wishing to take this pathway present evidence that they possess the skills and knowledge identified in the relevant Competency Standards, and then an assessor judges whether the candidate is competent. Summative approaches to assessment may be directed by the candidate (such as in the compilation of portfolios), or by the assessor (such as observation of workplace performance, requiring demonstrations of skills, and carrying out oral and written testing).

Combination of 'Training and Assessment' and 'Assessment Only' Pathways

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

In such situations, the candidate may undertake an initial assessment to determine their current competence using an 'assessment only pathway'. Once current competence is identified, a structured training and assessment program may be established to ensure that the candidate acquires the required additional competencies. These would be achieved through a 'training and assessment pathway'.

It is important to note that each of these assessment pathways leads to full recognition under the Australian Qualifications Framework. An individual's access to the assessment process should not be adversely affected by restrictions placed on the location or context of assessment beyond the requirements specified in the Amenity Horticulture Training Package.

1.9 Recognition of Prior Learning and Current Competency

The competencies in the Amenity Horticulture Training Package may be attained in a number of ways:

- formal or informal training and education;
- work experience;
- general life experience, and/or;
- any combination of the above.

All assessment pathways must provide for the recognition of competencies previously attained. Competencies achieved and currently held by individuals can be formally assessed against the Units of Competency and qualifications in the Amenity Horticulture Training Package, and should be recognised regardless of how, when or where they were achieved.

In assessing the competency of individual candidates, assessors must ensure that assessment processes take into account the skills and knowledge that candidates already possess. This can be done by conducting a pre-assessment where the candidate provides evidence of prior learning. In order for prior learning to be recognised, the assessor must be confident that the evidence indicates that the candidate is currently competent against the endorsed industry or enterprise competency standards. This evidence may take a variety of forms and might include certification, references from past employers, testimonials from clients, and work samples.

The onus is on candidates to provide sufficient evidence to satisfy assessors that they currently hold the relevant competencies. In determining whether a candidate has presented sufficient evidence, the assessor must ensure that the evidence of prior learning is:

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

1.10 Review and Maintenance of the Assessment System

The proponent of the Amenity Horticulture Training Package is responsible for the ongoing monitoring and review of these Assessment Guidelines. This process will be incorporated in the general review and maintenance of the Amenity Horticulture Training Package. Any review will ensure that these Assessment Guidelines:

- continue to meet the requirements of the industry;
- are consistent with the *Australian Recognition Framework Standards for Registered Training Organisations*;
- promote confidence in the system and the assessment outcomes on the part of industry, employers, enterprises, unions, employees, trainees, assessors and trainers;
- ensure assessment processes and outcomes are valid, reliable, fair and flexible;
- support RTOs in effectively carrying out their responsibilities.

Section 2 - Assessor Requirements

Assessments against the competency standards in the Amenity Horticulture Training Package will be carried out in accordance with these endorsed guidelines. The guidelines identify the necessary minimum qualifications for those conducting assessments and provide for those situations where more than one person may contribute to the assessment, and where any one person may not hold all the required technical and assessment competencies. Where imported units from other Training Packages are being assessed as part of an Amenity Horticulture Qualification, the RTO is advised to check the assessment guidelines through the NTIS in case special assessment conditions apply.

2.1 Assessor Qualifications

There are *mandatory* requirements that must be met by individual assessors or collectively by the members of an assessment team or panel conducting assessments against the Amenity Horticulture Training Package.

- Assessors **must** have the following assessment Units of Competency from the Training Package for Assessment and Workplace Training, or must have demonstrated equivalent competencies:
 - BSZ401A Plan Assessment;
 - BSZ402A Conduct Assessment;
 - BSZ403A Review Assessment.
- Be competent (and where possible hold formal recognition of competence) in the specific competency standards at least to the level to be assessed, or at a higher level (e.g. chemical use) where specified in the respective competency standard.

In addition to the above it is **recommended** that Assessors:

- Demonstrate comprehensive current knowledge of the industry, industry practices, and the job or role against which performance is being assessed. This may be demonstrated through evidence of one or more of the items below:
 - relevant work experience,
 - attendance at professional development/training and education activities focusing on good practice in the relevant industry competencies,
 - participation in professional/industry networks.

- Demonstrate current knowledge and skill in assessing against the Amenity Horticulture Training Package in a range of contexts. This may be demonstrated through at least one of the following:
 - familiarity with the competency standards in the Amenity Horticulture Training Package to be used by the candidate as a basis of assessment,
 - recent planning, conduct and review of assessment and/or workplace training activities,
 - participation in moderation/validation processes,
 - attendance in professional development activities focused on assessment and/or workplace training,
 - understanding of the requisite Assessor qualifications within the Amenity Horticulture Training Package.
- Demonstrate the necessary interpersonal and communication skills required in the assessment process. This may be demonstrated through evidence of one or more of the following:
 - attendance in professional development and/or training activities focused on effective communication in assessment and/or workplace training contexts,
 - knowledge of language, literacy and numeracy issues in the context of assessment and workplace training,
 - recent assessment and/or workplace training activities.

2.2 Gaining Formal Recognition as an Assessor

Formal recognition of competency against the Competency Standards from the Training Package for Assessment and Workplace Training and the relevant Competency Standards in the Amenity Horticulture Training Package may be gained through the successful completion of:

- a recognised training program offered by a RTO that is based on delivery against the relevant Competency Standards, and/or
- a recognition of prior learning process offered by a RTO for the relevant Competency Standards.

2.3 Using Qualified Assessors

RTOs issuing Qualifications and Statements of Attainment under the Amenity Horticulture Training Package must meet the requirement to use qualified Assessors and ensure that all assessments are conducted in accordance with the procedures outlined in Section Four.

All Assessors who are engaged in assessing against the Amenity Horticulture Training Package must be either:

- employed by a RTO, or
- acting under the registration of a RTO (e.g. an Assessor working in an enterprise which has a partnership arrangement with a private or public RTO).

The Amenity Horticulture Training Package provides a range of options for meeting these Assessor requirements. The options allow assessments to be undertaken by individual Assessors, partnerships involving Assessors and technical experts, and Assessors working in team situations in a variety of workplace and institutional contexts. The following table outlines the different ways that the requirement to use qualified Assessors may be met.

OPTIONS	ASSESSORS, TECHNICAL EXPERTS AND WORKPLACE SUPERVISORS
Single Assessor (An individual Assessor conducts the assessment)	The Assessor is required to: • hold formal recognition of competence in the relevant standards in the Training Package for Assessment and Workplace Training • be deemed competent, and where possible, hold formal recognition of competence in the specific competency standards from the Amenity Horticulture Training Package, at least to the level being assessed. In addition, it is recommended that the Assessor is able to: • demonstrate current knowledge of the industry, industry practices, and the job or role against which performance is being assessed • demonstrate current knowledge and skill in assessing against the Amenity Horticulture Training Package in a range of contexts • demonstrate the necessary interpersonal and communication skills required in the assessment process.

	The Assessor is required to: • hold formal recognition of competence in the relevant standards in the Training Package for Assessment and Workplace Training. In addition, it is recommended that the Assessor is able to: • demonstrate the necessary interpersonal and communication skills required in the assessment process. • demonstrate current knowledge and skill in assessing against the Amenity Horticulture Training Package in a range of contexts. The technical expert is required to: • be deemed competent, and where possible, hold formal recognition of competence in the specific competency standards in Amenity Horticulture, at least to the level being assessed. In addition, it is recommended that the Technical Expert is able to: • demonstrate current knowledge of the industry, industry practices, and the job or role against which performance is being assessed • communicate and liaise with Assessor throughout assessment process.
Assessor and workplace supervisor (Assessor works with a workplace supervisor in collecting evidence for valid assessment)	The Assessor is required to: • hold formal recognition of competence in the relevant standards in the Training Package for Assessment and Workplace Training • make the assessment decision. In addition, it is recommended that the Assessor is able to: • demonstrate the necessary interpersonal and communication skills required in the assessment process • demonstrate current knowledge and skill in assessing against the Amenity Horticulture Training Package in a range of contexts • communicate and liaise where appropriate with the workplace supervisor throughout the assessment process.

	The workplace supervisor is required to: • be deemed competent, and where possible, hold formal recognition of competence in the specific competency standards from the Amenity Horticulture Training Package, at least to the level being assessed. In addition, it is recommended that the workplace supervisor is able to: • demonstrate current knowledge of the industry, industry practices, and the job or role against which performance is being assessed • communicate and liaise where appropriate with the Assessor throughout the assessment process • use agreed practices to gather and record evidence for the Assessor to make a valid judgement on competency.
Assessment team/panel (A team working together to conduct the assessment)	A team which comprises assessment and industry experience and expertise that works together in the collection of evidence and making judgments about competency. The members of the team must include at least one person who: • holds formal recognition of competence in the relevant standards in the Training Package for Assessment and Workplace Training • is deemed competent, and where possible, hold formal recognition of competence in the specific competency standards from the Amenity Horticulture Training Package, at least to the level being assessed. In addition, it is recommended that members of the team/panel combined and involved in the assessment are able to: • demonstrate current knowledge of the industry, industry practices, and the job or role against which performance is being assessed • demonstrate current knowledge and skill in assessing against the Amenity Horticulture Training Package in a range of contexts • demonstrate the necessary interpersonal and communication skills required in the assessment process and liaise with other team/panel members throughout the assessment process.

Section 3 - Designing Assessment Tools

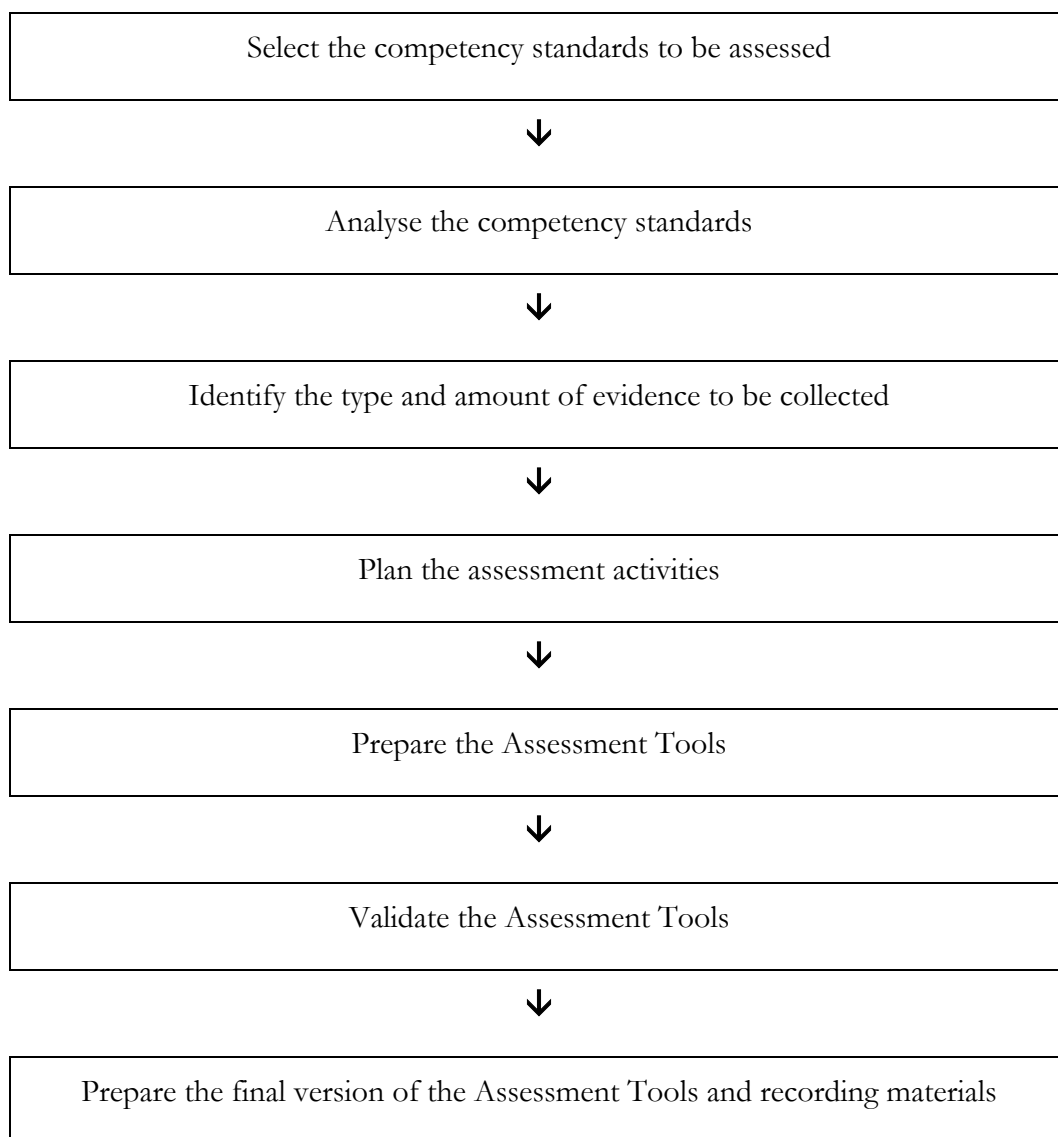
Assessment resources provide a means of collecting the evidence that assessors use in making judgements about whether candidates have achieved competency. In some cases, assessors may use prepared assessment materials, such as those specifically developed to support the Amenity Horticulture Training Package. Alternatively they may develop their own assessment materials to meet the needs of their clients.

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

When developing their own assessment materials, assessors must ensure that:

- the materials are benchmarked against the selected Unit(s) of Competency in the Amenity Horticulture Training Package;
- the materials are validated to ensure that assessors can gather sufficient valid and reliable information to make assessment decisions against the Competency Standards;
- the materials and processes meet the ARF Assessment Requirements for RTOs in Section 1 of this document.

A key reference for Assessors engaged in developing Assessment Tools is the Training Package for Assessment and Workplace Training [BSZ98], and particularly the competency standard titled, Develop Assessment Tools (BSZ507A). There is no set format or process for the design, production or development of Assessment Tools. However, the following seven-step process that is based on the competency standard, 'BSZ507A Develop assessment tools', provides a general approach to the design and development of such materials.

***Step 1. Select the competency standard(s) to be assessed***

Identify the competency standards that are to be assessed. Assessment Tools may focus on either a single competency standard or a cluster of related competency standards.

Step 2. Analyse the competency standard

The competency standard describes the work and the required standards of performance. Read the full competency standard carefully and familiarise yourself with the:

- *Descriptor* – this outlines the aspect of work to be assessed.

- *Elements and Performance Criteria* – these describe the nature of the task to be assessed and the standard of performance that is expected of the candidate.
- *Range of Variables* – these describe the contexts under which the task should be able to be performed.
- *Evidence Guide* – this provides information on the underpinning knowledge and skills required to perform the task.

Identify the key skills that the candidate will require to perform the work activity described in the competency standard. These are:

- *Task Skills* – these involve performing the task to the required standard as described in the competency standard.
- *Task Management Skills* – these involve managing a number of different tasks within the job.
- *Contingency Management Skills* – these involve responding to problems, breakdowns and changes in routine.
- *Job/ Role Environment Skills* – these involve fulfilling the responsibilities and expectations of the workplace.

Step 3. Identify the type and amount of evidence to be collected

Prepare a list of the evidence that might be collected to show that the candidate is able to perform the work activity described in the competency standard. There are three broad categories of assessment evidence that may be used in conducting competency assessments.

These are:

- **Product** – this refers to an item that is constructed or a service that is delivered.
- **Process** – this refers to the way in which a product is produced or achieved.
- **Knowledge** – this refers to the information that is required to perform the aspect of work described in the competency standards. This may include knowledge of specific information, knowledge of specific laws, regulations and codes of practice, and knowledge of principles, processes and procedures.

Evidence should be collected through a variety of methods. These include:

- Observation – observation of workplace activities, demonstration of specific tasks, observation of activities under simulated workplace conditions, and/or observation of role-play.
- Questioning - oral questioning, written tests and/or interviews.
- Supplementary Evidence – supervisor reports, employer references, documentation about past or prior achievements and/or portfolios.

The Assessor must determine the type and amount of evidence that is required and how this will be collected.

Step 4. Plan the assessment activities

Prepare a brief written description of the assessment activities that will be used to collect the required evidence. This assessment plan should be discussed with the candidate prior to assessment taking place. This plan may include observation of a workplace activity, assessment of a product or workplace process, a role-play simulation, questioning, or some other form of evidence gathering technique. The description does not have to be detailed but should at least describe, in broad terms, the nature of the activity to be undertaken. The assessment plan should detail the:

- type of evidence gathering (e.g. observation, questioning, supplementary evidence),
- tasks which the candidate is required to do,
- location of the assessment activity (i.e. on- or off-job),
- time allocated to the activity,
- who will be involved in the assessment process,
- any assessment considerations in regard to “reasonable adjustment” for candidates with special needs.

In planning the activity, consideration should be given to using evidence gathering methods that:

- are appropriate to the industry context,
- are gender and culturally inclusive,
- take into account the language, literacy and numeracy skills of both the Assessor and the candidate,
- minimise the cost of assessment,
- are practical in regard to safety issues and resources required,
- involve the collection of a variety of forms of evidence,
- may be customised to take into account local conditions, site requirements and enterprise specific practices,
- utilise industry and enterprise reference materials, such as Standard Operating Procedures and Material Safety Data Sheets,
- allow for updating of evidence requirements and work practices in line with changes to legislation, regulations and codes of practice,
- take account of safety considerations and the assessment environment, especially for New Apprenticeship pathways, which are likely to have first time workers, and for assessment of high-risk operations or in high-risk industries.

Step 5. Prepare the assessment resources

Resources need to be developed to:

- prepare the candidate,
- carry out the assessment process,
- record outcomes of the assessment for the candidate, Assessor, trainer and the employer.

The resources for the assessment process are to be developed in accordance with the assessment plan. The assessment resources should:

- address the relevant competency standards,
- require the candidate to demonstrate the four components of competency,
- identify the evidence requirements and evidence collection methods,
- include instructions for candidates and those involved in administering the assessment activity,
- incorporate allowable reasonable adjustments to the assessment procedure.

Step 6. Validate the assessment resources

The Assessment Tools should be piloted with a small sample of Assessors. Information gathered through this process should be analysed and checked for ease of use, validity, reliability, fairness and flexibility to establish any amendments that may be required. The Assessment Tools are redrafted incorporating suggested amendments as appropriate.

Step 7. Prepare the final version of the Assessment Tools and recording resources

The Assessment Tools are published in an appropriate format, either print or electronic, and made available to Assessors within the relevant organisation. Arrangements are put in place for the ongoing maintenance and cyclic review of the assessment resource.

Section 4 - Conducting Assessments

4.1 Assessment Procedures

The following outline describes the industry-preferred process for conducting assessments against the competency standards in the Amenity Horticulture Training Package. This process applies to all assessments conducted for the purposes of national recognition in both institutional and workplace contexts.

This process is consistent with the assessment procedure outlined in the Training Package for Assessment and Workplace Training, and particularly the standards titled Plan Assessment (BSZ401A), Conduct Assessment (BSZ402A) and Review Assessment (BSZ403A).

Step 1

Establish the assessment context

The Assessor:

- establishes the context and purpose of the assessment
- identifies the relevant competency standards, assessment guidelines and qualifications in the Amenity Horticulture Training Package
- identifies any Support Materials that have been developed to facilitate the assessment process
- analyses the competency standards and identifies the evidence requirements
- identifies alternative evidence collection methods.

Step 2

Prepare the candidate

The Assessor meets with the candidate to:

- explain the context and purpose of the assessment and the assessment process
- explain the competency standards to be assessed and the evidence to be collected
- advise on self-assessment including processes and criteria
- outline the assessment procedure, the preparation which the candidate should undertake, and answer questions
- assess the needs of the candidate and negotiate reasonable adjustment for assessing people with disabilities, people from diverse backgrounds and gender differences
- seek feedback regarding the candidate's understanding of the competency standards, evidence requirements and assessment process
- determine if the candidate is ready for assessment and in consultation with the candidate, decide on the time and place of the assessment
- develop an assessment plan.

Step 3	The Assessor must:
Plan and prepare the evidence gathering process	• establish a plan for gathering sufficient and quality evidence about the candidate's performance in order to make the assessment decision • source or develop assessment materials to assist the evidence gathering process • organise equipment or resources required to support the evidence gathering process • co-ordinate and brief other personnel involved in the evidence gathering process.
Step 4	The Assessor must:
Collect the evidence and make the assessment decision	• establish and oversee the evidence gathering process to ensure its validity, reliability, fairness and flexibility • collect appropriate evidence and match compatibility to the Elements, Performance Criteria, Range of Variables and Evidence Guide in the relevant competency standards • evaluate evidence in terms of the four dimensions of competency – task skills, task management skills, contingency management skills, and job/role environment skills • incorporate specified allowable adjustments to the assessment procedure, where appropriate • evaluate the evidence in terms of validity, consistency, currency, equity, authenticity and sufficiency • consult and work with other staff, assessment panel members or technical experts involved in the assessment process • record details of evidence collected • make a judgement about the candidate's competence based on the evidence and the relevant competency standard(s).
Step 5	The Assessor must provide advice to the candidate about the outcomes of the assessment process. This includes providing the candidate with:
Provide feedback on the assessment	• clear and constructive feedback on the assessment decision • information on ways of overcoming any identified gaps in competency revealed by the assessment • the opportunity to discuss the assessment process and outcome • information on reassessment and appeals processes.

- Step 6**
- Record and report the result**
- The Assessor must:
- record the assessment outcome according to the policies and procedures of the RTO
 - maintain records of the assessment procedure, evidence collected and the outcome according to the policies and procedures of the RTO
 - maintain the confidentiality of the assessment outcome
 - organise the issuance of qualifications and/or Statements of Attainment+ according to the policies and procedures of the RTO.
- + *The industry context of the assessment should be indicated on the Statement of Attainment eg Landscaping*
- Step 7**
- Review the assessment process**
- On completion of the assessment process, the Assessor must:
- review the assessment process
 - report on the positive and negative features of the assessment to those responsible for the assessment procedures
 - make suggestions (if necessary) on improving the assessment procedures to appropriate personnel in the RTO.
- Step 8**
- Participate in the reassessment and appeals process**
- The Assessor must:
- provide feedback and counselling to the candidate, if required, regarding the assessment outcome or process
 - provide the candidate with information on the reassessment and appeals process
 - report any assessment decision that is disputed by the candidate to the appropriate personnel in the RTO
 - participate in the reassessment or appeal according to the policies and procedures of the RTO.

4.2 Licences and Permits

The assessment of a number of competency standards will require Assessors to be aware of, and in some cases possess licences and permits to not only effectively carry-out the assessment, but to protect themselves professionally.

Licences and permits are generally based on State and Territory legislation and therefore vary from State to State. In some instances, licences and permits are issued by local government bodies or even professional associations. Areas where licensing and permits may apply are:

- operating vehicles on public roads
- operating forklifts and other specialised vehicles
- using chainsaws and other machinery
- storing and applying certain chemicals
- using and storing explosives
- possession and use of firearms
- clearing vegetation
- building structures.

4.3 Environmental Issues

Underpinning the assessment process is the notion that workplace performance should lead to viable and sustainable enterprises or organisations. This covers profitability, sustainability and observance of good industry practices. These themes have been incorporated into the revised competency standards and are therefore an essential component of the assessment process.

Many work practices in Amenity Horticulture can have either positive or negative environmental impacts of which the Assessor should be aware, and should incorporate in judgments when assessing evidence.

For example, negative work practices can include:

- over-watering
- over-working soil
- overusing chemicals
- failing to carry out the safe disposal of chemicals, oils, greases and packaging materials.

Positive work practices can include:

- installing and using effective water re-use systems and effluent disposal systems
- fencing off areas of similar land use capabilities
- planting trees in re-charge areas.

Those being assessed at the higher levels are responsible for the development of processes, strategies, procedures and controls. Those at lower levels have the responsibilities to act on, observe and report on processes, strategies, procedures and controls.

Questioning strategies can be used during assessment to ascertain whether an applicant is working towards enterprise viability and sustainability and is minimising environmental impacts.

Open ended questions like those below can assist in making this judgment:

- What are the main environmental issues surrounding your workplace?
- How and why do these problems occur?
- What current work practices can impact on the environment in a negative way?
- How do you minimise environmental impacts in your workplace?
- What current work practices have been adopted to limit the impact on the environment?
- How are staff informed about what constitutes good environmental practice?

Finally, evidence presented for assessment should indicate the application of good environmental practice in operational tasks, and in planning and management. Where this is not obvious, Assessors should require further evidence to be submitted that illustrates adherence to environmental principles and practices.

4.4 Language, Literacy and Numeracy

Amenity Horticulture competency standards have been developed to accommodate varying language, literacy and numeracy capabilities. The required levels of language, literacy and numeracy will be outlined in these standards.

Fairness in assessment means that where high levels of language, literacy and numeracy are not integral to successful completion of a work function (i.e. competency standard), the assessment should provide alternatives for determining a person's competence. For a person with low levels of language, literacy and numeracy, this could include:

- oral questioning rather than written tests or project work,
- arranging for a supervisor or colleague to assist in the evidence gathering and even the evidence interview,
- the use of signs and gestures rather than words where there exists a language barrier, and
- less reliance on written work in favour of practical demonstration and references.

In some situations it may be possible to conduct the oral part of an assessment or to assess aspects of knowledge by using a language other than English.

Where there is a requirement for basic language, literacy and numeracy such as in competency standards dealing with chemical use and application, then only the essential requirement for language, literacy and numeracy should be evaluated. For example, a person may be able to read relevant information in an operator's manual that will enable them to operate a particular machine in a safe manner and as required by the competency standard. However, it would be unfair to expect them to read and understand other written material within the manual that is not relevant to the standard.

Variations in language, literacy and numeracy can result from a range of circumstances such as culture and ethnicity, educational background, and physical, learning or intellectual disabilities.

The Assessor's role is not to evaluate the language, literacy and numeracy skills of the individual, but to judge whether they are able to perform the required work function to a workplace standard as defined by the competency standards. Making this judgment will often rely on the development of creative approaches to design techniques and tools that respect the diversity of language, literacy and numeracy skills in the workplace and training institutions.

4.5 Occupational Health and Safety

In Amenity Horticulture, Occupational Health and Safety (OHS) is an integral part of every work function. This has been reflected in the competency standards for the Amenity Horticulture Training Package. When assessing an individual, consideration must be made of the OHS aspects of evidence tendered for assessment.

For example, at the lower levels, the identification of hazards and the use of Personal Protective Equipment (PPE) are essential requirements. Therefore, evidence for assessment should indicate that an individual not only performs the task as required, but also uses appropriate safety equipment and clothing and is capable of identifying hazards. While the wearing of appropriate PPE can be adjudged by observation and demonstration, the identification of hazards may require use of written or oral questioning strategies. For example:

- What things could possibly cause harm to workers in your workplace?
- What do you do when you see something that looks dangerous and may harm someone?
- How do you make sure you protect yourself from hazards in the workplace?
- What protective equipment do you use and when?

At the higher levels there is a strong focus on not only identifying hazards, but also on assessing and controlling risks (adverse outcomes associated with hazards). These risks range from death, injury and illness, to financial loss and prosecution. Risk management covers facilities and equipment, planning, training, labour organisation and work practice procedures.

Evidence for assessment at the higher levels should include documentation of OHS risk assessment and management. This should be found in a range of areas including reports, business plans, OHS audits, training programs for staff, forms detailing compliance with legislation, and enterprise policies and procedures.

Questioning strategies at the higher levels should also focus on risk assessment and management. For example:

- How do you assess risks associated with workplace operations?
- What actions have you undertaken in relation to hazards identified in the workplace?
- How do you ensure that staff employed in the workplace observe OHS guidelines?
- Can you show me the OHS policies and procedures for your enterprise?

Where an individual cannot provide evidence, an Assessor may need to provide additional time for that evidence to be prepared or obtained.

4.6 Observing Cultural Protocols in Assessment

When assessing people with different cultural backgrounds, Assessors will need to be aware of cultural protocols and approaches that will help facilitate the assessment process. These protocols may apply not only in Indigenous communities but also in ethnic groups.

Prior to visiting a rural or remote community, the Assessor should:

- Consult with community decision-makers about the process of assessment and seek their advice on appropriate timing and place.
- Obtain approval to visit the community (this may include a permit to enter area).
- Establish a time and date for visiting.
- Confirm the visit in writing (letter, fax or email).
- Determine the person to meet on first arrival in the community. In Indigenous communities, there are often key people who should be contacted first when entering a community, such as an elder or administration officer.
- Arrange for required support, advocacy or mentoring for the person to be assessed. This may include engaging an interpreter.
- Remuneration for support in the assessment process where required.
- Arrange for active participation in the assessment process of a senior community person who has been identified by the community as having the necessary knowledge to deal with issues associated with cultural customs, sensitivities or special knowledge and is in a position to make decisions on behalf of the community. (Identifying the key decision-maker in a community requires good listening skills, observation and confirmation from the community).

Before visiting a community for the first time, an Assessor should determine whether there are specific rules or protocols governing culturally appropriate behaviour when on site. These could include:

- appropriate clothing
- who it is appropriate to speak to
- building relationships before doing business including limiting use of direct questions in the early part of communications
- appropriate mannerisms such as listening rather than talking, levels of familiarity, and the use of body language

- acceptable and appropriate use of language including forms of address and dealing with names of deceased persons
- ‘saving face’
- approval for photographing people and places
- gender lines and their effect on communication and training activities.

Sometimes applicants may be shy or lack English language skills. In these cases it will be necessary to arrange for mentoring support from a supervisor, senior person or colleague to assist the applicant.

Many of the cultural protocols and approaches outlined above will also be useful for dealing with individuals from different cultural groups.

Section 5 - Further Sources

The following list of resources and organisations is provided to assist Assessors in the planning, design, conduct and review of assessments undertaken against the Amenity Horticulture Training Package.

5.1 General Resources

Training Package for Assessment and Workplace Training

This key national resource is available from:

Business Services Training Australia	Australian Training Products Ltd
Suite 11c – Level 3 Como Centre 299 Toorak Road SOUTH YARRA VIC 3141	Level 25 150 Lonsdale Street MELBOURNE VIC 3000
Telephone: (03) 9824 0866 Fax: (03) 9824 0877	PO Box 5347BB MELBOURNE VIC 3001
Website: http://www.nawtb.com.au E-mail: assessors@nawtb.com.au	Tel: 03 9655 0600 Fax: 03 9639 4684
	Website: http://www.atpl.net.au E mail: sales@atpl.net.au

5.2 Subject Specific Resources

Rural Resources

Rural Training Council of Australia 1998, *Train to Gain — Self taught Workplace Trainer (Video)*.

Rural Training Council of Australia 1999, *Case Studies in Training and Assessment*.

Rural Training Council of Australia 1999, *Assessment Tools for Agriculture and Horticulture*.

Rural Training Council of Australia 1999, VET Notes (Nos. 3, 4 and 5).

Rural Training Council of Australia 1999, *How're you going? — Workplace Evaluator Video*.

Primary Industry Training Advisory Board (NSW) 1999, *A Job Well Done — Rural Workplace Assessor Training Program (Video)*.

Assessment instrument design

Hagar, P., Athanasou, J. and Gonczi, A. 1994, *Assessment Technical Manual*. Australian Government Publishing Service, Canberra.

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

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

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

Assessor training

Green, M., Moritz, R., Moyle, K., Vale, K., 1997, *Key competencies professional development package*, Department for Education and Children's Services, South Australia.

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

Australian Training Products Ltd, *Assessment and Workplace Training, Training Package – Toolbox*.

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

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

Australian National Training Authority, *Facilitator Packs for Certificate IV in Assessment and Workplace Training*.

Australian National Training Authority, *Facilitator's Pack for Train Small Groups and Assessment*.

Australian National Training Authority, *Facilitator's Pack for Certificate IV (BSZ405A – BSZ408A)*.

Australian National Training Authority, *Learners Packs for Certificate IV in Assessment and Workplace Training*.

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Part D Customisation Guidelines

1 Customisation of Amenity Horticulture Competency Standards

Customising competency standards involves adding or changing specific industry or enterprise information to the standards to better reflect the work of a particular industry or workplace.

Customisation involves no major changes to the integrity of the standards. The areas where additions or changes to information can be made are in the Performance Criteria, the Evidence Guides, and/or the Range of Variables.

A customised standard describes a workplace outcome in a specific enterprise or workplace context that is an equivalent to the national standard. Customisation should not be so extensive that the assessment and training required to achieve the competency standard is decreased or substantially increased.

There are three broad principles relating to the customisation of competency standards.

Customisation must ensure the integrity of:

- industry skill requirements
- industry portability requirements, and
- national competency standards system and AQF qualifications.

Customisation can occur in a number of ways.

Performance criteria can have terminology changed to reflect equivalent enterprise criteria. For example, ‘...according to enterprise procedures’ could become ‘...according to XYZ enterprise’s workplace procedures manual’. Generic terms can be replaced with specific terms. For example, ‘plant’ could become ‘seedling’ or ‘tube stock’, ‘pest’ could become ‘weed’ or even a specific species such as ‘dingo’ or ‘rabbit’ where it is relevant to the performance of that competency. Performance criteria can also be added where additional steps may want to be emphasised by the enterprise. For example, a worker may be required to immediately contact a nominated person on detection of certain pest plants or animals and this can be added as a performance criterion into the standard.

The **Range of Variables** can similarly be added to or amended to emphasise particular enterprise contexts. Moreover, items in the Range of Variables that are not relevant to an enterprise can be deleted.

The **Evidence Guide** can also be changed to suit a specific enterprise context. For example, items under underpinning knowledge and skills can be made more specific or have terminology changed to make them more relevant. Additional knowledge and skill requirements can be added where desired.

Where a standard has been customised, it will be necessary to state equivalence to the original national competency standard. For example, ‘This standard is equivalent to the competency standard RTF2001A – *Apply a range of treatments to trees*’ could be added to the descriptor.

Questions regarding equivalence with customised competency standards in Amenity Horticulture should be referred to the Rural Training Council of Australia.

Part E Competency Standards and their Structure

1 Competency Standards and their structure

1.1 What are Competency Standards?

The broad concept of competency is related to realistic work practices expressed as an outcome that can be understood by all people in the workplace, as well as by trainers and assessors. It is important that the meaning of competency is interpreted and understood in the same way by different users, and in different situations.

Competency comprises specified knowledge and skills relevant to an industry, and the application of that knowledge and skills to the standard of performance required in the workplace.

ANTA's definition of competency encompasses several features:

"The concept of competency focuses on what is expected of an employee in the workplace rather than the learning process, and embodies the ability to transfer and apply skills and knowledge to new situations and environments".

An element of the Training Package is the Competency Standard, which is made up of a number of Competency Standards. Each Competency Standard has a Title, Descriptor, Elements, Performance Criteria, a Range Statement and an Evidence Guide.

Title

The Title is a succinct statement of the broad area of competency covered by the standard and is expressed in terms of the outcome.

Descriptor

The Descriptor expands, as necessary, on the title of the standard to accurately and clearly reflect the complete purpose and intent of the standard.

Elements of Competency

Elements of Competency are the basic building blocks of the standard. They describe, in terms of outcome, the significant functions and tasks that a person in a particular area of work is able to perform.

Performance Criteria

The Performance Criteria specify all the relevant tasks, roles, skills, and applied knowledge and understanding that demonstrate competent performance.

Range Statement

The Range Statement links the required knowledge and organisational and technical requirements to a context. It describes any contextual variables that will be used or encountered when applying the competency in work situations.

Evidence Guide

The Evidence Guide specifies the evidence required to demonstrate competence of the Competency Standard. The actual assessment should be conducted in the workplace and/or training environment. The Evidence Guide provides reliable and succinct information about how the quality and level of performance could be determined. The evidence must relate directly to the Elements, Performance Criteria and Range Statement.

The Evidence Guide includes the following advice:

Clear statements about the assessment process that direct the focus of the individual, the trainer and the assessor to the holistic nature of competency and the link to the Performance Criteria and underpinning knowledge. The Evidence Guide specifically indicates evidence demonstrating that the competent person can deal with unexpected contingencies beyond the usual routine.

The Evidence Guide details the specific products, materials or outcomes that must be available to demonstrate competency. Other Competency Standards that can or should be jointly assessed are indicated. It also deals with any specific issues about the context of assessment, whether it must be assessed under particular workplace conditions, and what conditions a valid simulated environment should meet. It may also include a specific statement of the resource implications, for example, access to particular equipment, infrastructure or situations.

The Evidence Guide may cover consistency in performance to indicate any requirement to demonstrate competency over time in a number of contexts and involving a range of evidence.

Key Competencies

Key Competencies must be identified within each Competency Standard, or at the qualification level. The Mayer Committee has defined seven Key Competencies underpinning successful activity in life and work. These are:

- collecting, analysing and organising information,
- communicating ideas and information,
- planning and organising activities,
- working with others in teams,
- solving problems,
- using mathematical ideas and techniques,
- using technology.

They have three levels of performance that should be specified when identifying where they apply in industry competencies.

Assessment Context

A description of the Assessment Context is a requirement within the Evidence Guide of each Competency Standard. The descriptor of the Assessment Context will vary from indicating that specified standards are to be assessed wholly on the job, while other standards might require assessment in the workplace or in a simulated environment.

Standards nominated to be assessed on the job are generally thought to require:

- access to specific machinery/equipment not normally held by a RTO, or
- a live environment (where it has been determined by the industry that assessment needs to be a place under workplace pressures, such as timeframes, business, speed requirements, production schedules, etc.) It is no longer true that all assessment is to be conducted on the job or in a simulated environment.

The assessment context is much broader than simply stipulating where assessment is to be undertaken. It also needs to identify:

- the interdependence of the standard (any pre-requisite or co-requisite standards),
- the assessment methods suitable for a valid and reliable assessment (case studies, folios, observation, questioning, demonstration, etc.),
- any special physical resources required to conduct the assessment (equipment, description of environment, procedures, legislation, documentation, etc.),
- any special conditions under which the assessment is to occur (as part of a team, within specified time limits, speed, accuracy, number of times or attempts, etc.),
- accuracy of assessment outcome (determining whether the person can apply the principles or achieve the standard outcome in a different situation or change of environment).

The manner in which this information is included in each Competency Standard is not specified by ANTA, however, two approaches are outlined. Neither specifies the assessment context as being at the workplace or under workplace simulated conditions, as this is regarded as inappropriate. A description of the conditions and environment required for valid assessment is a better approach, as an institution-based RTO is then in a better position to determine whether the assessment needs to be conducted in the workplace or in a simulated environment.

The format for competency standards for the Amenity Horticulture Training Package is shown below.

“EXAMPLE ONLY”**RTC2016A**

The **code** is a unique identifier for each competency standard

The **title** states the broad area of competency covered by the standard and is expressed in terms of the outcome.

Recognise plants

This competency standard covers the process of recognising plants that are commonly encountered in horticulture or land management situations. Recognising plants is likely to involve supervision with intermittent checking by supervisors, requires a range of plant identification techniques, plant nomenclature, enterprise procedures and supplying advice and information about plants, and enterprise requirements about the range and number of plants to be recognised.

The **descriptor** expands on the title to reflect the intent of the standard.

The **performance criteria** specify all the relevant tasks, roles, skills and applied knowledge and understanding that demonstrate competent performance.

Element	Performance Criteria
1 Prepare for plant recognition	1.1 Range of plants requiring recognition according to supervisors/customer requirements. 1.2 Resources and equipment for use in recognition activity are located and identified. 1.3 Available processes for plant recognition are identified, selected and prepared for use.
2 Recognise specified plants	2.1 Specified plants are recognised and named according to their identifiable characteristics. 2.2 Brief descriptions of plant habits, characteristics and significant features are recorded according to enterprise requirements 2.3 The advice of supervisors is sought when necessary and where appropriate in the recognition activity 3.1 Information about plants is documented according to enterprise requirements and added to the reference collection.

Elements of competency are the basic building blocks of the standard. They describe, in terms of outcome, the significant functions and tasks that a person in a particular area of work is able to perform.

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.

The **range statement** describes contextual variables that may be used or encountered when applying the competency in work situations.

What range of plants may be relevant to this standard?	Plants may be native or introduced species including weeds. Plants will comprise those commonly encountered within the industry workplace.
How will plants be named ?	Common names will be used in recognition of plants. However, in some situations botanical names may be required. In Indigenous communities, language names can be used in lieu of common names.
What resources may be used to recognise plants?	Resources may include enterprise or public library, business and research organisation websites, suppliers and contractors, enterprise supervisor and team colleague experience, and experts in the local area or industry sector.

The **evidence guide** specifies the evidence required to demonstrate competency

Evidence Guide

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

Competence in recognising plants requires evidence that a person can identify and utilise available resources and equipment to identify plants accurately. The skills and knowledge required to recognise plants must be **transferable** to a different work environment. For example, this could include different plants, workplace settings and environments.

What specific knowledge is needed to achieve the performance criteria?

The knowledge requirements for this competency standard are listed below:

Range of plant identification techniques.

Plant nomenclature.

Enterprise procedures for obtaining supplying advice and information about plants.

Depth and scope of underpinning knowledge is relative to the nominal AQF level of the competency

What specific skills are needed to achieve the performance criteria?

Recognise the range of plants specific to

the enterprise, and describe their attributes

Use simple keys.

- Communicate with customers.

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.

How can **communication of ideas and information (1)** be applied?

Ideas and information relating to plant activities and problems encountered discussed with other members of the supervisor.

How can **information be collected, analysed and organised (1)**?

Enterprise specific plants should be research processes undertaken, and gained discussed with the work team.

How are **activities planned and organised (1)**?

Equipment, materials and work procedures for plant recognition activities will need to be planned and between work periods.

How can **team work (1)** be applied?

Plant recognition activities may involve working with other members of a team to complete the program

How can the use of **mathematical ideas and techniques (1)** be applied?

Measuring the length, regularity and period of plant identifying features will require mathematical application.

How can **problem-solving skills (1)** be applied?

Problems relating to the difficulty of recognising certain features of a plant may arise.

How can the **use of technology (1)** be applied?

Technology may be applied in the provision of information about plants to clients and customers.

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 the Amenity Horticulture Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.

The **assessment guide** lists any special conditions under which assessment is to occur.

Key competencies are fundamental to the transfer and application of learning, and enable people to transfer to the workplace knowledge and skills developed in classrooms and other learning situations.

1.2 Key Competencies

The Key Competencies are general capabilities prepared by the Mayer Committee in Putting Education to Work: The Key Competencies report (Mayer 1992).

They were described in the Mayer report as being fundamental to the transfer and application of learning, and were defined as a set of capabilities that enable people to transfer to the workplace knowledge and skills developed in classrooms and other learning situations.

ANTA has recognised the critical role of the Key Competencies in ensuring that the Australian work force is equipped with the skills necessary to effectively participate in current and emerging forms of work organisation. ANTA specifies that all Training Packages "require the effective integration of key competencies".

The seven Key Competencies identified in the Mayer (1992) report are described below.

- 1. Collecting, analysing and organising information:** The capacity to locate, sift and sort information in order to select what is required and to present it in a useful way, and evaluate both the information itself and the sources and methods used to collect it.
- 2. Communicating ideas and information:** The capacity to communicate effectively with others using the range of spoken, written, graphic and other non-verbal means of expression.
- 3. Planning and organising activities:** The capacity to plan and organise one's own work activities, including making good use of time and resources, sorting out priorities, and monitoring one's performance.
- 4. Working with others and in teams:** The capacity to interact effectively with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a client and working effectively as a member of a team to achieve a shared goal.
- 5. Solving problems:** The capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and the solution are clearly evident, and in situations requiring creative thinking and a creative approach to achieve a desired outcome.
- 6. Using mathematical ideas and techniques:** The capacity to use mathematical ideas, such as number and space, and techniques such as estimation and approximation, for practical purposes.

7. Using technology: The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems.

Key Competencies are essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. Key Competencies are generic, in that they apply to work generally rather than to work in particular occupations or industries. (Mayer 1992, p. 5)

Levels of Performance

The Mayer committee (1992, p. 13) established three levels of performance in each of the seven Key Competencies. These are stand-alone levels and do not correspond to levels in the Australian Qualifications Framework (AQF).

- Performance Level 1 describes the competence needed to undertake activities efficiently and with sufficient self-management to meet the explicit requirements of the activity, and to make judgements about the quality of outcome against established criteria.
- Performance Level 2 describes the competence needed to manage activities requiring the selection, application and integration of a number of elements, and to select from established criteria to judge quality of process and outcome.
- Performance Level 3 describes the competence needed to evaluate and reshape processes, to establish and use principles in order to determine appropriate ways of approaching activities, and to establish criteria for judging quality of process and outcome.

In simple terms:

- Level 1 is concerned with the level of competence needed to undertake tasks effectively,
- Level 2 with the ability to manage tasks, and
- Level 3 with concepts of evaluating and reshaping tasks.
- Although the levels are designed and used within Competency Standards to indicate levels of complexity, the current definitions are problematic. The industry or workplace context is generally seen as far more indicative in determining the degree of difficulty of the application of the Key Competencies than the prescribed and abstracted performance levels above.

Where the Key Competencies are explicitly embedded within the Competency Standards, the level of performance for the group of Key Competencies involved will align to the AQF level for that standard. Those delivering training and/or assessment of the standard will more readily understand this rather than the performance levels outlined in the standards themselves.

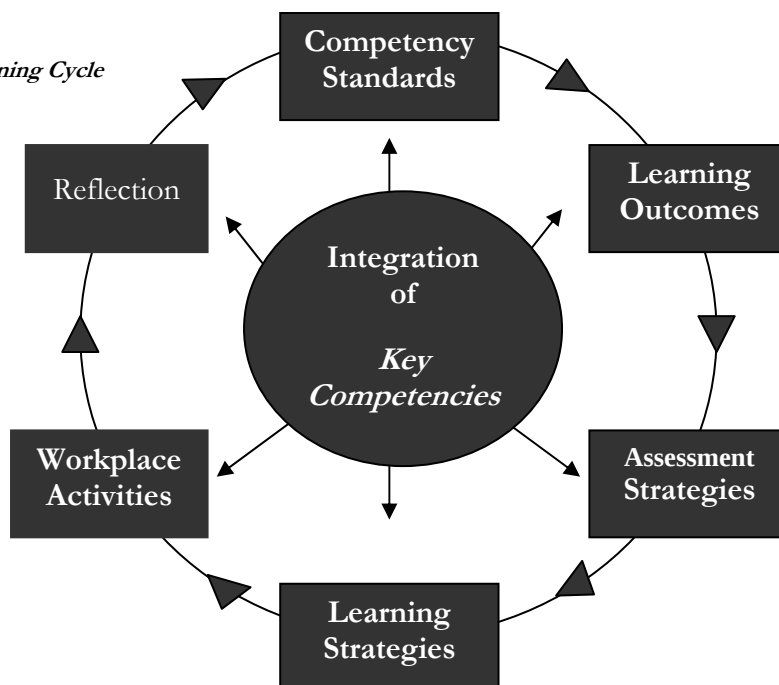
Implications of Key Competencies for Vocational Education and Training

The skills identified by the Mayer committee describe capabilities commonly used as key selection criteria by employers. They underpin the ability of employees to adapt to technological, organisational, societal and functional change.

The Key Competencies need to be explicitly developed and applied in vocational education and training, both in delivery and assessment in order to ensure that staff members have the flexibility and adaptability to respond effectively to current and future directions and challenges within Australian workplaces.

This means that the Key Competencies cannot be considered as supplementary to vocational competence, they are integral to it. They are part of good learning and are essential to good practice. It is therefore critical that Training Package developers, training program developers, teachers and trainers deliberately incorporate the Key Competencies into the design, customisation, delivery and assessment of vocational education and training programs. A deliberate effort is required to incorporate the Key Competencies explicitly into every stage of the training cycle, represented in Figure 1, through Competency Standard and Training Package development, and through delivery, learning, assessment and reflection.

Figure 1: Training Cycle



Part F Additional Information

1 Amenity Horticulture Units of Competency

The following is a list of all units of competency within the Amenity Horticulture Training Package.

Amenity Horticulture units (*Volume 1 of 4*)

RTF1002A	Support arboricultural work
RTF1003A	Support turf work
RTF1004A	Support gardening work
RTF1007A	Support floricultural production
RTF2001A	Apply a range of treatments to trees
RTF2008A	Maintain indoor plants
RTF2009A	Perform above ground pruning
RTF2013A	Pot-on plants
RTF2014A	Prepare and maintain plant displays
RTF2015A	Prepare turf surfaces for play
RTF2017A	Prune shrubs and small trees
RTF2019A	Renovate grassed areas
RTF2020A	Assist with turf construction
RTF2023A	Support turf establishment
RTF2024A	Tend nursery plants
RTF2025A	Transplant small trees
RTF2027A	Undertake standard climbing techniques
RTF2204A	Construct low-profile timber or modular retaining walls
RTF2207A	Protect trees during construction work
RTF2208A	Lay paving
RTF2211A	Prepare a gravesite
RTF2215A	Assist with landscape construction work
RTF2311A	Undertake stump removal
RTF2504A	Determine basic properties of soil/growing media
RTF3001A	Construct turf playing surfaces
RTF3004A	Implement a grassed area maintenance program
RTF3005A	Deliver and promote sales of plants
RTF3007A	Fell large trees

RTF3010A	Establish turf
RTF3011A	Implement a plant establishment program
RTF3012A	Implement a plant nutrition program
RTF3014A	Implement a propagation plan
RTF3015A	Implement a tree maintenance program
RTF3017A	Implement a tree pruning program
RTF3018A	Implement a tree transplanting program
RTF3019A	Remove trees in confined spaces
RTF3020A	Install and maintain interior plant displays
RTF3021A	Maintain nursery plants
RTF3023A	Monitor turf health
RTF3025A	Prepare specialised plants
RTF3026A	Receive and dispatch plants and other nursery products
RTF3027A	Renovate sports turf
RTF3028A	Perform specialist amenity pruning
RTF3031A	Undertake complex tree climbing
RTF3032A	Install cable and bracing
RTF3033A	Implement a maintenance program for hydroponic systems
RTF3035A	Implement a tree protection program
RTF3036A	Plan and establish plant displays
RTF3203A	Construct brick and/or block structures and features
RTF3204A	Construct concrete structures and features
RTF3207A	Implement a landscape maintenance program
RTF3208A	Install metal structures and features
RTF3215A	Install hydroponic systems
RTF3216A	Install water features
RTF3217A	Set out site for construction works
RTF3219A	Construct stone structures and features
RTF3220A	Implement a paving project
RTF3221A	Implement a retaining wall project
RTF3503A	Sample soils and analyse results
RTF3510A	Design and prepare growing media
RTF3702A	Undertake aerial rescue
RTF4001A	Design plant displays
RTF4003A	Plan a plant establishment program
RTF4004A	Develop a plant nutrition program

RTF4005A	Develop a sports turf maintenance program
RTF4006A	Plan a tree pruning program
RTF4007A	Prepare a garden design
RTF4014A	Plan a growing-on program
RTF4015A	Plan a propagation program
RTF4016A	Plan a tree protection program
RTF4017A	Plan a tree transplanting program
RTF4019A	Prepare and implement plans to minimise tree stress
RTF4021A	Plan the removal of trees
RTF4023A	Promote plant health
RTF4514A	Develop soil survey maps
RTF5001A	Develop a horticultural production plan
RTF5004A	Manage landscape projects
RTF5005A	Manage plant health
RTF5008A	Plan the establishment of sports turf playing surfaces
RTF5009A	Plan the restoration of parks and gardens
RTF5010A	Prepare a landscape project design
RTF5012A	Manage a controlled growing environment
RTF5013A	Manage plant cultural practices for amenity horticulture
RTF5018A	Assess trees
RTF5302A	Develop a plan for a hydroponic system
RTF5506A	Develop and implement a streetscape management plan
RTF5521A	Monitor and manage soils

Conservation and Land Management units (Volume 2 of 4)

RTD1501A	Support natural area conservation
RTD2022A	Carry out natural area restoration works
RTD2206A	Install aggregate paths
RTD3034A	Implement revegetation works
RTD4020A	Plan the implementation of revegetation works
RTD4406A	Implement pest management action plans
RTD4510A	Supervise natural area restoration works
RTD4811A	Provide information on environmental issues and policies
RTD4910A	Report on project
RTD5402A	Develop a strategy for the management of target pests
RTD6502A	Review management plans and strategies
RTD6902A	Monitor projects in a program

Rural Production units (Volume 2 of 4)

RTE1005A	Support horticultural production
RTE1601A	Support irrigation work
RTE2003A	Carry out postharvest operations
RTE2010A	Establish horticultural crops
RTE2018A	Regulate crops
RTE2021A	Support horticultural crop harvesting
RTE2028A	Undertake field budding and grafting
RTE2308A	Operate ride-on vehicles
RTE2503A	Observe and report on weather
RTE2601A	Assist with the operation of gravity fed irrigation
RTE2602A	Assist with the operation of pressurised irrigation
RTE2603A	Lay irrigation and/or drainage pipes
RTE2604A	Maintain drainage systems
RTE2605A	Maintain gravity-fed irrigation systems
RTE2606A	Maintain pressurised irrigation systems
RTE2607A	Install micro-irrigation systems
RTE2707A	Follow site quarantine procedures
RTE2902A	Collect and record production data
RTE3002A	Co-ordinate a crop regulation program

RTE3003A	Co-ordinate horticultural crop harvesting
RTE3013A	Implement a post-harvest program
RTE3030A	Harvest horticultural crops mechanically
RTE3305A	Install and terminate extra low voltage wiring systems
RTE3307A	Co-ordinate machinery and equipment maintenance and repair
RTE3506A	Monitor weather conditions
RTE3601A	Install irrigation systems
RTE3603A	Install drainage systems
RTE3604A	Troubleshoot drainage systems
RTE3605A	Troubleshoot irrigation systems
RTE3611A	Operate pressurised irrigation systems
RTE3612A	Implement a maintenance program for an irrigation system
RTE3713A	Carry out workplace OHS procedures
RTE3714A	Maintain and monitor environmental work practices
RTE3801A	Provide on-job training support
RTE3819A	Process customer complaints
RTE3904A	Keep records for a primary production business
RTE3907A	Use hand held e-business tools
RTE4002A	Develop a crop regulation program
RTE4012A	Supervise horticultural crop harvesting
RTE4511A	Develop a soil use map for a property
RTE4604A	Determine seasonal irrigation scheduling tasks
RTE4606A	Supervise on-site irrigation installation and construction work
RTE4607A	Plan on-site irrigation system installation and construction work
RTE4608A	Plan and co-ordinate gravity-fed irrigation systems
RTE4609A	Implement, monitor and adjust irrigation schedules
RTE4812A	Co-ordinate customer service and networking activities
RTE4913A	Analyse and interpret production data
RTE4914A	Participate in an e-business supply chain
RTE4915A	Implement and monitor quality assurance procedures
RTE5006A	Plan and manage long-term weed, pest and/or disease control in crops
RTE5015A	Manage the harvest of agricultural and horticultural crops
RTE5016A	Develop production plans for crops
RTE5304A	Implement a machinery management system
RTE5524A	Develop and implement sustainable land use strategies
RTE5525A	Manage trial and/or research material

RTE5601A	Audit irrigation systems
RTE5602A	Design irrigation system maintenance and monitoring programs
RTE5603A	Design irrigation, drainage and water treatment systems
RTE5606A	Manage water systems
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
RTE5912A	Plan and monitor production processes
RTE5920A	Negotiate and monitor contracts/commercial agreements
RTE5921A	Market products and services
RTE6301A	Analyse machinery options
RTE6501A	Manage the production system
RTE6503A	Design and conduct a field-based research trial
RTE6802A	Lead and manage community or industry organisations
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

Units imported from other Training Packages *(Volume 3 of 4)*

BCG3115A	Lay segmental/unit paving
BSBCMN413A	Implement and monitor environmental policies
BSBCMN405A	Analyse and present research information
BSBEBUS302A	Use and maintain electronic mail system
BSBEBUS303A	Participate in a virtual community
BSBEBUS304A	Buy online
BSBEBUS305A	Sell online
BSBEBUS405A	Conduct online financial transactions
BSBEBUS501A	Evaluate e-business opportunities
BSBEBUS504A	Implement an e-business strategy

BSBEBUS505A	Implement new technologies for business
BSBEBUS506A	Plan and develop a business website
BSBMGT503A	Prepare budgets and financial plans
BSBMGT507A	Manage environmental performance
BSBMGT609A	Manage risk
BSBSBM405A	Monitor and manage business operations
BSZ404A	Train small groups
SRXIND005A	Promote compliance with laws and legal principles
SRXRES007A	Undertake open space planning
SRXRES010A	Protect heritage and cultural assets
TDTR298B	Source goods/services and evaluate contractors
WRRCA1B	Operate retail equipment
WRRCA2B	Apply retail office procedures
WRRCS2B	Apply point of sale handling procedures
WRRCS3B	Interact with customers
WRRF1B	Balance register/terminal
WRR14B	Buy merchandise
WRR15A	Maintain and order stock
WRRLP2B	Minimise theft
WRRLP4B	Maintain store security
WRRM3B	Co-ordinate merchandise presentation
WRR01B	Manage merchandise and store presentation
WRR02B	Manage sales and service delivery
WRR04B	Control store security/loss
WRR05B	Control inventory
WRR06B	Manage store facilities
WRR07A	Profile a retail market
WRRPM2B	Recruit and select personnel
WRRS1B	Sell products and services
WRRS2B	Advise on products and services
WRRS4B	Build relationships with customers
WRWPL508A	Improve supply and distribution chains

Common units (Volume 4 of 4)

RTC1006A	Support nursery work

RTC1201A	Maintain the workplace
RTC1202A	Support landscape work
RTC1301A	Operate basic machinery and equipment
RTC1302A	Assist with routine maintenance of machinery and equipment
RTC1701A	Follow basic chemical safety rules
RTC1801A	Prepare for work
RTC2005A	Fell small trees
RTC2012A	Plant trees and shrubs
RTC2016A	Recognise plants
RTC2026A	Undertake propagation activities
RTC2203A	Conduct visual inspection of park facilities
RTC2209A	Install, maintain and repair fencing
RTC2210A	Maintain properties and structures
RTC2301A	Undertake operational maintenance of machinery
RTC2304A	Operate and maintain chainsaws
RTC2306A	Operate vehicles
RTC2307A	Operate machinery and equipment
RTC2309A	Operate tractors
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
RTC2706A	Apply chemicals under supervision
RTC2801A	Participate in workplace communications
RTC3016A	Provide information on plants and their culture
RTC3201A	Conduct operational inspection of park facilities
RTC3206A	Erect timber structures and features
RTC3211A	Implement a maintenance program for an aquatic environment
RTC3218A	Undertake a site assessment
RTC3310A	Operate specialised machinery and equipment
RTC3401A	Control weeds
RTC3404A	Control plant pests, diseases and disorders
RTC3701A	Respond to emergencies
RTC3704A	Prepare and apply chemicals

RTC3705A	Transport, handle and store chemicals
RTC3805A	Coordinate work site activities
RTC4024A	Recommend plants and cultural practices
RTC4206A	Supervise landscape project works
RTC4306A	Supervise maintenance of machinery and equipment
RTC4701A	Implement and monitor the enterprise OHS program
RTC4702A	Minimise risks in the use of chemicals
RTC4703A	Plan and implement a chemical use program
RTC4905A	Cost a project
RTC4908A	Supervise work routines and staff performance
RTC4911A	Operate within a budget framework
RTC5011A	Collect and classify plants
RTC5201A	Conduct comprehensive inspection of park facilities
RTC5504A	Develop a management plan for a designated area
RTC5520A	Manage parks and reserves
RTC5701A	Establish and maintain the enterprise OHS program
RTC5702A	Develop and manage a chemical use strategy
RTC5801A	Provide specialist advice to clients
RTC5908A	Prepare estimates, quotes and tenders
RTC5913A	Collect and manage data
RTC5914A	Prepare reports

2 Amenity Horticulture Relationship Matrix

The following Relationship Matrix lists all units of competency within the Amenity Horticulture Training Package and identifies which particular Industry Sector Qualification they appear in and whether they appear as Groups A and/or B (refer below) within a particular qualification.

- **Group A** – these are the key technical work functions that have been designated for each sector specialisation
- **Group B** – these are the more generic work functions across a number of industry sectors and a wide choice is available

Note: The symbol (*) indicates that the unit of competency is compulsory

Key to Codes:

G	General
A	Arboriculture
L	Landscape
NR	Nursery Retail
NW	Nursery Wholesale
PG	Parks & Gardens
T	Turf
F	Floriculture

Competency Standards included in Certificate I qualifications		General
RTC1006A	Support nursery work	B
RTC1201A	Maintain the workplace	B
RTC1202A	Support landscape work	B
RTC1301A	Operate basic machinery and equipment	B
RTC1302A	Assist with routine maintenance of machinery and equipment	B
RTC1701A	Follow basic chemical safety rules	B
RTC1801A	Prepare for work	A*
RTD1501A	Support natural area conservation	B
RTE1005A	Support horticultural production	B
RTE1601A	Support irrigation work	B
RTF1002A	Support arboricultural work	B
RTF1003A	Support turf work	B
RTF1004A	Support gardening work	B
RTF1007A	Support floricultural production	B

Competency Standards included in Certificate II qualifications		G	A	L	NR	NW	PG	T	F
RTC2005A	Fell small trees	B	A						
RTC2012A	Plant trees and shrubs	B	B	A			A	B	
RTC2016A	Recognise plants	B	A	A	A	A	A	B	
RTC2026A	Undertake propagation activities	B				A			B
RTC2203A	Conduct visual inspection of park facilities	B					B		
RTC2209A	Install, maintain and repair fencing	B		B					
RTC2210A	Maintain properties and structures	B		B		B	B	B	B
RTC2301A	Undertake operational maintenance of machinery	B	B	B			A	B	B
RTC2304A	Operate and maintain chainsaws	B	A	B				B	
RTC2306A	Operate vehicles	B		B			B	B	
RTC2307A	Operate machinery and equipment	B	B	A		A	B	A	A
RTC2309A	Operate tractors	B				B	B	B	A
RTC2401A	Treat weeds	B	B			A	A	A	B
RTC2404A	Treat plant pests, diseases and disorders	B	B		B	B	A	A	B
RTC2701A	Follow OHS procedures	A*	A*	A*	A*	A*	A*	A*	A*
RTC2702A	Observe environmental work practices	A*	A*	A*	A*	A*	A*	A*	A*
RTC2704A	Provide basic first aid	B	A	A	A	A	A	A	A
RTC2705A	Work effectively in the industry	A*	A*	A*	A*	A*	A*	A*	A*
RTC2706A	Apply chemicals under supervision	B	B			B	A	B	A
RTC2801A	Participate in workplace communications	A*	A*	A*	A*	A*	A*	A*	A*
RTD2022A	Carry out natural area restoration works	B					B		
RTD2206A	Install aggregate paths	B		B					
RTE2003A	Carry out postharvest operations	B							A
RTE2010A	Establish horticultural crops	B							A
RTE2018A	Regulate crops	B							B
RTE2021A	Support horticultural crop harvesting	B							A
RTE2028A	Undertake field budding and grafting	B							B
RTE2308A	Operate ride-on vehicles	B			B	A	A	B	
RTE2503A	Observe and report on weather	B	B						B
RTE2601A	Assist with the operation of gravity-fed irrigation	B							B
RTE2602A	Assist with the operation of pressurised irrigation	B		B		B	B	B	A
RTE2603A	Lay irrigation and/or drainage pipes	B		A				B	B
RTE2604A	Maintain drainage systems	B				B		B	B
RTE2605A	Maintain gravity-fed irrigation systems	B							B
RTE2606A	Maintain pressurised irrigation systems	B		B	B	B	B	A	B
RTE2607A	Install a micro-irrigation system	B					B		

Competency Standards included in Certificate II qualifications		G	A	L	NR	NW	PG	T	F
RTE2707A	Follow site quarantine procedures	B	B		A			B	B
RTE2902A	Collect and record production data	B							B
RTF2001A	Apply a range of treatments to trees	B	A						
RTF2008A	Maintain indoor plants	B			A	B			
RTF2009A	Perform above ground pruning	B	A						
RTF2013A	Pot-on plants	B			B	A			
RTF2014A	Prepare and maintain plant displays	B			B		B		
RTF2015A	Prepare turf surfaces for play	B					B	A	
RTF2017A	Prune shrubs and small trees	B	A	B	B		A		
RTF2019A	Renovate grassed areas	B		B			B	A	
RTF2020A	Assist with turf construction	B						A	
RTF2023A	Support turf establishment	B		A			B	A	
RTF2024A	Tend nursery plants	B			A	A			
RTF2025A	Transplant small trees	B	B	B					
RTF2027A	Undertake standard climbing techniques	B	A						
RTF2204A	Construct low-profile timber or modular retaining walls	B		A					
RTF2207A	Protect trees during construction work	B	B						
RTF2211A	Prepare a gravesite	B					B		
RTF2215A	Assist with landscape construction work	B		A					
RTF2311A	Undertake stump removal	B	A						
RTF2504A	Determine basic properties of soil/growing media	B	B	A	A	A	A	A	A
RTF2208A	Lay paving	B		A					
WRRCA1B	Operate retail equipment	B			A				
WRRCA2B	Apply retail office procedures	B			A				
WRRCS2B	Apply point of sale handling procedures	B			A				
WRRS1B	Sell products and services	B			A				

Competency Standards included in Certificate III qualifications		G	A	L	NR	NW	PG	T	F
BCG3115A	Lay segmental/unit paving	B		A*					
BSBEBUS302A	Use and maintain electronic mail system	B	B			B	B	B	
BSBEBUS303A	Participate in a virtual community	B							B
BSBEBUS304A	Buy online	B	B		B	B			B
BSBEBUS305A	Sell online	B				B			B
RTC3016A	Provide information on plants and their culture	B	A	A	A	A	A*	B	
RTC3201A	Conduct operational inspection of park facilities	B					B		
RTC3206A	Erect timber structures and features	B		A*					
RTC3211A	Implement a maintenance program for an aquatic environment	B					B		
RTC3218A	Undertake a site assessment	B							
RTC3310A	Operate specialised machinery and equipment	B		B			B	A	
RTC3401A	Control weeds	B		B		B	A	A	B
RTC3404A	Control plant pests, diseases and disorders	B	B		B	A	A	A	A
RTC3701A	Respond to emergencies	B	A	A	A	A	A	A	A
RTC3704A	Prepare and apply chemicals	B	B	B	B	A	A	B	A
RTC3705A	Transport, handle and store chemicals	B	B		B	B	B	B	B
RTC3805A	Co-ordinate work site activities	B	A	A	A	A	A*	A	A
RTD3034A	Implement revegetation works	B					B		
RTE3002A	Co-ordinate a crop regulation program	B							A
RTE3003A	Co-ordinate horticultural crop harvesting	B							A
RTE3013A	Implement a post-harvest program	B							A
RTE3030A	Harvest horticultural crops mechanically	B							A
RTE3305A	Install and terminate extra low voltage wiring systems	B		B					
RTE3307A	Coordinate machinery and equipment maintenance and repair	B	B			B		B	A
RTE3506A	Monitor weather conditions	B	B						B
RTE3601A	Install irrigation systems	B		A*				B	B
RTE3603A	Install drainage systems	B		B				B	B
RTE3604A	Troubleshoot drainage systems	B							B
RTE3605A	Troubleshoot irrigation systems	B				A	B	B	A
RTE3611A	Operate pressurised irrigation systems	B			B	B	B	B	B
RTE3612A	Implement a maintenance program for an irrigation system	B						B	
RTE3713A	Carry out workplace OHS procedures	A*	A*	A*	A*	A*	A*	A*	A*

Competency Standards included in Certificate III qualifications		G	A	L	NR	NW	PG	T	F
RTE3714A	Maintain and monitor environmental work practices	B	A	B	B	A	A	A	A
RTE3801A	Provide on-job training support	B	B		B				B
RTE3819A	Process customer complaints	B			B	B			
RTE3904A	Keep records for a primary production business	B	B						B
RTE3907A	Use hand held e-business tools	B	B	B	B	B	B	B	
RTF3001A	Construct turf playing surfaces	B						B	
RTF3004A	Implement a grassed area maintenance program	B					A	B	
RTF3005A	Deliver and promote sales of plants	B				B			
RTF3007A	Fell large trees	B	A						
RTF3010A	Establish turf	B		B			B	A	
RTF3011A	Implement a plant establishment program	B		B			A		A
RTF3012A	Implement a plant nutrition program	B		B	B	A	A	B	A
RTF3014A	Implement a propagation plan	B				B			B
RTF3015A	Implement a tree maintenance program	B	B				A		
RTF3017A	Implement a tree pruning program	B	A						
RTF3018A	Implement a tree transplanting program	B	B						
RTF3019A	Remove trees in confined spaces	B	A						
RTF3020A	Install and maintain interior plant displays	B			B				
RTF3021A	Maintain nursery plants	B			B	A			
RTF3023A	Monitor turf health	B						A	
RTF3025A	Prepare specialised plants	B				B			
RTF3026A	Receive and dispatch plants and other nursery products	B			A	A			
RTF3027A	Renovate sports turf	B						A	
RTF3028A	Perform specialist amenity pruning	B	A				A		
RTF3031A	Undertake complex tree climbing	B	B						
RTF3032A	Install cable and bracing	B	B						
RTF3033A	Implement a maintenance program for hydroponic systems	B							B
RTF3035A	Implement a tree protection program	B	B						
RTF3036A	Plan and establish plant displays	B			A	B	A		
RTF3203A	Construct brick and/or block structures and features	B		A*					
RTF3204A	Construct concrete structures and features	B		A*					
RTF3207A	Implement a landscape maintenance program	B		A			A		
RTF3208A	Install metal structures and features	B		B					
RTF3215A	Install hydroponic systems	B							B

Competency Standards included in Certificate III qualifications		G	A	L	NR	NW	PG	T	F
RTF3216A	Install water features	B		A					
RTF3217A	Set out site for construction works	B		A*					
RTF3219A	Construct stone structures and features	B		A*					
RTF3220A	Implement a paving project	B		A					
RTF3221A	Implement a retaining wall project	B		A					
RTF3503A	Sample soils and analyse results	B	A	B	A	A	A*	A	A
RTF3510A	Design and prepare growing media	B							B
RTF3702A	Undertake aerial rescue	B	A						
WRRCS3B	Interact with customers	B			A				
WRRF1B	Balance register/terminal	B			A				
WRRM3B	Co-ordinate merchandise presentation	B			A				
WRRS2B	Advise on products and services	B							

Competency Standards included in Certificate IV qualifications		G	A	L	NR	NW	PG	T	F
BSBCMN413A	Implement and monitor environmental policies	B	A		A	A	A	A	A
BSBCMN405A	Analyse and present research information	B	B	B			B	B	
BSBEBUS405A	Conduct online financial transactions	B	B		B	B		B	B
BSZ404A	Train small groups	B					B		
RTC4024A	Recommend plants and cultural practices	A	A	A	A	A	A	A	
RTC4206A	Supervise landscape project works	B		A			B		
RTC4306A	Supervise maintenance of machinery and equipment	B	B	A	B	B	A	B	B
RTC4701A	Implement and monitor the enterprise OHS program	A	A	A	A	B	A	A	B
RTC4702A	Minimise risks in the use of chemicals	B	B	B		B	A	B	B
RTC4703A	Plan and implement a chemical use program	B	B	B		A	A	B	A
RTC4905A	Cost a project	B	B	A		B	A	A	
RTC4908A	Supervise work routines and staff performance	B	A	A	A	A	A	B	A
RTC4911A	Operate within a budget framework	B	B	B	A	A	A	B	B
RTD4020A	Plan the implementation of revegetation works	B					B		
RTD4406A	Implement pest management action plans	B						A	A
RTD4510A	Supervise natural area restoration works	B		B			B		
RTD4811A	Provide information on environmental issues and policies	B					B		
RTD4910A	Report on project	B		B			B		
RTE4002A	Develop a crop regulation program	B							A
RTE4012A	Supervise horticultural crop harvesting	B							A
RTE4511A	Develop a soil use map for a property	B							B
RTE4604A	Determine seasonal irrigation scheduling tasks	B		B		A		A	A
RTE4606A	Supervise on-site irrigation installation and construction work	B		A		B	B	A	
RTE4607A	Plan on-site irrigation system installation and construction work	B		A				B	
RTE4608A	Plan and co-ordinate gravity-fed irrigation systems	B							B
RTE4609A	Implement, monitor and adjust irrigation schedules	B		B			B		
RTE4812A	Co-ordinate customer service and networking activities	B			B	B	B		
RTE4913A	Analyse and interpret production data	B							B

Competency Standards included in Certificate IV qualifications		G	A	L	NR	NW	PG	T	F
RTE4914A	Participate in an e-business supply chain	B	B		B	B		B	B
RTE4915A	Implement and monitor quality assurance procedures	B	B			A	B	B	A
RTF4001A	Design plant displays	B			B		B		
RTF4003A	Plan a plant establishment program	B		A			B		
RTF4004A	Develop a plant nutrition program	B					B	A	A
RTF4005A	Develop a sports turf maintenance program	B						A	
RTF4006A	Plan a tree pruning program	B	A				B		
RTF4007A	Prepare a garden design	B		A	B				
RTF4014A	Plan a growing-on program	B				A			B
RTF4015A	Plan a propagation program	B				B			B
RTF4016A	Plan a tree protection program	B	B						
RTF4017A	Plan a tree transplanting program	B	B						
RTF4019A	Prepare and implement plans to minimise tree stress	B	A						
RTF4021A	Plan the removal of trees	B	A						
RTF4023A	Promote plant health	B	A		A	A	A	A	A
RTF4514A	Develop soil survey maps	B		B		A	A	B	
WRR14B	Buy merchandise	B			A				
WRR15A	Maintain and order stock	B			A				
WRRLP2B	Minimise theft	B			B				
WRRLP4B	Maintain store security	B			B				
WRRO1B	Manage merchandise and store presentation	B			B				
WRRS4B	Build relationships with customers	B			A				
TDTR298B	Source goods/services and evaluate contractors	B		A			B	B	

Competency Standards included in Diploma qualifications		G	A	L	NR	NW	PG	T	F
BSBEBUS501A	Evaluate e-business opportunities	B	B					B	B
BSBEBUS504A	Implement an e-business strategy	B	B		B	B	B	B	B
BSBEBUS505A	Implement new technologies for business	B				B	B		
BSBEBUS506A	Plan and develop a business website	B	B		B	B		B	
BSBMGT503A	Prepare budgets and financial plans	B	B	A	B	B	A	A	A
BSBMGT507A	Manage environmental performance	B	B	B	B	A	B	B	A
BSBMGT609A	Manage risk	B					A		
BSBSBM405A	Monitor and manage business operations	B		A	B	B	A		
RTC5011A	Collect and classify plants	B	A		A	A		B	
RTC5201A	Conduct comprehensive inspection of park facilities	B					B		
RTC5504A	Develop a management plan for a designated area	B					B		
RTC5520A	Manage parks and reserves	B					A		
RTC5701A	Establish and maintain the enterprise OHS program	B	A	B	A	B	A	B	B
RTC5702A	Develop and manage a chemical use strategy	B	B			B	A	B	B
RTC5801A	Provide specialist advice to clients	B	A	A	A	B	A	B	
RTC5908A	Prepare estimates, quotes and tenders	B	A	A		B	B	A	
RTC5913A	Collect and manage data	B				B	B		
RTC5914A	Prepare reports	B	B				A	B	
RTD5402A	Develop a strategy for the management of target pests	B				A			A
RTE5006A	Plan and manage long-term weed, pest and/or disease control in crops	B							B
RTE5015A	Manage the harvest of agricultural and horticultural crops	B							A
RTE5016A	Develop production plans for crops	B							A
RTE5304A	Implement a machinery management system	B	A	B			B	A	A
RTE5524A	Develop and implement sustainable land use strategies	B							B
RTE5525A	Manage trial and/or research material	B		B		B		B	B
RTE5601A	Audit irrigation systems	B						B	
RTE5602A	Design irrigation system maintenance and monitoring programs	B				B		A	B
RTE5603A	Design irrigation, drainage and water treatment systems	B		B				B	
RTE5606A	Manage water systems	B				B			
RTE5807A	Manage staff	B	A	A	A	A	A	A	A

Competency Standards included in Diploma qualifications		G	A	L	NR	NW	PG	T	F
RTE5901A	Develop a marketing plan	B	B			B			B
RTE5902A	Develop and review a business plan	B	B		B	B	B	B	B
RTE5903A	Plan, implement and review a quality assurance program	B	B		B		B	B	A
RTE5906A	Monitor and review business performance	B		B		B			B
RTE5912A	Plan and monitor production processes	B						B	
RTE5920A	Negotiate and monitor contracts/commercial agreements	B	B	A		B	B	B	
RTE5921A	Market products and services	B	B	A		A		B	B
RTF5001A	Develop a horticultural production plan	B				A		B	A
RTF5004A	Manage landscape projects	B		A			B		
RTF5005A	Manage plant health	B	A	B	A	A		A	A
RTF5008A	Plan the establishment of sports turf playing surfaces	B						A	
RTF5009A	Plan the restoration of parks and gardens	B		B			B		
RTF5010A	Prepare a landscape project design	B		A			B		
RTF5012A	Manage a controlled growing environment	B				B			B
RTF5013A	Manage plant cultural practices for amenity horticulture	B					B		
RTF5018A	Assess trees	B	A						
RTF5302A	Develop a plan for a hydroponic system	B							B
RTF5506A	Develop and implement a streetscape management plan	B					B		
RTF5521A	Monitor and manage soils	B		B		A		B	A
SRXIND005A	Promote compliance with laws and legal principles	B					B		
SRXRES007A	Undertake open space planning	B					B		
SRXRES010A	Protect heritage and cultural assets	B					B		
WRRO2B	Manage sales and service delivery	B			A				
WRRO4B	Control store security/loss	B			B				
WRRO5B	Control inventory	B			A				
WRRO6B	Manage store facilities	B			A				
WRRO7A	Profile a retail market	B			B				
WRRPM2B	Recruit and select personnel	B			B				
WRWPL508A	Improve supply and distribution chains	B				B			

AQF Level 6 Competency Standards		
RTD6502A	Review management plans and strategies	B
RTD6902A	Monitor projects in a program	B
RTE6301A	Analyse machinery options	B
RTE6501A	Manage the production system	B
RTE6503A	Design and conduct a field-based research trial	B
RTE6802A	Lead and manage community or industry organisations	B
RTE6803A	Manage human resources	B
RTE6901A	Analyse business performance	B
RTE6903A	Develop and review a strategic plan	B
RTE6904A	Manage business capital	B
RTE6906A	Develop export markets for produce	B
RTE6907A	Manage capital works	B
RTE6908A	Design and manage the enterprise quality management system	B

Part G National Competency Standards

Level 1 Amenity Horticulture Units

RTF1002A	Support arboricultural work.....	189
RTF1003A	Support turf work.....	195
RTF1004A	Support gardening work	200
RTF1007A	Support floricultural production	205

RTF1002A**Support arboricultural work**

This competency standard covers the process of providing ground support to an arboricultural work unit. Support requires checking tools and equipment, maintaining a clear work site during operations, communicating with and observing above ground workers, assisting climbers by sending up tools and equipment, and receiving and processing tree prunings. Ground support work is performed under direct supervision within established enterprise guidelines.

Element	Performance Criteria
1 Prepare for ground support operations	1.1 Instructions for ground support operations are received and clarified prior to work being undertaken.
	1.2 OHS hazards are identified.
	1.3 Tools, equipment and machinery are selected that are appropriate to the task being undertaken.
	1.4 Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
	1.5 Suitable safety equipment and personal protective equipment (PPE) is selected, checked, used and maintained.
2 Maintain a clear work site during operations	2.1 Persons not involved in the work program are kept away from the site during operations.
	2.2 Tools, equipment and machinery are stored clear of debris and the drop zone.
	2.3 Rescue equipment is placed within easy access.
	2.4 Drop zone is kept free of debris according to enterprise guidelines.
3 Provide ground support for tree climbers	3.1 Communication links between ground crew and operator are clearly maintained at all times according to enterprise guidelines.
	3.2 Non-verbal signs of communication are received and clarified according to enterprise guidelines.
	3.3 Equipment is raised and lowered to climber using safe working procedures .
	3.4 Rope handling techniques are performed according to safe working practices.

4	Receive and process tree prunings during operations	4.1	Tools and equipment are used according to supervisors instructions and manufacturers guidelines.
		4.2	Tree prunings are received and stacked according to enterprise guidelines.
		4.3	Tree prunings are prepared for processing according to enterprise guidelines.
		4.4	Processing of tree prunings is undertaken according to supervisors instructions and/or manufacturers instructions.
		4.5	Surrounding environment is maintained in a damage free condition.
5	Complete ground support operations	5.1	Tools, equipment and machinery are checked for wear/damage, prepared for transporting/storage, and stored according to enterprise policy and procedures.
		5.2	Waste is collected and disposed of, or recycled to minimise damage to the environment.
		5.3	Records of ground support operations are maintained in the appropriate format.

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 when undertaking ground support operations?	Instructions may include Standard Operating Procedures (SOP) or verbal directions from manager, supervisor, or senior operator; work notes, routine maintenance schedules; manufacturers service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.
What OHS hazards may be identified in the work area?	OHS hazards may include working near power lines, tree integrity, climbing, traffic, manual handling, moving equipment and vehicles, sharp hand tools, falling branches and equipment, UV radiation, heat and cold, fatigue, working alone, noise, insects and animals.
What tools, equipment and machinery might be used to provide arboriculture support?	Equipment used may include ropes, safety lines, safety harness, saddle, lanyard, karabiners, rope grabs, pole belts and other climbing gear; chipper; small chainsaw and appropriate maintenance equipment; ladder, handsaw, secateurs, elevating work platform (EWP), and vehicles for loading and removing prunings.

What safety equipment may be required?	Safety equipment may include pedestrian barriers, traffic barriers, warning signs, road signs, danger signs, flashing lights, traffic bollards, safety mesh, and witches hats.
What PPE may be required to undertake arboriculture support operations?	PPE may include steel cap boots, six point safety helmet, ear protection, eye protection, cut resistant trousers or chaps, reflective vest, close fitting work clothes, gloves and sunscreen lotion.
What rescue equipment might be relevant to this standard?	Rescue equipment will include first aid kit, emergency contact numbers, harness, lifeline, prussik loop, karabiners, climbing spurs, flipline/polestrap, pulleys and tube tape.
How is the drop zone identified?	The drop zone is calculated by establishing a radius in which tree prunings are expected to fall and adding a safety margin. The drop zone may be marked out by witches hats, signs and barriers.
What non-verbal signs of communication may apply to this standard?	Non-verbal communication may include hand signals, whistles, and signage.
What safe working practices may apply to raising and lowering equipment above ground level?	Safe working practices include the use of clove hitch knots when sending up tools and equipment on ropes, double checking ropes for faults, and correct manual handling.
What safe working practices may apply to rope handling techniques ?	Safe working practices may include keeping climbing ropes clear of saws, falling timber, and ground level obstacles.
What methods may be used to process tree prunings for this standard?	Processing methods may include chipping, burning, and removal.
What waste material may be relevant to this standard?	Waste material may include large branches, processed plant debris, broken equipment or components, and litter. Plant-based material may be used as mulch or compost, or recycled as firewood; plastic, metal, paper-based materials may be recycled, re-used, returned to the manufacturer, or disposed of according to enterprise work procedures.
What records may apply to this standard?	Records may include equipment safety checklist, and hours.
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 arboricultural support requires evidence that a person can support and monitor a climber during tree works, maintain a safe work site, and communicate effectively with both climbers and other members of the ground support team.

The skills and knowledge required to provide arboricultural support must be **transferable** to a different work environment. For example, a person who can provide ground support during roadside tree lopping operations should be able to transfer that knowledge and skill to another workplace, where a dead tree may need to be removed from a private residence.

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:

- basic operational and maintenance requirements of arboriculture equipment
- safety procedures and potential hazards of working in trees
- non-verbal communication protocols and techniques used for tree work
- principles and methods of rope handling techniques
- the effect of adverse outdoor climatic conditions which may prevent or impede arboricultural operations (steady rain, lightning, excessive heat).

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 work procedures including hazard and risk analysis and maintenance schedules
 - communicate with team members and supervisor using both verbal and non-verbal communication
 - participate in teams and contribute to team objectives
 - calculate or estimate fuel levels, exclusion zones, distance, and quantities of tree prunings to be processed
 - monitor and maintain arboriculture tools and equipment.
-

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 about specific tasks associated with the job, such as work completion and hazards encountered, may be communicated to work colleagues and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Information such as site details, tree inspection results, safety issues and work schedules should be discussed with the supervisor and work team members before tree works commence, or at regular crew meetings.
3. How are activities planned and organised (1) ?	Pre-operational checks and organisation of tools, equipment and task allocation should be arranged before tree works begin.
4. How can team work (1) be applied?	Ground support work involves working closely with other members of a team to ensure the safety of operations.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques may be applied when calculating rope lengths and distances, the area of exclusion and drop zones, fuel volumes, and quantity of tree prunings and processed plant material.
6. How can problem-solving skills (1) be applied?	Problems relating to processes, variation in traffic or weather patterns, workplace safety, other team members, and interruption of tree works may require problem-solving.
7. How can the use of technology (1) be applied?	Technology may be applied in the preparation, use and maintenance of arboricultural tools and equipment, and communication systems such as two-way radios.

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**.

RTF1003A

Support turf work

This competency standard covers the process of supporting turf work under supervision. It requires the ability to prepare materials, tools and equipment for turf work, undertake turf work, handle materials and equipment, and clean up on completion of work. Supporting turf work requires knowledge of safe work practices, mowing patterns and heights, turf machinery and equipment, and maintenance practices.

Element

Performance Criteria

1	Prepare materials, tools and equipment for turf work	1.1	The required materials, tools and equipment are identified according to lists provided and/or supervisor's instructions .
		1.2	Checks are conducted on all materials, tools and equipment with insufficient or faulty items reported to the supervisor.
		1.3	Techniques used when loading and unloading materials demonstrate correct manual handling and minimise damage to the load and the vehicle.
		1.4	Suitable personal protective equipment (PPE) is selected and checked prior to use.
		1.5	Turf support is provided according to OHS requirements and according to workplace information .
		1.6	OHS hazards are identified and reported to the supervisor.
2	Undertake turf work as directed	2.1	Instructions and directions provided by supervisor are followed and clarification sought when necessary.
		2.2	Turf work is undertaken in a safe and environmentally appropriate manner according to enterprise guidelines.
		2.3	Interactions with other staff and turf users is carried out in a positive and professional manner.
		2.4	Enterprise policy and procedures in relation to workplace practices, handling and disposal of materials is observed.
		2.5	Problems or difficulties in completing work to required standards or timelines are reported to supervisor.

3	Handle materials and equipment	3.1	Plant debris and waste material produced during turf work are stored in a designated area according to supervisor's instructions.
		3.2	Materials, equipment and machinery are handled and transported according to supervisor's instructions and enterprise guidelines.
		3.3	A clean and safe work site is maintained while completing turf activities.
4	Clean up on completion of turf work	4.1	Materials are returned to store or disposed of according to supervisor's instructions.
		4.2	Tools and equipment are cleaned, maintained and stored according to manufacturers specifications and supervisor's instructions.
		4.3	Work outcomes are reported to the supervisor.

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 included under turf work ?	Assisting with the maintenance of turf including mowing, edging, watering, fertilising, and lifting and laying sod. Assisting with collecting rubbish and removing weeds and disposing as directed. Assisting with maintaining turf facilities including assisting with repair, upkeep and moving of on-site structures and equipment, marking out, cleaning of water bodies and raking of sand traps.
What instructions may be relevant to this standard?	Instructions may include Standard Operating Procedures (SOPs), enterprise policy and procedures, specifications, work notes, Material Safety Data Sheets (MSDSs), manufacturers instructions, or verbal directions from manager or supervisor.
What tools and equipment may be required for nursery work?	Mowers may include cylinder, rotary, flail, hand, hand-operated cylinder mowers and greens mowers. Other tools, equipment and machinery may include rollers, super soakers, line marking equipment, brush cutters, edge clippers, edge slicers and water pumps.
What workplace information might be required for this standard?	Workplace information may include procedures for disposing of waste materials, work instructions or verbal instructions from the supervisor.

What OHS hazards may be associated with turf work?	Hazards may include people and animals moving across the site during work, obstacles and debris on the site, disturbance or interruption of services, solar radiation, dust, noise, chemicals and hazardous substances, manual handling, moving machinery and machinery parts, uneven surfaces and flying objects.
What are the personal protective clothing and equipment requirements associated with turf support?	Personal protective clothing and equipment may include steel capped boots/shoes, overalls, gloves, sun hat, sunscreen lotion, safety goggles, face mask and ear protectors.
What debris may apply to this standard?	Plant material (such as fallen tree limbs and small branches, leaves and grass clippings), animal faeces and litter may create debris on the turf surface, as well as equipment and materials debris resulting from work 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 supporting turf work requires evidence that turf activities have been carried out according to instructions and within the required timelines. The skills and knowledge that are required to support turf work must be **transferable** to a different work environment. For example, this could include different work tasks, enterprises and sporting surfaces.

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: • safe work practices required at turf work sites • mowing patterns and heights • turf machinery and equipment • turf and facility maintenance 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: • prepare materials, tools and equipment for turf work • undertake turf work as directed

- handle materials and equipment
 - clean up on completion of turf work.
-

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 the job, tasks and problems should be discussed with other members in the work team and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Workplace and supervisors instructions should be located, interpreted and applied with further clarification sought as necessary.
3. How are activities planned and organised (1) ?	Discussions with the supervisor and other team members may be required in order to complete tasks efficiently, in a logical sequence, and in a timely manner.
4. How can team work (1) be applied?	Good communication and co-operation with other staff in completing turf tasks.
5. How can the use of mathematical ideas and techniques (1) be applied?	Skills in counting, tallying and estimation are required when handling materials, tools and equipment.
6. How can problem-solving skills (1) be applied?	Problems will require corrective action or consultation with supervisor.
7. How can the use of technology (1) be applied?	Technology may be applied in the use of turf equipment 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**.

RTF1004A**Support gardening work**

This competency standard covers the process of supporting gardening work under supervision. It requires the ability to prepare materials, tools and equipment for gardening work, undertake gardening activities, handle materials and equipment, and clean up on completion of work. Supporting gardening work requires knowledge of safe work practices, planting techniques, garden tools and equipment, maintenance practices for planted areas, and repair and maintenance of garden features.

Element		Performance Criteria	
1	Prepare materials, tools and equipment for gardening work	1.1	The required materials, tools and equipment are identified according to lists provided and/or supervisor's instructions .
		1.2	Checks are conducted on all materials, tools and equipment with insufficient or faulty items reported to the supervisor.
		1.3	Techniques used when loading and unloading materials demonstrate correct manual handling and minimise damage to the load and the vehicle.
		1.4	Suitable personal protective equipment (PPE) is selected and checked prior to use.
		1.5	Gardening support is provided according to OHS requirements , and according to workplace information .
		1.6	OHS hazards are identified and reported to the supervisor.
2	Undertake gardening work as directed	2.1	Instructions and directions provided by supervisor are followed and clarification sought when necessary.
		2.2	Gardening work is undertaken in a safe and environmentally appropriate manner according to enterprise guidelines.
		2.3	Interactions with other staff and customers is carried out in a positive and professional manner.
		2.4	Enterprise policy and procedures in relation to workplace practices, handling and disposal of materials is observed.
		2.5	Problems or difficulties in completing work to required standards or timelines are reported to supervisor.

3	Handle materials and equipment	3.1	Waste material produced during gardening work is stored in a designated area according to supervisor's instructions.
		3.2	Materials, equipment and machinery are handled and transported according to supervisor's instructions and enterprise guidelines.
		3.3	A clean and safe work site is maintained while completing gardening activities.
4	Clean up on completion of gardening work	4.1	Materials are returned to store or disposed of according to supervisor's instructions.
		4.2	Tools and equipment are cleaned, maintained and stored according to manufacturers specifications and supervisor's instructions.
		4.3	Work outcomes are reported to the supervisor.

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 included under gardening work ?	Maintenance of planted areas including watering, fertilising, staking, mowing, pruning, weeding and collecting rubbish. Maintaining garden facilities including assisting with repair and upkeep of site furniture and structures, paths and paved areas, and garden features. Assisting in preparation of areas for planting, installing trees and shrubs (containerised and bare-rooted), and planting of annual and perennial beds.
What instructions may be relevant to this standard?	Instructions may include Standard Operating Procedures (SOPs), enterprise policy and procedures, specifications, work notes, Material Safety Data Sheets (MSDSs), manufacturers instructions, or verbal directions from manager or supervisor.
What tools and equipment may be required for gardening work?	Tools and equipment may include secateurs, knives, spades, forks, trowels, rakes, hoes, spray equipment, augers, buckets, brooms, wheelbarrows, hoses and hose fittings; ancillary equipment such as stabilising materials, weed mats, stakes and tree guards.
What workplace information might be required for this standard?	Workplace information may include procedures for disposing of waste materials, work instructions or verbal instructions from the supervisor.

What OHS hazards may be associated with gardening work?	Hazards may include, solar radiation, dust, noise, air- and soil-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, holes, and slippery and uneven surfaces.
What are the personal protective clothing and equipment requirements associated with gardening support?	Personal protective clothing and equipment may include steel capped boots/shoes, overalls, gloves, sun hat, sunscreen lotion, safety goggles, face mask and ear protectors.
What waste materials may apply to this standard?	Plant debris, litter and broken components, mulches, compost, plastic, metal, and paper-based materials. These may be recycled, re-used, returned to the manufacturer or disposed of according to enterprise work 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 supporting gardening work requires evidence that gardening activities have been carried out according to instructions and within the required timelines. The skills and knowledge that are required to support gardening work must be **transferable** to different work environments. For example, this could include different gardening tasks, enterprises, and types of gardens.

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: • safe work practices • planting techniques • garden tools and equipment • maintenance practices for planted areas • repair and maintenance of garden features.

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:

- prepare materials, tools and equipment for gardening work
- undertake gardening work as directed
- handle materials and equipment
- clean up on completion of gardening work.

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 the job, tasks and problems should be discussed with other members in the work team and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Workplace and supervisors instructions should be located, interpreted and applied with further clarification sought as necessary.
3. How are activities planned and organised (1) ?	Discussions with the supervisor and other team members may be required in order to complete tasks efficiently, in a logical sequence, and in a timely manner.
4. How can team work (1) be applied?	Good communication and co-operation with other staff in completing gardening tasks.
5. How can the use of mathematical ideas and techniques (1) be applied?	Skills in counting, tallying and estimation are required when handling materials, tools and equipment.
6. How can problem-solving skills (1) be applied?	Problems will require corrective action or consultation with supervisor.
7. How can the use of technology (1) be applied?	Technology may be applied in the use of garden tools and equipment.

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**.

RTF1007A**Support floricultural production**

This competency standard covers the process of supporting floricultural production under supervision. It requires the ability to prepare materials, tools and equipment for floricultural production work, undertake routine production assistance work, handle materials and equipment, and clean up on completion of work. Supporting floricultural production work requires knowledge of safe work practices relating to basic crop handling techniques including planting, maintaining, picking, and packing, and loading and unloading using associated tools and equipment.

Element	Performance Criteria
1 Prepare materials, tools and equipment for floricultural production work	1.1 The required materials, tools and equipment are identified according to lists provided and/or supervisor's instructions .
	1.2 Checks are conducted on all materials, tools and equipment with insufficient or faulty items reported to the supervisor.
	1.3 Techniques used when loading and unloading materials demonstrate correct manual handling and minimise damage to the load and the vehicle.
	1.4 Suitable personal protective equipment (PPE) is selected and checked prior to use.
	1.5 Work support is provided according to OHS requirements , and according to workplace information .
	1.6 OHS hazards are identified and reported to the supervisor.
2 Undertake floricultural production work as directed	2.1 Instructions and directions provided by supervisor are followed and clarification sought when necessary.
	2.2 Work is undertaken in a safe and environmentally appropriate manner according to enterprise guidelines.
	2.3 Interactions with other staff and customers is carried out in a positive and professional manner.
	2.4 Enterprise policy and procedures in relation to workplace practices, handling and disposal of materials is observed.

		2.5	Problems or difficulties in completing work to required standards or timelines are reported to supervisor.
3	Handle materials and equipment	3.1	Waste material produced during work is stored in a designated area according to supervisor's instructions.
		3.2	Materials, equipment and machinery are handled and transported according to supervisor's instructions and enterprise guidelines.
		3.3	A clean and safe work site is maintained while working.
4	Clean up on completion of work	4.1	Materials are returned to store or disposed of according to supervisor's instructions.
		4.2	Tools and equipment are cleaned, maintained and stored according to manufacturers specifications and supervisor's instructions.
		4.3	Work outcomes are reported to the supervisor.

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 included under floricultural crop work ?	Assistance with all activities associated with floricultural production such as land preparation, seeding/planting, maintaining, loading and unloading, harvesting/picking, sorting and packing. Assisting with routine maintenance or cleaning of sheds and other buildings, fences, fixtures and fittings.
What instructions may be relevant to this standard?	Instructions may include Standard Operating Procedures (SOPs), enterprise policy and procedures, specifications, work notes, Material Safety Data Sheets (MSDSs), manufacturers instructions, or verbal directions from manager or supervisor.
What tools and equipment may be required for floricultural production work?	Tools and equipment may include knives, secateurs, spades, forks, ladders, hoes, packing equipment, boxes, bins and buckets, hoses and hose fittings.
What workplace information might be required for this standard?	Workplace information may include procedures for disposing of waste materials, work instructions or verbal instructions from the supervisor.

What OHS hazards may be associated with floricultural production work?	Hazards may include, solar radiation, dust, noise, air- and soil-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, holes, and slippery and uneven surfaces.
What are the personal protective clothing and equipment requirements associated with floricultural work?	Personal protective clothing and equipment may include steel capped boots/shoes, overalls, gloves, sun hat, sunscreen lotion, safety goggles, face mask and ear protectors.
What waste materials may apply to this standard?	Plant debris, litter and broken components, plastic, metal, and paper-based materials. These may be recycled, re-used, returned to the manufacturer or disposed of according to enterprise work 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 supporting floricultural production work requires evidence that activities have been carried out according to instructions and within the required timelines. The skills and knowledge that are required to support floricultural production work must be **transferable** to different work environments. For example, this could include different tasks, crops and types of orchards/plantations/farms.

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: • safe work practices • planting, picking, packing, loading and transporting techniques appropriate to this level • use of floricultural tools and 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: • prepare materials, tools and equipment for work • undertake work as directed

- handle materials and equipment
 - clean up on completion of work.
-

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 the job, tasks and problems should be discussed with other members in the work team and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Workplace and supervisors instructions should be located, interpreted and applied with further clarification sought as necessary.
3. How are activities planned and organised (1) ?	Discussions with the supervisor and other team members may be required in order to complete tasks efficiently, in a logical sequence, and in a timely manner.
4. How can team work (1) be applied?	Good communication and co-operation with other staff in completing tasks.
5. How can the use of mathematical ideas and techniques (1) be applied?	Skills in counting, tallying and estimation are required when handling materials, tools and equipment.
6. How can problem-solving skills (1) be applied?	Problems will require corrective action or consultation with supervisor.
7. How can the use of technology (1) be applied?	Technology may be applied in the use of tools and equipment.

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**.

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RTF2001A**Apply a range of treatments
to trees**

This competency standard covers the application of treatment to trees to remedy common problems including alleviating tree stress and installing protective barriers. Treating trees also requires consideration of the environmental implications of treatment methods, techniques and procedures.

Treatment of trees is likely to be under routine supervision with intermittent checking. Tree treatments are usually carried out within established routines, methods and procedures. Competency requires the application of knowledge and skills to a range of tree treatments.

Element	Performance Criteria
1 Prepare to apply tree treatments	1.1 Trees requiring treatments are located and the treatment identified according to work procedures. 1.2 OHS hazards are identified, risks assessed and reported to the supervisor. 1.3 Tools and equipment appropriate to the task being undertaken are prepared and used according to supervisors instructions and enterprise guidelines. 1.4 Personal protective equipment (PPE) is selected and used according to enterprise OHS requirements. 1.5 Treatment activities are undertaken according to OHS requirements and with due regard of environmental implications.
2 Modify trees to alleviate stress	2.1 All dead, fractured, poorly attached, dying and diseased wood is removed at the designated position according to compartmentalisation of decay in trees (CODIT) principles. 2.2 Competing branches are removed to allow adequate space for the natural form of the tree. 2.3 Growth patterns are re-directed to avoid physical and structural damage to the tree. 2.4 Removed plant material is disposed of according to enterprise guidelines and with due regard for environmental implications.

3	Modify environment to maintain health and vigour of tree	3.1	Competing plants are removed to ensure adequate space; light, water and nutrient requirements of the tree are maintained.
		3.2	Nutrient additives are applied to the soil at rates and designated location according to supervisors instructions.
		3.3	Soil structure is modified according to supervisors instructions.
4	Apply treatments	4.1	Application equipment is checked for volume calibration, adjusted and operated according to manufacturers instructions and enterprise guidelines.
		4.2	Treatments are applied following manufacturers instructions, enterprise guidelines and in accordance with OHS requirements and with due regard for environmental implications.

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 treatments may trees require?	Treatments may be chemical (fertilisers, pesticides, herbicides), biological, (beneficial insects, fungi, viruses) and environmental (modifying soil, removal of soil covering, reducing compaction, removing competition).
What work procedures are appropriate for this standard?	These may include supervisors instructions, company standard operating procedures (SOPs), waste disposal, recycling and re-use guidelines, and OHS procedures.
What OHS hazards may be identified in the work area?	Hazards may include solar radiation, dust, noise, pests and diseases, chemical spills, hand tools and equipment, use of chainsaws, moving machinery, manually handling of heavy and irregular shaped objects, and using ladders.
What tools and equipment are used in the treatment process?	Tools and equipment may include chemical applicators, secateurs, handsaws, rakes, mattocks, shovels, and chainsaws, climbing and rigging equipment and trenching machines.
What PPE may be needed to carry out tree treatments?	PPE may include boots, overalls, gloves, goggles, face shields, sun hats, hearing protection and sunscreen lotion.

What **OHS requirements** may be relevant to this standard?

OHS requirements may include guidelines for handling, transporting, storing and disposing of chemicals and hazardous substances and maintaining public and worker safety from falling tree limbs or debris on the ground. Guidelines may also include wearing protective clothing, safe operation of machinery and equipment, safety of general public, correct manual handling techniques, disposing of debris in an environmentally safe manner, basic first aid, and recognising and reporting problems to the supervisor. When a Code of Practice for Arboriculture is registered it will provide additional information on OHS requirements.

What **environmental implications** may be relevant when treating trees?

Environmental implications may include spray drift, noisy machinery, waste material including plant debris, soil and dust, spread of disease or pests, effect on habitat of wildlife and chemical contamination.

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 trees for a range of problems requires evidence that a person can prepare for tree treatments according to work procedures, modify trees to alleviate stress, modify environment to maintain health and vigour of tree, apply appropriate treatments for a range of tree problems, and install root barriers.

The skills and knowledge required to treat trees for a range of problems must be **transferable** to a different work environment. For example, this could include different treatments and different tree species.

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:

- how trees react to drainage and stresses
- industry code of practice
- environmental considerations associated with the treatment program including use of chemical treatments and the environmentally safe disposal of plant, equipment and chemical debris

- principles and methods relating to identification of pests and disease
- factors affecting the timing and method of applying tree treatments
- different broad chemical types, for example, insecticides, herbicides and fungicides and the environmental implications of using these chemicals
- health, safety and environmental considerations when applying chemical treatments
- timing and placement of fertilisers and the need to minimise fertiliser use to limit environmental impact.

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:
- work using a variety of chemical application tools and pieces of equipment that are suitable for the particular application task while minimising environmental impact
- dispose of plant and equipment debris in an environmentally aware and sensitive manner, such as sorting plant and paper-based waste for recycling
- dispose of chemical substances and their containers in a way designed to minimise environmental impact
- interpret directions
- read labels
- record information
- communicate with fellow team members.

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 about specific tasks associated with the job such as work completion and hazards encountered should be discussed with work colleagues and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Information about tree treatments such as tree species and appropriate treatments should be discussed with the supervisor and work team members.
3. How are activities planned and organised (1) ?	Equipment, materials, relevant OHS guidelines and production schedules should be established and organised before and during work periods.
4. How can team work (1) be applied?	Treating trees may involve working with other members of a team to complete the treatment program.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques may be applied when calibrating application equipment and calculating safe working loads.
6. How can problem-solving skills (1) be applied?	Problems relating to treatment techniques, chemical application, workplace safety, other team members and interruption in treatment program may arise during the treatment process.
7. How can the use of technology (1) be applied?	Technology such as horticultural hand tools and equipment may be applied in treatment operations.

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, for example:

RTC2404A Treat plant pests, diseases and disorders

RTC2706A Apply chemicals under supervision.

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**.

RTF2008A**Maintain indoor plants**

This competency standard covers the process of maintaining interior plant displays in buildings and offices. Maintenance involves watering, feeding and other plant treatments necessary to maintain the health and appearance of indoor plants.

Indoor plant maintenance is usually performed under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Competency is demonstrated by the application of knowledge and skills to a range of plant maintenance tasks and roles usually within established enterprise guidelines.

Element		Performance Criteria	
1	Prepare to maintain indoor plants	1.1	Workplace information is interpreted and clarified with the supervisor.
		1.2	Tools, equipment and materials for maintenance activities are selected and prepared according to enterprise guidelines, and safe working practices are employed.
		1.3	OHS hazards relating to maintaining indoor plants and the growing environment are identified, risks assessed and reported to the supervisor.
2	Maintain the growing environment	2.1	Plants are accessed according to client requirements and supervisors instructions.
		2.2	Tools, equipment and materials are transported safely in accordance with access requirements, client and supervisors instructions.
		2.3	Watering system is maintained and/or adjusted where necessary according to enterprise guidelines.
		2.4	Light meter readings are taken to ensure specified parameters are maintained.
		2.5	Condition of media is checked according to supervisors instructions.
		2.6	Containers and growing site are cleaned to ensure the aesthetic and hygiene standards of indoor plants are maintained.
3	Maintain indoor plants	3.1	Common problems in indoor plants are recognised, and rectified and/or reported to the supervisor.

		3.2	Treatments are selected and applied to optimise plants health and appearance according to enterprise guidelines.
		3.3	Water is applied in the quantity and method specified by enterprise work procedures.
		3.4	Plants are replaced when no longer at optimum health and appearance.
4	Complete indoor plant maintenance operations	4.1	Rubbish, litter and decaying material are removed from plants, pots and surrounds and cleaning procedures are performed according to enterprise guidelines.
		4.2	Waste is collected and disposed of, or recycled to minimise damage to the environment.
		4.3	Tools and equipment are cleaned and stored according to enterprise work procedures.
		4.4	Workplace information is recorded in the appropriate format.

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 workplace information may be relevant when undertaking indoor plant maintenance activities?	Workplace information may include Standard Operating Procedures (SOPs), specifications, work notes, Material Safety Data Sheets (MSDS), manufacturers instructions, product labels, or verbal directions from the manager, supervisor, or senior operator.
What tools, equipment and materials are likely to be used to maintain indoor plants?	Tools, equipment and materials may include secateurs, knives, dibblers, trolley, trowels, hand tools, hand sprayers, water spray containers, cleaning equipment, rubbish bins, plant supports, ties, growing media, plant nutrition, fertilisers and fungicides.
What OHS hazards may be associated with maintaining indoor plants?	Hazards may include the use of a limited range of chemicals, sharp tools, and manual handling.
What access factors may influence client requirements ?	Access factors may include time constraints, parking restrictions, stairs and level changes, work areas, lift size, equipment needed, floor surface, furnishings and room use.
What adjustments and maintenance may be required on watering systems?	Adjustments and maintenance may include altering flow rate and timing, repairing or replacing worn, leaking or blocked irrigation components.

What specified parameters might apply to light meter readings?	Specified parameters that apply to selected indoor plants include low, medium and high light intensity.
How might media condition be assessed?	Media condition may be assessed by visual inspection or touch to check if it is dry or water logged and for the presence of mould or fungus.
What common problems associated with indoor plants may be encountered during plant maintenance activities?	Common problems may include dehydration or over watering, pests and diseases, nutrient deficiencies, low or high light intensity, pot-bound and deformed plants.
What treatments are likely to be selected and applied to indoor plants?	Treatments may include the limited use of pesticides, fungicides, and fertiliser, removing weeds and dead material, and trimming, pruning or training.
What methods may be used to apply water to indoor plants?	Watering methods may include irrigation, subirrigation, and hand watering and spraying.
What type of waste may be collected?	Waste may include left over treatments, containers, and plant debris.
What workplace information is likely to be recorded ?	Records may include client details, plant identity, date and treatments applied.
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 maintaining indoor plants requires evidence that the feeding, watering, cleaning, pruning, and treatment needs of indoor pot plants and displays can be met.

The skills and knowledge required to maintain indoor plants must be **transferable** to a different work environment. For example, if plants can be maintained in an atrium with high intensity natural light, it must also be evident that plant maintenance can be undertaken in an office with low light intensity.

What specific knowledge is needed to achieve the performance criteria?	Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below: • identification and characteristics of common indoor plants and their culture • growth requirements of indoor plants • light and moisture tolerance/intolerance for common indoor plant species

- acclimatisation techniques for indoor plants
- common problems that may occur with indoor plants and their treatment
- operations and maintenance of a range of irrigation/subirrigation systems used for watering indoor plants/displays
- methods of disposing of waste to minimise damage to 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
 - interpret enterprise work procedures
 - communicate with clients, team members and supervisor
 - measure quantities and calculate application rates.
-

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 indoor plant maintenance 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) ?	Enterprise work procedures, such as watering plan or nutrition schedule, should be consulted, interpreted and applied to coordinate indoor plant maintenance activities with further clarification sought from the supervisor where necessary.
3. How are activities planned and organised (1) ?	Work activities for indoor plant maintenance routines may need to be organised around client requirements, and there may be some responsibility for coordinating work activities with other members of the work team.

4. How can team work (1) be applied?	Indoor plant maintenance 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 of indoor plants will require mathematical application.
6. How can problem-solving skills (1) be applied?	Problems relating to maintenance of the growing environment, the plants, treatments, watering, tools and equipment, workplace safety and other team members may arise during the maintenance of indoor plants.
7. How can the use of technology (1) be applied?	Technology may be applied in the preparation, use and maintenance of horticultural and test equipment.

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**.

RTF2009A**Perform above ground pruning**

This competency standard covers the process of aerial pruning of ornamental trees and shrubs. Work is usually undertaken from an elevated work platform or through climbing. (The use of climbing ropes and rigging in a tree is covered in the unit *RTC3031A Undertake complex tree climbing*)

Competency is demonstrated by the application of knowledge and skills to a range of aerial pruning tasks such as identifying OHS hazards, selecting, preparing and using tools and equipment. Roles are usually within established enterprise guidelines and are usually performed under routine supervision with intermittent checking.

Element		Performance Criteria	
1	Prepare for pruning operations	1.1	Pruning instructions are obtained and confirmed with the supervisor.
		1.2	OHS hazards are identified, risks assessed and reported to the supervisor.
		1.3	Tools and equipment are selected that are appropriate to the task being undertaken.
		1.4	Pre-operational and safety checks are carried out on pruning tools and equipment, according to manufacturers specifications and work procedures.
		1.5	Personal protective equipment required for above ground pruning is selected and used.
2	Perform remedial and corrective pruning of trees	2.1	Safety harness is fitted and adjusted according to manufacturers guidelines and workplace safety requirements.
		2.2	Ascent to a given position for the pruning operation is achieved using communication and signage techniques according to enterprise requirements.
		2.3	Tools are used to perform remedial and corrective pruning operations according to supervisors instructions.
		2.4	Pruning operations are carried out according to strict OHS requirements and industry codes of practice.
		2.5	Pruning material is dropped in a safe manner into designated drop zone and may include the use of ropes.

		2.6	Descent at the conclusion of the pruning operation is completed in accordance with industry safe work standards.
3	Complete pruning operations	3.1	Tools and equipment are cleaned, maintained and stored according to manufacturers specifications.
		3.2	Pruned material is collected and disposed of and/or recycled in a manner that causes minimal damage to the environment.
		3.3	Workplace records are maintained according to enterprise guidelines.

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 OHS hazards may be relevant to above ground pruning operations?	Hazards may include working at heights, using sharp hand and power tools, falling debris, tangled ropes, power lines, moving machinery and noise.
What tools and equipment may be relevant to this standard?	Tools and equipment may include handsaws, secateurs, ropes, powered pruning equipment, ladders, and small chainsaws, rigging equipment, EWP, trailers and trucks.
What personal protective equipment may be needed to carry out above ground pruning operations?	Personal protective equipment may include boots, overalls, gloves, helmets, goggles, safety harnesses, hearing protection, face shields.
What type of above ground pruning may be required?	Above ground pruning operations may include formative or corrective pruning and may be divided into the areas of crown cleaning, crown thinning, crown reduction, crown lifting or crown renewal.
What OHS requirements should be employed in the pruning process?	OHS requirements may include cleaning and storing of equipment, appropriate use of protective clothing and equipment, safe operation of machinery and equipment, basic first aid, identifying and reporting problems to supervisors.
How may pruning materials be disposed of and/or recycled ?	Pruning material may be gathered and placed in trailers or trucks for removal to rubbish dumps or put through a chipper and recycled.
What workplace records may apply to this standard?	Workplace records may include date, type of pruning carried out, time spent on operations.

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 above ground pruning requires evidence that a person can utilise safe work practices when preparing for pruning operations and demonstrate appropriate selection of pruning requirements, pruning methods and techniques including remedial and corrective pruning of trees and maintenance of a clean and safe work environment.

The skills and knowledge required to perform above ground pruning must be **transferable** to a different work environment. For example, this could include different tree species, locations, enterprises and seasonal 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 competency standard are listed below:

- the Australian Standard AS4373 Amenity Tree Pruning
- the procedures to be followed for safe use of controlled ascending and descending devices
- factors affecting the timing and method of tree or shrub pruning
- basic tree structure and how they grow
- employees OHS responsibilities when carrying out above ground pruning
- the effect of adverse climatic conditions (e.g., rain, hail, wind or very high temperatures), which may prevent or impede above ground pruning 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:

- interpret directions and communicate with fellow team members
- calculate heights and safe working loads
- dispose of plant debris in an environmentally aware and sensitive manner
- minimise noise, dust, and high activity vehicle traffic 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?	Information about specific tasks associated with the job, such as work completion and hazards encountered, should be communicated with the supervisor.
2. How can information be collected, analysed and organised (1) ?	Information about above ground pruning operations such as site location and pruning techniques and equipment to be used, should be discussed with the supervisor.
3. How are activities planned and organised (1) ?	Pre-operational checks on tools, equipment and materials, as well as organisation of work schedules should be arranged before pruning begins.
4. How can team work (1) be applied?	Pruning may involve working with other members of a team to complete pruning operations.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques may be applied when calculating heights and safe working loads.
6. How can problem-solving skills (1) be applied?	Problems relating to pruning techniques, tools and equipment, interruption in pruning program and workplace safety, including working in confined spaces above ground level, may require problem solving.
7. How can the use of technology (1) be applied?	Technology such as elevated work platforms and powered pruning equipment may be used in pruning operations.

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**.

RTF2013A

Pot-on plants

This competency standard covers the process of production of containerised nursery plants after propagation in production nurseries.

Competency is demonstrated by the application of knowledge and skills to a range of tasks involved in the potting-on process, such as the preparation of growing media, potting-up treatments, and nursery hygiene. The work is carried out within routine methods and procedures under supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required.

Element		Performance Criteria	
1	Prepare for potting-on operations	1.1	Workplace information is interpreted and clarified according to instructions.
		1.2	OHS hazards are identified and reported to the supervisor.
		1.3	Tools and equipment for potting-on are selected and used according to enterprise guidelines.
		1.4	Work area is cleaned and disinfected according to company hygiene practices .
		1.5	Materials are collected and checked to ensure sufficient quantity and quality for potting-on operations.
2	Prepare growing media	2.1	Suitable personal protective equipment (PPE) is selected, used and maintained.
		2.2	Media components are measured and mixed according to enterprise guidelines.
		2.3	Growing media is tested to ensure the product complies with media specifications.
3	Pot-on propagated plants	3.1	Plants are prepared for potting in accordance with enterprise guidelines.
		3.2	Plants are graded during the potting process according to quality specifications.
		3.3	Soil level in pots is adjusted to produce a well-furnished plant according to supervisors instructions.
		3.4	Placement and depth of plants comply with the planting method and plan.
		3.5	Potting operations are carried out according to OHS requirements.

4	Complete potting-on operations	4.1	Plants are watered in to eliminate air pockets and prevent dehydration.
		4.2	Cleaning procedures are performed and hygiene practices followed according to enterprise guidelines.
		4.3	Waste is collected and disposed of or recycled to minimise damage to the external environment.
		4.4	Records of potting-on operations are maintained in the appropriate format.

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 workplace information may be relevant when undertaking potting-on operations?	Potting-on plan, Nursery Industry Accreditation Scheme, production statistics, Standard Operating Procedures (SOPs), specifications, work notes, Material Safety Data Sheets (MSDS), manufacturers instructions, product labels, or verbal directions from the manager, supervisor, or senior operator.
What OHS hazards may be identified in the work area?	OHS hazards may include use of hazardous substances, use of potting mix, manual handling, moving equipment, sharp hand tools, and slippery or uneven surfaces.
What tools and equipment may be required for potting-on activities?	Tools and equipment may include potting machine, secateurs, knives and other cutting instruments, pots and containers, bins, trailers, wheelbarrow, trolley, mechanical trolley, small tractors, shovel, trowel, plant supports, ties and rubbish bins.
What hygiene practices may be relevant to this standard?	Hygiene practices may include personal hygiene, removing and disposing of all media and organic waste from production surfaces, disinfecting production surfaces, tools and equipment; footbaths, access restrictions and handling practices, which minimise cross contamination.
What personal protective equipment (PPE) may be needed to carry out potting-on activities?	Personal protective clothing and equipment may include breathing apparatus, gloves, overalls, and boots.
What media components may be required for the preparation of growing media?	Media components may include sand, potting mix, gravel, gro-wool, sawdust, pine bark, perlite, vermiculite, foam, peat, amendments, nutrients, ameliorants, ash, rice hulls, sphagnum moss, and commercial mixes.

What media specifications might be relevant to this standard?	Media specifications may include pH, drainage, aeration, salinity and nitrate levels, and water repellence.
What propagated plants may require potting-on procedures?	Propagated plants may include established plants with developed root systems sown from seed, from cuttings, layering, growing on tissue cultured plants, division or splitting, spores, cloning, and budding or grafting.
How might plants be prepared for potting-on?	Preparation steps may include root trimming, thinning and spreading, and shoot trimming.
What criteria can be used to grade plants during the potting-on process?	Grading parameters may include size, health and potential.
What types of pots may be used during the potting-on process?	Pots may include cells, tubes, standard, squat, planter bags, and root trainers.
What OHS requirements apply to this standard?	OHS requirements may include identifying, assessing and reporting risks; working with hazardous substances such as potting mixes and organic matter, cleaning, maintaining and storing tools and equipment, appropriate use of personal protective equipment, safe operation of tools and equipment, correct manual handling, basic first aid; personal hygiene and reporting problems to supervisors.
What type of waste may be collected?	Waste may include left over media and components, pots and containers, and organic waste.
What records may be relevant to this standard?	Records may include number of plants potted-on, date, problems encountered, and batch number.
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 potting-on plants requires evidence that the trainee can prepare plants for potting-on, prepare the potting media, pot-on plants and provide the necessary after care.

The skills and knowledge required to pot-on plants must be **transferable** to a different work environment. For example, a trainee potting-on ornamental plants must be able to pot-on vines in a production nursery after an induction period.

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 uses and application of different types of potting media
- basic plant physiology relevant to potting-on activities
- enterprise plants and their characteristics
- importance of hygiene and quality control when potting-on and handling potting media
- tool care and use
- common problems that may occur with potting-on plants in a controlled environment and their treatment
- methods of disposing of waste 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:

- participate in teams and contribute to team objectives
- read and interpret enterprise work procedures and maintain required records
- measure out media components accurately.

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 plant potting-on 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) ?	Enterprise work procedures, such as a daily production schedule or potting plan, should be consulted, interpreted and applied to co-ordinate potting-on 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 daily potting up routines may need to be arranged before work periods, 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?	Potting-on 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?	Mixing and testing media, measuring volumes, calibration, and counting, and tallying, may all require mathematical application.
6. How can problem-solving skills (1) be applied?	Problems relating to potting-on, tools and equipment, workplace safety and other team members may arise that require corrective action or consultation with the supervisor.
7. How can the use of technology (1) be applied?	Technology may be applied with the use of machines such as potting machines, soil mixing equipment, soil testing equipment and small tractors and trailers.

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**.

RTF2014A**Prepare and maintain plant displays**

This competency standard covers the process of preparing and maintaining plant displays, either indoors or as seasonal displays of annual and perennial plants in garden beds.

The preparation and maintenance of plant displays requires the application of basic horticultural knowledge including plant types, condition and requirements to maintain the plants in prime condition throughout the duration of the display. The preparation and maintenance of plant displays is likely to be under regular supervision from others. 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 the display site	1.1 The plant display site is prepared according to instructions. 1.2 Materials, tools, equipment and machinery are used according to enterprise work procedures. 1.3 Suitable personal safety equipment is selected and used.
2 Install plants	2.1 Plants are placed in the pattern specified by the plan. 2.2 Accessories and materials chosen are as specified in the plan. 2.3 Work is undertaken according to OHS requirements .
3 Maintain plants	3.1 Health of the plants is monitored to ensure they retain optimum appearance. 3.2 Plants are fertilised and watered to maintain optimum health and appearance. 3.3 Plants are replaced when no longer at optimum health and appearance. 3.4 Rubbish, litter and decaying material are removed from plants, pots and surrounds to maintain optimum appearance of display.

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 plant displays in the context of this standard?	Plant displays include displays for functions, annual bedding displays, herbaceous perennial displays, and indoor presentations.
What tools, equipment and machinery may be required?	Materials, tools, equipment and machinery may include plants, hanging baskets, fertiliser, hand tools such as rakes, shovels, spades, wheelbarrows and hoses, forklifts, trolley.
What safety equipment may be required?	Safety equipment may include signage and barriers.
What accessories and materials may be used for the preparation of plant displays?	Accessories and materials may include sculptures, rocks, water, surface and edge treatments, garden furniture, nursery products, signage, stands, boxes, fabrics and other decorative materials.
What OHS requirements are relevant to this standard?	OHS requirements may include 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.
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 plant displays requires evidence that plant displays can be prepared to a level which satisfies the workplace and plants suitable for the display can be selected and maintained in a healthy, optimal state.

The skills and knowledge required to prepare the display must be **transferable** to a different work environment. For example, it may include displays of annual flowering plants, displays of potted colour or temporary displays for functions.

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:

- planting techniques for annual bed displays
- maintenance techniques for annuals and/or indoor displays
- common problems occurring with display plants
- remedial action required for display plants displaying health problems.

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 with work team members, supervisors, suppliers and customers
- use hand tools and machinery associated with the preparation of plant displays
- use fertilisers and chemicals associated with plant maintenance
- interpret planting plans
- calculate quantities of plants and materials
- effectively complete plant display in a 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 (1)** be applied?

Verbal communication of ideas and information relating to achieving the task.

2. How can **information be collected, analysed and organised (1)**?

Daily work reports may be used to collect information for the supervisors.

3. How are activities planned and organised (1) ?	Activities are planned and organised as a part of a team.
4. How can team work (1) be applied?	Preparing the display may involve working as part of a team to complete the display to plan and on time.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical concepts may be used to calculate plant requirements.
6. How can problem-solving skills (1) be applied?	Problem-solving skills may be required when dealing with unforeseen circumstances.
7. How can the use of technology (1) be applied?	Technological understanding may be required to access information about suitable plants and design ideas, 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**.

RTF2015A**Prepare turf surfaces for play**

This competency standard covers the process of work undertaken by greenkeepers and sports turf curators in preparing turf surfaces for match play.

Preparation of turf surfaces is likely to be carried out under routine supervision with intermittent checking. Competency is demonstrated by the application of knowledge and skills to a range of turf surface preparation tasks. Preparation of turf surfaces is usually within established routines, methods and procedures.

Element	Performance Criteria
1 Prepare the site to be mown	1.1 Services affecting the turf surface are located using site plans and in consultation with the supervisor. 1.2 Permanent obstacles and OHS hazards are identified, risks assessed and reported to the supervisor. 1.3 Movable obstacles are removed before and replaced after mowing and debris is disposed of in an environmentally aware and safe manner according to enterprise work procedures. 1.4 Abnormal conditions or changes in the appearance of the site are reported to the supervisor.
2 Prepare equipment for mowing	2.1 Tools, equipment and machinery are selected that are appropriate to the task being undertaken. 2.2 The mower is calibrated and adjusted to height according to the manufacturers guidelines and enterprise work procedures. 2.3 Pre-operational checks of tools, equipment and machinery are completed according to manufacturers specifications and enterprise work procedures. 2.4 Suitable personal protective equipment (PPE) is selected, used and maintained. 2.5 Suitable safety equipment is selected and erected at the work site during work periods.
3 Mow playing surface	3.1 Grass appearance is assessed against enterprise guidelines and changes in appearance are reported to the supervisor.

		3.2	The mower is matched to any implement attached to it according to manufacturers guidelines and enterprise work procedures.
		3.3	Continuous oversight of mowing activities is maintained according to enterprise work procedures.
		3.4	Mowing is undertaken according to OHS requirements .
4	Undertake final preparation of playing surface	4.1	Mark out tools appropriate for the task being undertaken are selected.
		4.2	Lengths and angles are measured to locate markers and match play equipment according to enterprise work procedures and industry practice.
		4.3	Marking out is completed according to the intended playing surface use and enterprise work procedures.
		4.4	Markers and play equipment are placed where necessary according to enterprise work procedures.
		4.5	Correct manual handling techniques are used when lifting or moving heavy loads.
		4.6	Tools, equipment and machinery are cleaned, maintained and stored according to enterprise work procedures.
		4.7	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 services may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What types of turf surface may require preparation for play?	Turf surfaces may include fine, coarse or juvenile turf.
What permanent obstacles may be identified?	Permanent obstacles may include fixed play equipment, service outlets, ground water, design features, trees and shrubs, and open drains.
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 preparing turf surfaces for play?	Hazards may include people and animals moving across the site during work, obstacles and debris on the site, disturbance or interruption of services, solar radiation, dust, noise, chemicals and hazardous substances, manual handling, moving machinery and machinery parts, uneven surfaces and flying objects.
What or who may be at risk from OHS hazards?	Hazards may pose a risk to workers, equipment, people and animals external to the workplace (such as members of the public, match players, stray pets and wildlife) and the natural environment.
What movable obstacles may be identified?	Movable obstacles may include play equipment, irrigation sprinkler heads, hoses and potted plants.
What debris may be identified on the site?	Plant material (such as fallen tree limbs and small branches, leaves and grass clippings), animal faeces and litter may create debris on the turf surface, as well as equipment and materials debris resulting from work procedures.
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, program for preparation of the turf surface, enterprise standard operating procedures (SOPs), specifications, routine maintenance schedules, work notes; manufacturers service specifications and operators manuals; waste and water disposal, recycling and reuse guidelines; and OHS procedures.
What abnormal conditions may be identified?	Abnormal conditions may include damage to permanent fixtures, displays, playing equipment, presence of animals, and the turf surface.
What tools, equipment and machinery may be required to prepare a turf surface for play?	Mowers may include cylinder, rotary, flail, hand, hand-operated cylinder mowers, ride-on mowers, and 4 wheel drive machinery. Other tools, equipment and machinery may include rollers, super soakers, line marking equipment, brush cutters, edge clippers, edge slicers and water pumps.
What personal protective equipment (PPE) may be required to prepare turf surfaces for play?	Personal protective equipment may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.
What safety equipment may be required?	Safety equipment may include signage and barriers.

What changes in grass appearance may be observed?	Grass appearance changes may be observed as worn, discoloured, dried or over-watered grass patches, and evident weed or other pest invasions of the turf surface.
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 mark out tools may be used when preparing turf surfaces for play?	Mark out tools may include dry and/or wet markers, aerosols, specified measurements, measuring equipment and fitting placements.
What match games might the playing surface use include?	Games may include golf, cricket, tennis, volleyball, rugby, soccer, football, horse racing, hockey, bowls or lacrosse.
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?

Overall competency in preparing turf surfaces for match play requires evidence that a person working in a horticultural environment is aware of the procedures that are used to prepare a range of turf surfaces for play and is confident in applying these procedures.

The skills and knowledge required to apply these procedures must be **transferable** to a wide range of turf surfaces, with different grass types and match play uses. For example, the skills required in placing game equipment, line marking and mowing would be applicable in varying situations. Identifiable hazards may also vary in relation to the public accessibility to a playing surface between match play uses.

Skills required to set up and shut down powered tools and trailed machinery in accordance with manufacturers specifications and identify hazards and assess risks will also be applicable in other work situations, such as renovating grassed areas, establishing turf and supporting the construction of a turf establishment site.

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:

- practical understanding of how the intended use of the turf playing surface and the competition playing requirements will affect preparation of the turf surface
- the effect of outdoor climatic conditions (e.g., rain, hail, extreme heat and/or wind, or very high ultraviolet radiation), which may prevent or impede turf surface preparation programs, or influence the requirements for the playing surface, the selection of tools, machinery and safety equipment to reduce the hazards presented
- the environmental impact of water removal procedures, potential run-off from the site and disposal into drains or reticulation units
- awareness of the potential public nature of turf surface preparation activities and the hazards and responsibilities associated with working in a publicly accessible situation.

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 effectively with team members and supervisor
 - measure distances, angles and calculate areas
 - dispose of excess water, plant debris and litter in a safe, environmentally aware and sensitive manner, such as sorting plant and paper-based waste for recycling, returning chemical containers to the manufacturer, minimising water run-off and non-recyclable waste, and reporting and disposing of biohazardous litter such as used condoms or hypodermic syringes.
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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 turf preparation 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 site and surrounding area should be inspected visually and the information gained discussed with the work team and supervisor. Enterprise work procedures and site plans should be consulted, interpreted and applied to turf preparation activities with further clarification sought from the supervisor where necessary.
3. How are activities planned and organised (1) ?	Equipment, materials and work procedures for turf preparation 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 turf preparation 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, calibrating machinery, estimating quantities of materials and marking out will require mathematical application.
6. How can problem-solving skills (1) be applied?	Problems relating to preparation techniques, processes, the turf area, workplace safety and other team members may arise during the preparation of turf surfaces for play.
7. How can the use of technology (1) be applied?	Technology may be applied in the preparation, use and maintenance of turf preparation tools, equipment and machinery.

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**.

RTF2017A**Prune shrubs and small trees**

This competency standard covers the process of pruning shrubs and small trees. The work is likely to be undertaken from the ground. Aerial pruning from a ladder, an elevated work platform or from climbing ropes and rigging in a tree, are covered in separate units.

Pruning work is likely to be carried out under routine supervision with intermittent checking. Competency is demonstrated by the application of knowledge and skills to a range of pruning tasks and roles usually within established enterprise routines.

Element	Performance Criteria
1 Identify pruning requirements	1.1 Plants that require pruning from the ground are identified according to enterprise work procedures. 1.2 The purpose and method of pruning 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 pruning	2.1 Pruning tools and equipment are selected according to the location, access and size of material to be pruned. 2.2 Pre-operational and safety checks are carried out on pruning tools and equipment according to manufacturers specifications and enterprise work procedures. 2.3 Pruning tools and equipment are prepared for use. 2.4 Suitable safety and personal protective equipment (PPE) is selected, used and maintained.
3 Undertake pruning of shrubs and small trees	3.1 Safety equipment is erected around the pruning site during and between work periods. 3.2 Plant material to be pruned or removed is identified according to the pruning program. 3.3 The pruning program is undertaken according to enterprise work procedures and OHS requirements.

	3.4	Pruning tools and equipment are operated safely and effectively.
	3.5	Where required, hygiene practices are observed during pruning operations.
4. Complete pruning shrubs and small trees	4.1	Prunings and waste material removed from the site are 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	Pruning tools and equipment are cleaned, maintained and stored according to enterprise work procedures.
	4.4	A clean and safe 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 enterprise work procedures may apply to this standard?	Work procedures will be based on sound horticultural pruning principles and practices and may include supervisors oral or written instructions, the pruning 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 shrubs and small trees be pruned?	The goals of pruning may include to shape, form, correct or control growth, prevent disease or damage, promote health, control capacity and vigour, manage the canopy and fruit and flower production, provide ornamental effects or aesthetic appeal, and provide clearance for services, access or cultural practices.
What services may need to be located?	Services may include above ground outlets for water supply, irrigation fittings, 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 pruning shrubs and small trees?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, manual handling, moving powered equipment parts, sharp tools and equipment, uneven surfaces, and flying and falling objects.
What or who may be at risk from OHS hazards?	Hazards may pose a risk to workers, equipment, people and animals external to the workplace (such as members of the public, stray pets and wildlife) and the natural environment.
What ground based pruning tools and equipment may be used?	Tools and equipment may include ropes, handsaws, hand and battery-powered secateurs, pneumatic snips and compressor, hedge trimmers both manual and powered, small chainsaws and chippers.
What preparation may be required before use of pruning tools and equipment?	Preparation may include sharpening, cleaning and oiling.
What safety equipment may be required?	Safety equipment may include signage and barriers.
What personal protective equipment (PPE) may be required to undertake pruning of shrubs and small trees?	Personal protective equipment may include hat, boots, overalls, gloves, and halter, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hardhat.
What OHS requirements may be relevant 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, drinking to avoid dehydration, safe operation of tools and equipment, correct manual handling, basic first aid, personal hygiene and reporting problems to supervisors.
What hygiene practices may be required while pruning?	Hygiene practices may include sterilisation of tools between prunings of different plants, removal of debris as pruning work is undertaken, washing hands and refraining from smoking to prevent virus transmission.
What materials may prunings include?	Prunings may include small to medium branches, foliage, leaves, sticks, buds, flowers, fruit, bark, plant debris and chipped material.
How may a clean and safe area be maintained?	Tasks may include keeping public access paths and roads clear of debris, waste, tools and equipment, disabling tools and equipment after use, using signage and barriers where necessary and removing debris and waste from the work area swiftly and efficiently.

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 pruning shrubs and small trees requires evidence that a person using appropriate pruning tools and equipment can effectively achieve the desired tree and shrub forms in relation to appearance, capacity and vigour, yield quantities and clearance as required by individual enterprises.

The skills and knowledge required to apply pruning techniques must be **transferable** to different work environments. For example, pruning techniques from the ground are required for a range of stages of plant growth in a number of horticultural industries, 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:

- practical awareness of the principles of pruning and the methods used to achieve plant management goals
- effects on plant growth, habit and production levels of pruning operations in relation to the purposes of the enterprise
- the purpose of tools and equipment used for pruning and the correct and safe use and care of these tools and equipment
- the effect of outdoor climatic conditions (e.g., rain, hail, days of extreme heat and/or wind, or very high ultraviolet radiation), which may prevent or impede pruning programs, or influence the selection of pruning tools, equipment and safety equipment to minimise the hazards presented
- awareness of the potential public nature of pruning work sites and the hazards and responsibilities associated with working in a publicly accessible situation
- plant names, growth habits, flowering times and effect of pruning on fruit production

- hygiene practices and plant health principles (e.g., CODIT) relevant to pruning.

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
- understand work procedures
- communicate with team members and supervisor
- calibrate tools, estimate fuel levels, quantities of plant material to be pruned, such as counting buds or flowers to be retained along a branch or cane, and numbers of branches to be retained per plant or bay
- minimise noise and dust 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.

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1. How can **communication of ideas and information (1)** be applied?

Ideas and information relating to pruning activities, plant species and growth habits encountered should be discussed with other members of the work team and the supervisor.

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2. How can **information be collected, analysed and organised (1)**?

The pruning site and surrounding area should be inspected visually and the information gained discussed with the work team and supervisor.

Enterprise work procedures and site plans should be consulted, interpreted and applied to co-ordinate pruning activities with further clarification sought from the supervisor where necessary.

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3. How are **activities planned and organised (1)**?

Equipment, materials and work procedures for pruning 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 pruning 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?	Simple numeracy in relation to shrub, tree and pruned material quantity and working hours, as they apply to daily performance, will be required.
6. How can problem-solving skills (1) be applied?	Problems in applying pruning methods to the aims of pruning or varying shrub and tree forms, workplace safety and other team members may arise during the pruning of shrubs and small trees.
7. How can the use of technology (1) be applied?	Technology may be applied in the preparation, use and maintenance of pruning tools and equipment.

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**.

RTF2019A

Renovate grassed areas

This competency standard covers the process of basic renovation practices that are used to restore turf health and condition on a range of grassed areas.

Renovation work is likely to be carried out under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Competency is demonstrated by the application of knowledge and skills to a range of turf renovation tasks. Turf renovation is usually within established routines, methods and guidelines.

Element		Performance Criteria	
1	Prepare turf area for renovation	1.1	Services are located using site and construction plans and in consultation with the supervisor.
		1.2	OHS hazards are identified, risks assessed and reported to the supervisor.
		1.3	Suitable safety equipment is selected for the turf renovation program.
		1.4	The environmental implications of the turf renovation program are identified and the likely outcomes assessed and reported to the supervisor.
		1.5	Preparation of turf area is carried out according to enterprise work procedures and site and construction plans.
2	Prepare equipment for turf renovation	2.1	Hand tools and renovation machinery are selected that are appropriate to the task being undertaken.
		2.2	Pre-operational and safety checks are carried out on hand tools and renovation machinery, according to manufacturers specifications and enterprise work procedures.
		2.3	Suitable personal protective equipment (PPE) is selected, used and maintained.
3	Undertake turf renovation	3.1	Safety equipment is erected around trench lines, holes and other disturbed surfaces during and between work periods.
		3.2	Correct manual handling techniques are used when lifting or moving heavy loads.
		3.3	The turf renovation program is undertaken according to OHS requirements .

	3.4	Turf renovation tools and machinery are operated safely and effectively.
4. Complete turf renovation	4.1	Plant debris and waste material removed from the site are disposed of in an environmentally aware and safe manner according to enterprise work procedures.
	4.2	Tools and machinery are cleaned, maintained and stored according to enterprise work procedures.
	4.3	A clean and safe area is maintained throughout and on completion of work.
	4.4	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 services may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
How may OHS hazards be identified?	Hazards may be identified through visual inspection of the area, understanding of site and construction plans, and enterprise work procedures.
What OHS hazards may be associated with renovating turf areas?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, chemicals and hazardous substances, manual handling, moving machinery and machinery parts, uneven surfaces and flying objects.
What safety equipment may be required?	Safety equipment may include signage and barriers.
What are the environmental implications when performing turf renovation?	Environmental implications may include the contamination of off-site ground water or soils from solids, debris, nutrients or chemicals, and levels of noise, dust, high activity vehicle traffic and water run-off.
What tasks may be undertaken in the turf renovation program ?	The program may include scarifying, de-thatching, over-sowing, turf replacement (e.g., seeds, sod, stolons, plugs or hydro mulching), checking surface and/or sub-surface drains, soil improvement, soil aeration, fertiliser application and top dressing.

What tasks may preparation of turf areas include?	Tasks may include area measurement, peg placement and erection of signage and safety barriers.
What types of turf area may require renovation?	Turf areas may include coarse turf, fine turf, localised areas, and large-scale renovation.
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 turf renovation program, enterprise standard operating procedures (SOPs), specifications, routine maintenance schedules, work notes; product labels and Material Safety Data Sheets (MSDSs); manufacturers service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.
What hand tools may be needed?	These may include rake, spreader, shovel, and turf spade and hose.
What renovation machinery may be needed?	Machinery may include trailed or motorised renovating equipment, scarifier, de-thatcher, coring machines and core harvesters.
What personal protective equipment (PPE) may be required to undertake turf renovation?	Personal protective equipment may include hat, boots, overalls, gloves, goggles, respirator or face mask, hearing protection, sunscreen lotion and hardhat.
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, basic first aid, personal hygiene and reporting problems to supervisors.
How may a clean and safe area be maintained?	Tasks may include keeping public access paths clear of debris, waste, tools, equipment and machinery, disabling equipment and machinery after use, using signage and safety barriers during and removing after turf renovation activities are completed, and removing debris and waste from the work area swiftly and efficiently.
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?

Overall competence in renovating grassed areas requires evidence that a person working in a horticultural environment is aware of the procedures that are used to restore turf health and condition on a range of grassed areas and is confident in applying these procedures.

The skills and knowledge required for this standard must be **transferable** to a wide range of work environments, with different grass types and end use. For example, turf surfaces serve many purposes, including public access areas such as sports playing surfaces, parks and reserves and median strips, and restricted access areas such as private gardens and display sites.

The skills and knowledge required to renovate grassed areas, such as operating trailed and powered machinery and hand tools, interpreting site and construction plans, identifying and minimising hazards and maintaining clean and safe work areas, are also required when supporting the construction of a turf area and establishing turf.

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 purpose of turf renovation programs in maintaining turf presentation, particularly in relation to the end use of the turf
- the principles and application of site and construction plans, and work programs to the turf renovation area
- the effect of adverse outdoor climatic conditions (e.g., rain, hail, extreme heat and/or wind, or very high ultraviolet radiation), which may prevent or impede turf renovation programs, or influence the selection of tools, machinery and safety equipment to minimise the hazards presented
- awareness of the potential public nature of turf renovation work sites and the hazards and responsibilities associated with working in a publicly accessible situation
- various requirements of turf species and their culture, different soil preparations for renovation, and effective and safe use of tools and machinery.

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 instructions
 - communicate effectively with team members and supervisor
 - measure distance and calculate area
 - minimise noise, dust, high activity vehicle traffic and water run-off to prevent nuisance-level environmental disturbance.
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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 turf renovation 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 site and surrounding area should be inspected visually and the information gained discussed with the work team and supervisor. Enterprise work procedures and site and construction plans should be consulted, interpreted and applied to co-ordinate turf renovation activities with further clarification sought from the supervisor where necessary.
3. How are activities planned and organised (1) ?	Equipment, materials and work procedures for turf renovation 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 turf renovation 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, calibration of machinery and estimating quantities of materials will require mathematical application.

6. How can problem-solving skills (1) be applied?	Problems relating to renovation techniques, processes, the turf area, workplace safety and other team members may arise during the renovation of a grassed area.
7. How can the use of technology (1) be applied?	Technology may be applied in the preparation, use and maintenance of turf renovation machinery and equipment.

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, for example:

RTF2020A Assist with turf construction

RTF2023A Support turf establishment

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**.

RTF2020A**Assist with turf construction**

This competency standard covers the process of support a worker provides to others in a team who are constructing soil profiles for the establishment of turf.

Construction work is likely to be under routine supervision with intermittent checking.

Competency is demonstrated by the application of knowledge and skills to a range of soil profile construction tasks. Installation of irrigation and drainage systems is covered in other units at packaged at AQF 3. The work is usually within established routines, methods and procedures.

Element		Performance Criteria	
1	Prepare for soil profile construction	1.1	Services are located using site and construction plans and in consultation with the supervisor.
		1.2	OHS hazards are identified, risks assessed and reported to the supervisor.
		1.3	Suitable safety equipment is selected for the soil profile construction program.
		1.4	The construction site is prepared according to enterprise work procedures and the construction plan.
2	Prepare equipment for soil profile construction	2.1	Construction tools, equipment and machinery are selected that are appropriate to the task being undertaken.
		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	Suitable personal protective equipment (PPE) is selected, used and maintained.
3	Undertake soil profile construction	3.1	The base is graded to the specified level and on a consistent slope, and is consolidated to achieve uniform compaction over the entire site, according to enterprise work procedures.
		3.2	Trench lines are dug to the specified depth, width and fall, with all superfluous material evacuated and stored safely according to the construction plan and enterprise work procedures.
		3.3	Construction of the soil profile is undertaken according to OHS requirements .

4	Restore the site after drainage and irrigation installation	4.1	Trenches are back-filled with specified construction materials, consolidated and levelled according to the construction plan and enterprise work procedures.
		4.2	The construction site is levelled to visual satisfaction as each layer of the soil profile is installed.
		4.3	The construction site is hand watered thoroughly on completion according to enterprise work procedures.
		4.4	Waste material is removed from the construction site and disposed of in an environmentally aware and safe manner according to enterprise work procedures.
		4.5	Tools, equipment and machinery are cleaned, maintained and stored according to enterprise work procedures.
		4.6	A clean and safe area is maintained throughout and upon completion of work according to enterprise work procedures.
		4.7	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 services may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
How may OHS hazards be identified?	Hazards may be identified through visual inspection of the area, understanding of site and construction plans, and enterprise work procedures.
What OHS hazards may be associated with supporting the construction of soil profiles?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil and water-borne micro-organisms, chemicals and hazardous substances, manual handling, moving machinery and machinery parts, uneven surfaces and flying and falling objects.
What safety equipment may be required?	Safety equipment may include signage and barriers.

What tasks may preparation of the construction site include?	Tasks may include supporting surveying, area measurement, marking out, peg placement and erection of signage and safety barriers.
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, soil profile construction 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.
What tools, equipment and machinery may be required?	Tools, equipment and machinery may include hand tools such as rakes, shovels, spades, rollers, wheelbarrows, hoses and hose fittings, drag mats, level frames, bunker rakes, and machinery such as bobcats, ditch witches, backhoes, front-end loaders, graders, mechanical rollers, trucks, hydraulic trailers, and tractors and 3-point linkage equipment.
What personal protective equipment (PPE) may be required to support the construction of soil profiles?	Personal protective equipment may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hardhat.
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, basic first aid, personal hygiene and reporting problems to supervisors.
What waste material may be relevant to this standard?	Waste material may include unused construction and excavated materials, and 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.

What tasks may be undertaken to maintain a **clean and safe area**?

Tasks may include keeping public access paths clear of debris, waste material, tools, equipment and machinery, disabling equipment and machinery after use, using signage and safety barriers during and removing after construction activities are completed, and swiftly and efficiently removing 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 supporting the construction of soil profiles for turf establishment requires evidence that a person using construction equipment and materials can effectively assist other workers in the required work procedures.

The skills and knowledge required to construct a soil profile for turf establishment must be **transferable** to a different work environment. For example, the excavation of trenches, backfilling techniques and practical knowledge of the constructed soil profiles for a range of turf surfaces are also applicable when establishing, monitoring and maintaining a wide range of turf surfaces.

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:

- awareness of irrigation and/or drainage installation procedures and the care needed in laying soil profiles to accommodate and work around these installations
- awareness of the structural relationship between a well-constructed soil profile and the achievement of enterprise standards for the quality and appearance of the turf to be established on the profile, particularly in relation to the end use of the turf surface
- awareness of the environmental implications associated with disturbing and installing soil profiles, such as disturbance level noise, dust and water run-off, and the exacerbation or prevention of the contamination of ground water, salination, erosion and interruption to existing native ecosystems

- awareness of the potential public nature of soil profile construction activities and the hazards and responsibilities associated with working in a publicly accessible situation
- the effect of adverse outdoor climatic conditions (e.g., rain, hail, days of extreme heat and/or wind, or very high ultraviolet radiation), which may prevent or impede construction programs, or influence the selection of tools, machinery and safety equipment to reduce 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 effectively with team members and supervisors
- read, understand and interpret written instructions and work procedures
- measure distances and calculate depth, area, volume and capacity accurately
- 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.

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1. How can **communication of ideas and information (1)** be applied?

Ideas and information relating to soil profile construction 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 construction 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 and construction plans should be consulted, interpreted and applied to co-ordinate soil profile construction activities, with further clarification sought from the supervisor where necessary.
3. How are activities planned and organised (1) ?	Equipment, materials and work procedures for construction activities will need to be arranged before and between work periods and there will be some responsibility for co-ordinating work with others.
4. How can team work (1) be applied?	The soil profile construction program will 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 and volumes, calibrating machinery, estimating quantities of materials and marking out will require mathematical application.
6. How can problem-solving skills (1) be applied?	Problems relating to the site and environmental conditions, construction techniques, processes, workplace safety and other team members may arise during the construction of soil profiles for turf establishment.
7. How can the use of technology (1) be applied?	Technology may be applied in the preparation, use and maintenance of construction tools, equipment and machinery.

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**.

RTF2023A**Support turf establishment**

This competency standard covers the process of supporting the establishment of turf by seed or sod for sporting, recreational, landscaping, community and private use.

Supporting turf establishment is likely to be carried out 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 turf establishment tasks. Turf establishment is usually undertaken within established routines, methods and procedures.

Element		Performance Criteria	
1	Prepare to establish a planted area	1.1	The planting site, planting methods and turf plant species and cultivars are identified according to the site plan and enterprise work procedures .
		1.2	Materials, tools, equipment and machinery are selected according to planted area design requirements and 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	The environmental implications of the turf establishment program 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	Suitable safety and personal protective equipment (PPE) is selected, used and maintained.
2	Prepare the planting area	2.1	Layout of services is recognised, depths checked against the site plan and discrepancies are reported to the supervisor.
		2.2	Earthworks are undertaken according to OHS requirements .
		2.3	All competing plants are treated according to enterprise work procedures.
		2.4	Soil is assessed for moisture, tilth, compactness, depth and decaying plant material according to enterprise work procedures.

		2.5	Soil additives are selected and applied according to enterprise work procedures.
		2.6	The entire surface is raked out evenly to achieve a consistent texture and the area is uniformly levelled to defined contour requirements according to enterprise work procedures.
		2.7	The planting site is watered according to the planting method and enterprise work procedures.
		2.8	Debris and pollutants are removed from the site and disposed of in an environmentally aware and safe manner according to enterprise work procedures.
3	Plant turf	3.1	All turf plant material is inspected prior to being planted and material with major defects is discarded according to enterprise work procedures.
		3.2	Hygiene practices with use of tools and equipment are clarified with supervisor and observed in establishment work.
		3.3	Turf plant material with minor defects is trimmed or treated to maintain health and vigour according to enterprise work procedures.
		3.4	Seed spread by hand and mechanically is evenly distributed over the whole planting area with no overlap and no areas missed according to enterprise work procedures.
		3.5	The entire sown surface is evenly raked and thoroughly watered according to enterprise work procedures.
		3.6	Sods are correctly oriented, rolled evenly onto a moist surface and interlocked in the pattern and area according to enterprise work procedures.
		3.7	Newly laid turf is watered thoroughly to encourage establishment according to enterprise work procedures.
4	Provide post-planting care	4.1	The planted site is protected from animals, pedestrian and vehicular traffic according to enterprise work procedures.
		4.2	The planted site is rolled to a work pattern planned to cover the area evenly and efficiently and rolling is even, flat and uniform with no disturbance according to enterprise work procedures.
		4.3	Turf is mown according to a pattern and height specified in enterprise work procedures.

		4.4	Top dressing is applied evenly to the required depth over the whole area and is worked or rubbed into the surface according to enterprise work procedures.
		4.5	New turf is watered according to irrigation system manufacturers specifications and enterprise work procedures.
		4.6	Water is applied by hand to dry or under-watered plants according to the requirements of the turf species and cultivar, and according to enterprise work procedures.
		4.7	Watering patterns are checked for dry spots and blockages and faults are rectified according to manufacturers specifications and reported to the supervisor.
5	Monitor turf health	5.1	Turf structure is observed for quality according to published data, enterprise work procedures and industry standards.
		5.2	Damaged turf is identified according to published data, suppliers specifications, historical data and enterprise work procedures.
		5.3	Plants incorrectly planted or situations that will prevent plants from reaching their full potential are identified, recorded and reported to the supervisor according to enterprise work procedures.
6	Complete establishment of the planted area	6.1	Earthworks are finished off to plan specifications and enterprise work procedures.
		6.2	Waste material is removed from the planting site and disposed of in an environmentally aware and safe manner according to enterprise work procedures.
		6.3	Tools, equipment and machinery are cleaned, maintained and stored according to enterprise work procedures.
		6.4	A clean and safe work area is maintained throughout and on completion of work.
		6.5	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 planting sites may be relevant to this standard?	Planting sites may include sports turf or recreational turf surfaces, parks, gardens, landscaped areas and recreational reserves.
What planting methods are relevant to this standard?	Planting methods may include hand and machine-assisted sowing, installing sod, stolons, plugs and hydro mulching.
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 turf establishment program, irrigation scheduling, 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.
What materials may be required to support turf establishment?	Materials may include soil additives, materials for protecting planted areas, and weed, pest and disease control chemicals and materials.
What tools, equipment and machinery may be required to support turf establishment?	Hand tools may include knives, trowels, spades, forks, rakes, hoes, shovels, buckets, brooms, wheelbarrows, hoses and hose fittings, secateurs or snips, seeders, spreaders, turf spades, rollers and backpack spray equipment. Equipment and machinery may include trailed or motorised seeders, spreaders, spray equipment, pumps and pump fittings, mechanical rollers, brush cutters, edge clippers, edge slicers, renovating equipment, scarifiers, de-thatchers, coring machines and core harvesters, bobcats, ditch witches, backhoes, front-end loaders, graders, trucks, hydraulic trailers, tractors and 3-point linkage equipment, and irrigation and drainage systems and components. Mowers may include cylinder, rotary, flail, hand, hand-operated cylinder mowers, greens mowers, large ride-on fairway mowers, triplex greens mowers and 4-wheel drive machinery.

What OHS hazards may be associated with supporting turf establishment?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil, water and air-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, 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 personal protective equipment (PPE) may be required to support turf establishment?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, spray jacket or suit, hearing protection, sunscreen lotion and hardhat.
What services may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What earthworks may be required when establishing a turf surface?	Earthworks may include ripping and cultivating the area to be planted, and supporting the construction of soil profiles for sports turf playing surfaces and the installation of irrigation and drainage systems.
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 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, basic first aid, personal hygiene and reporting problems to supervisors.
What competing plants may require control before establishing turf?	Competing plants may include established plants that require pruning back or weed species that require control techniques such as manual removal, herbicide application, laying weed mats and mulching.
What soil additives may be required for the successful establishment of turf surfaces?	Soil additives may include lime, gypsum, emollients, fertilisers, organic materials and fungal and disease control agents.
What major defects may require the rejection of turf plant material?	Major defects include any condition that will prevent the turf plant from reaching its full potential, including wilt, stunted growth and root damage.

What minor defects may be repairable in required turf plant material?	Minor defects that may be repaired may include damage sustained by turf plant material that can be trimmed or treated so that the plants can still reach their desired potential.
What disturbance should be avoided when rolling new turf?	Disturbance may include overlapping sods or parting sods.
What factors may indicate level of turf quality ?	Factors may include upright growth, apparent stress and uniformity or variation in the growing pattern.
What properties of damaged turf may be identified?	Properties of damaged turf may include strength, wear tolerance, growth rate, colour and recovery rate.
What waste material may be relevant to this standard?	Waste material may include unused earthworks materials, and 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.
What tasks may be undertaken to maintain a clean and safe work area ?	Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of turf establishment activities, safely storing materials on site, using signage and safety barriers during and removing after turf establishment 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 supporting turf establishment requires evidence that a person is able to prepare for establishment activities, prepare the site, install plants, provide post-planting care of the planted area and monitor the health of the newly established turf.

The skills and knowledge required to support turf establishment must be **transferable** to a different work environment. For example, a person who can support turf establishment for a domestic garden should be able to transfer that knowledge, and those skills, to another workplace where they are required to support the establishment of a turf surface in a recreational park for public use, 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 purpose of the turf establishment program in relation to enterprise presentation standards and the end use of the turf surface
- the characteristics of enterprise turf species and cultivars, including growth rates, and their planting and post-planting cultural requirements
- irrigation and drainage system design and operational techniques to deliver maximum benefits to the planted area while minimising detrimental environmental impacts
- the effect of adverse outdoor climatic conditions (e.g., rain, hail, total fire ban days, or very high ultraviolet radiation), which may prevent or impede turf establishment activities, or influence the selection of tools, machinery and safety equipment to minimise the hazards presented
- the potential public nature of turf establishment work sites and the hazards and responsibilities associated with working in a publicly accessible situation.

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 turf establishment specifications
 - measure quantities, calculate material requirements, area, volume, ratios and application rates, and calibrate machinery
 - co-ordinate own activities with the work group
 - minimise noise, dust, high activity vehicle traffic and water run-off to prevent nuisance-level environmental disturbance.
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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 turf establishment 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 turf establishment site and surrounding area should be inspected visually and the information gained discussed with the work team and supervisor. Enterprise work procedures and site and establishment plans should be consulted, interpreted and applied to co-ordinate turf establishment activities, with further clarification sought from the supervisor where necessary.
3. How are activities planned and organised (1) ?	Equipment, materials and work procedures for turf establishment activities will need to be arranged before and between work periods and there will be some responsibility for co-ordinating work with others.
4. How can team work (1) be applied?	Supporting the turf establishment program will 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 and volumes, calibrating machinery, estimating quantities of materials and marking out will require mathematical application.
6. How can problem-solving skills (1) be applied?	Problems relating to the site and environmental conditions, establishment techniques, processes, workplace safety and other team members may arise during the establishment of turf surfaces.
7. How can the use of technology (1) be applied?	Technology may be applied in the preparation, use and maintenance of turf establishment tools, equipment and machinery.

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**.

RTF2024A**Tend nursery plants**

This competency standard covers the process of tending containerised nursery plants.

Plant maintenance is likely to be carried out under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Competency is demonstrated by the application of knowledge and skills to a range of plant maintenance tasks. Maintenance of nursery plants usually follows established enterprise guidelines.

Element	Performance Criteria
1 Maintain the nursery environment	1.1 OHS hazards in the nursery environment are identified, risks assessed and reported to the supervisor. 1.2 Plant growth and health requirements are clarified with the supervisor. 1.3 Irrigation system components are serviced and faulty parts are repaired or replaced. 1.4 Performance parameters of the irrigation system are checked to ensure optimum performance. 1.5 Temperature controls are monitored to ensure specified temperatures are maintained. 1.6 Nursery hygiene practices are followed to minimise risk of contamination.
2 Maintain nursery plants	2.1 Suitable personal protective equipment (PPE) is selected, used and maintained. 2.2 Common problems in nursery plants are recognised, and rectified and/or reported to the supervisor. 2.3 Tools and equipment are selected and used for plant maintenance. 2.4 Treatments are applied to assist plant growth as directed by the supervisor. 2.5 Water is applied in the quantity and method specified by enterprise work procedures. 2.6 Nursery operations are undertaken according to OHS requirements.
3 Complete nursery plant maintenance operations	3.1 Workplace information is recorded in the appropriate format. 3.2 Waste is collected and disposed of or recycled to minimise damage to the external environment.

- 3.3 Tools and equipment are cleaned and stored according to enterprise work 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 particular training and assessment requirements may depend on the work situations available.

What OHS hazards may be associated with tending nursery plants?	Hazards may include the use of chemicals and hazardous substances, sharp tools, manual handling, solar radiation and operating spray equipment.
What areas may be considered part of the nursery environment ?	The nursery environment may include glasshouses, shade houses and hardening-off areas.
What is covered by plant growth and health requirements ?	Plant growth requirements may include watering, light levels, fertiliser regime, pruning and shaping, repotting, and staking.
What types of irrigation system may be relevant to this standard?	Irrigation systems may include ebb and flow, sprinklers, capillary beds, sprayers and drippers.
What irrigation system components may require servicing?	Irrigation system components may include pumps, lines, pipes, sprinklers, sprinkler heads, solenoids, filters, controllers, sprayers and drippers.
What performance parameters should be checked to ensure the effective operation of the irrigation system?	Checks may include identifying dry spots and blockages, water dumping, abnormal water flow, and leaking heads, lines and pipes.
What nursery hygiene practices should be considered when tending plants?	Hygiene practices may include removing weeds, dead or diseased plant material; washing the work area on transfer of plants; disinfecting tools, equipment and work areas, and using foot baths on entry to different work areas.
What personal protective equipment (PPE) may be required to tend nursery plants?	Personal protective equipment may include hat, boots, overalls, gloves, sunscreen lotion, goggles, face mask, respirator, spray jacket or suit.
What common problems may be encountered during plant maintenance operations?	Common problems may include dehydration, pests, diseases, nutrient deficiencies and deformed plants.
What types of nursery plants may be relevant to this standard?	Nursery plants may include containerised, balled and bagged, in-ground, aquatic, stock plants, cuttings and rootlings.

What tools and equipment are likely to be used for plant maintenance?	Tools and equipment may include secateurs, water spray containers, dibblers, sprayers, plant supports, ties and rubbish bins.
What treatments are likely to be selected and applied to nursery plants?	Treatments may include pesticides, fungicides, fertiliser, mulching, removing weeds, removing dead material, tip pruning, formative pruning, aeration, staking, tying, spacing and thinning.
What methods may be used to apply water to nursery plants?	Water may be applied manually or by operating the irrigation system.
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 Nursery Industry Accreditation Scheme, plant care program, enterprise standard operating procedures (SOPs), specifications, production schedules, routine maintenance schedules, work notes, product labels, and Material Safety Data Sheets (MSDSs); Integrated Pest Management (IPM) programs; manufacturers service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.
What OHS requirements may be relevant 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, safe operation of tools and equipment, safe handling, use and storage of chemicals and hazardous substances, correct manual handling, basic first aid, personal hygiene and reporting problems to supervisors.
What workplace information is likely to be recorded?	Records may include environmental parameters, date of treatments, type of treatment and rate of treatment.
What type of waste may be collected?	Waste may include left over treatments, unused containers, plant debris or faulty irrigation components.
What are the implications for the external environment when performing this unit?	Environmental implications may include the contamination of off-site ground water or soils from solids, nursery debris, nutrients or chemicals.
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 tending nursery plants requires evidence that a nursery environment can be maintained, daily water requirements can be applied, plants can be treated and workplace information can be recorded.

The skills and knowledge required to tend nursery plants must be **transferable** to a different work environment. For example, if plants can be tended in a glasshouse, it must also be evident that plants can be tended in a shade house or hardening-off area.

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 requirements of a range of containerised plants growing in a nursery setting
- applied understanding of the importance of hygiene and quality control when tending nursery plants
- common problems that may occur with containerised plants in a controlled environment and their treatment
- Nursery Industry Water Management Best Practice Guidelines, 1997
- principles and operations of a range of irrigation systems used in nurseries
- methods of disposing of waste 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:

- participate in teams and contribute to team objectives
 - read and interpret enterprise work procedures
 - communicate effectively with team members and supervisor
 - measure quantities and calculate application rates
 - minimise noise, dust and water run-off to prevent nuisance-level environmental disturbance.
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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 plant maintenance 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) ?	Enterprise work procedures, such as a daily watering plan, should be consulted, interpreted and applied to co-ordinate plant maintenance 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 daily plant maintenance routines may need to be arranged before work periods, 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?	Nursery plant maintenance 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 of nursery plants will require mathematical application.
6. How can problem-solving skills (1) be applied?	Problems relating to maintenance of the nursery environment, the nursery plants, treatments, watering, tools and equipment, workplace safety and other team members may arise during the maintenance of nursery plants.
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.

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, for example:

RTC2404A Treat plant pests diseases and disorders

RTC2706A Apply chemicals under supervision

RTC2016A Recognise plants

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**.

RTF2025A**Transplant small trees**

This competency standard covers the process of tree and shrub transplanting without the use of lifting machinery and equipment and applies to domestic, commercial and natural landscapes.

Transplanting is usually performed under routine supervision and with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Competency is demonstrated by the application of knowledge and skills to a range of transplanting tasks and roles within established enterprise guidelines.

Element	Performance Criteria
1 Prepare for tree or shrub removal	1.1 Transplanting plans/instructions are obtained and confirmed with the supervisor.
	1.2 OHS hazards are identified, risks assessed and reported to the supervisor.
	1.3 All underground services are located according to supply authorities guidelines.
	1.4 Tools and equipment appropriate to the task being undertaken are prepared and used according to supervisors instructions and manufacturers guidelines.
	1.5 Suitable personal protective equipment (PPE) is selected, used and maintained.
2 Prepare tree or shrub and undertake earthworks for removal	2.1 Crown is prepared according to requirements of species, time of removal and enterprise work procedures .
	2.2 Site is cleared and watered prior to transplanting.
	2.3 Root ball width and depth is confirmed with the supervisor to ensure the root system can colonise new ground according to the needs of the species and size of the specimen.
	2.4 Trench is dug around the plant without damaging large roots according to enterprise work procedures.
	2.5 Root ball is undercut to ensure the ball comes away cleanly and with minimum stress to the plant according to enterprise work procedures.
	2.6 Root system is prepared and appropriate treatments hygienically applied to ensure viability of the plant is maintained.

3	Remove tree or shrub from original site	3.1	Root ball is bound with appropriate material to ensure adequate soil is retained.
		3.2	Root ball is kept moist prior to transportation and installation.
		3.3	Tree or shrub is prepared and handled to minimise damage during handling and transportation.
		3.4	Safe manual handling techniques are employed when lifting.
4	Replant tree or shrub in new environment	4.1	Appropriate drainage is incorporated to ensure root system survival is maintained according to the needs of the species and conditions of the planting site.
		4.2	Soil is modified according to the cultural requirements of the species.
		4.3	Tree or shrub is planted in prepared hole according to enterprise work procedures.
		4.4	Plant support devices are installed according to the supervisor's instructions and/or installation plan.
5	Complete transplant operations	5.1	Transplanted plant is maintained with regular aftercare activities appropriate to the requirements of the species.
		5.2	Tools and equipment are cleaned, maintained and stored according to enterprise guidelines.
		5.3	Waste is collected and disposed of or recycled to minimise damage to the external environment.
		5.4	Records of transplant are maintained in the appropriate format.

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 size of trees and shrubs may be relevant to this standard?	Trees and shrubs may include plants that can be transported/carried in a wheelbarrow, with an estimated weight of up to 80kg.
What OHS hazards may be associated with the transplanting of small trees?	Hazards may include power lines, water pipes, gas lines, heat and cold, solar radiation, manual handling, working alone, fatigue, insects and animals, dust, noise, uneven surfaces, holes, sharp hand tools and equipment, and incorrectly stored tools and equipment.

What services may need to be located?	Services may include power (electricity), water supply, irrigation, stormwater, drainage, gas and telecommunications.
What tools and equipment may be used to transplant trees and trees?	Tools and equipment may include wheelbarrows, ropes, jacks, tree frames, tie downs, hand tools, secateurs, pruning saw, loppers, spades, shovels, trenching shovel, rakes, stakes or pegs, hoses and fittings.
What PPE may be required to carry out transplanting operations?	PPE may include boots, overalls, gloves, sun hats and sunscreen lotion.
How might the crown be prepared before undertaking earthworks for removal?	Preparing the crown may involve pruning, deleafing and applying anti-transpirants.
What enterprise work procedures may apply to this standard?	Enterprise work procedures may include supervisors instructions and orders, transplanting plans and specifications, installation plans, company standard operating procedures (SOPs) and OHS procedures.
What requirements may apply to the digging of a trench for transplanting operations?	Trenching requirements may include dimensions such as distance from trunk and depth.
What treatments may be applied to the root system to ensure maximum viability?	Root treatment may include trimming, “bare rooting”, dipping (fungicides, bacterial and hormone).
What material may be used for binding?	Appropriate material may include hessian sacking and wire frames.
How might the tree or shrub be prepared and handled prior to transportation?	The crown may need to be bound and supported, and the tree handled by root ball (not trunk or crown).
What appropriate drainage may need to be applied to the planting site?	Appropriate drainage may include artificial drainage such as slotted agricultural pipe and mounds.
How might soil be modified to make it suitable for the transplant?	Soil modifications may include addition of nutrition/fertiliser or other organic compounds, conditioning additives to effect a change in the water holding capacity of the soil, soil structure, soil texture, and pH, such as gypsum, sand, lime, dolomite, chemicals and mulches.
What plant support devices may apply to this standard?	Tree support devices may include stakes and guy ropes.

What aftercare activities may be required to maintain plant health and quality?	Aftercare may include weed and disease control, mulching, fertilising, watering, pruning and securing.
What waste material may be relevant to this standard?	Waste material may include unused work material, plant debris and other organic compounds, 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.
What records may be relevant to this standard?	Records may include site and plant details, materials used for transplanting, treatments/amendments applied, chemical use, date, problems encountered.
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 transplanting small trees requires evidence that a person can prepare a tree for transplanting, undertake earthworks for removal, remove the tree from the original site, install the tree in a new environment and provide aftercare to ensure the ongoing viability of the tree.

The skills and knowledge required to transplant small trees must be **transferable** to a different work environment. For example, this may include different species and cultivars of trees and shrubs, soil types, locations and climatic regions.

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: • trees and shrubs that are most suited to transplanting • factors affecting the timing and method of lifting trees and shrubs • causes of damage or drying-out of trees and shrubs, and prevention methods • transplanting practices associated with different soil types and relationships to plant care • responsible and environmentally sensible practices concerning the nutrition and watering requirements for newly transplanted trees and shrubs

- techniques of securing and anchoring transplanted trees and shrubs
- the effect of adverse outdoor climatic conditions (e.g., rain, hail, or very high ultraviolet radiation), which may prevent or impede transplanting 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:

- interpret work procedures including transplanting/installation plans and site map
 - communicate with team members and supervisor
 - participate in teams and contribute to team objectives
 - use tools and equipment in a safe and effective manner
 - calculate area, volumes and treatment application rates.
-

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 about specific tasks associated with the job, such as work completion and hazards encountered, may be communicated to work colleagues and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Information such as transplanting techniques, installation plans and work schedules should be discussed with the supervisor and work team members.
3. How are activities planned and organised (1) ?	Pre-operational checks and organisation of tools, equipment and work schedules should be arranged before transplanting begins.
4. How can team work (1) be applied?	Transplanting trees and shrubs may involve working with other members of a team to complete the transplanting program.

5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques may be applied when measuring water and treatment application rates, assessing the diameter of root balls, and depth and volume of planting holes and trenches.
6. How can problem-solving skills (1) be applied?	Problems relating to transplanting techniques, processes, the transplanting area, tools and equipment, workplace safety, other team members, environmental issues and interruption of transplanting program may require problem solving.
7. How can the use of technology (1) be applied?	Technology may be applied in the preparation, use and maintenance of horticultural tools and equipment.

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**.

RTF2027A**Undertake standard climbing techniques**

This competency standard covers the techniques used to climb small trees.

Climbing is likely to be performed 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 climbing tasks. Climbing techniques follow established enterprise procedures.

Element		Performance Criteria	
1	Prepare for climbing operations	1.1	Climbing instructions and methods are determined according to work procedures .
		1.2	Hazards associated with the climb are identified and reported to the supervisor.
		1.3	Climbing tools and equipment are selected, prepared and used according to supervisors instructions and manufacturers guidelines.
2	Tie knots required for tree climbing operations	2.1	Ropes specific to the task are selected and inspected for wear, damage and soundness.
		2.2	Industry recognised knots are used in accordance with the required application.
		2.3	All knots are checked on completion in line with established workplace practice.
3	Climb trees in a low hazard work conditions	3.1	Personal protective (PPE) and safety equipment is selected, maintained and used according to enterprise procedures.
		3.2	Climbing is undertaken using standard industry methods , enterprise procedures and according to OHS 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 work procedures are appropriate for this standard?	These may include supervisors instructions and orders, communication arrangements, climbing plans and specifications, location and site plans, manufacturers guidelines, work schedules, emergency rescue procedures, enterprise standard operating procedures (SOPs), and OHS procedures.
What hazards may be identified in the work area?	Hazards may include solar radiation, dust, noise, faulty tools and equipment, sharp tools, power lines, tangled ropes, insecure harnesses, poor attachment/anchor point, inadequate or incorrect use of personal protective clothing, and team members inadequately trained for the climbing task and in emergency rescue procedures.
What tools and equipment may be used in climbing operations?	These may include ropes, work position harness, pulleys, cambium/rope saver, ascenders and descenders, throw line and bag, pole belt, wire core flip line, rope lanyard, ladders, carabines.
What industry recognised knots may be applicable to this standard?	Knots may include but are not limited to bowline, bowline on a bight, tautline, prussik, figure 8, clove hitch and half hitch.
What constitutes low hazard climbing conditions ?	Low hazard climbing conditions are those situations where trees are NOT prone to branch failure, are healthy, free from decay, disease and pests, and are free from embedded objects such as wire, nails or spikes.
What PPE and safety equipment may be used to climb small trees?	Equipment may include boots, overalls, gloves, helmets, work position harness, chainsaw trousers or chaps, sun hats and sunscreen lotion.
What standard industry methods are used when climbing?	Standard industry methods may include setting a ladder, body thrust and footlock, and climbing spike.
What enterprise OHS requirements may be relevant to this standard?	OHS requirements may include safe operation and maintenance of machinery and equipment, safe systems for working at heights in trees, safe procedures for working outdoors, appropriate use of personal protective clothing and equipment, correct manual handling techniques, procedures for calling emergency services and identifying and reporting problems to the supervisor.
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 climbing small trees requires evidence that a person can prepare tools and equipment for climbing operations, tie knots required for tree climbing according to industry standards, and climb small trees in low hazard environments.

The skills and knowledge required to climb small trees must be **transferable** to a different work environment. For example, a person should be able to climb a range of tree species, and use a variety of climbing 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: • basic climbing principles and preparation procedures • basic climbing techniques and planning • safe working limit of ropes • safe work practices relevant to tree climbing 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: • participate and contribute to team objectives • follow guidelines, instructions and supervision • interpret supervisors directions and communicate with fellow team members • estimate and calculate tree heights and loads • minimise noise, dust, and high activity vehicle traffic 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?	Information about specific tasks associated with the job such as climbing techniques, communication arrangements, work completion and hazards encountered, may be communicated to work colleagues and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Ideas and information about climbing strategy, methods and safety requirements should be discussed and analysed with the supervisor and work team members.
3. How are activities planned and organised (1) ?	All tools, equipment and materials used for climbing small trees should be selected and prepared before climbing work begins.
4. How can team work (1) be applied?	Climbing small trees may involve working with other members of a team to safely complete the climbing program.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques may be applied when calculating heights of trees and safe working loads.
6. How can problem-solving skills (1) be applied?	Problems relating to climbing techniques and methods, workplace safety including working above ground level, tools and equipment, inclement weather and interruption in climbing activities may require problem solving.
7. How can the use of technology (1) be applied?	Technology such as arboriculture equipment and machinery may be used to climb small trees safely.

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, for example:

RTF2009.A Perform above ground pruning

RTF2001.A Apply a range of treatments to trees

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**.

RTF2204A**Construct low-profile timber or modular retaining walls**

This competency standard covers the process of constructing low profile timber or modular retaining walls in landscape settings. Construction work is likely to be performed under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Competency is demonstrated by the application of knowledge and skills in tasks such as marking out sites, preparing footings, and preparing and installing retaining wall components.

Element	Performance Criteria
1 Plan and prepare work	1.1 Work instructions relating to constructing the retaining wall are interpreted and confirmed with the supervisor. 1.2 Services are located according to site and construction plans. 1.3 Tools and equipment are prepared and used according to the supervisor's instructions. 1.4 The quantity and quality of materials are checked to ensure they conform to the requirements of the job. 1.5 Manual handling and other OHS hazards are identified, risks assessed and reported to the supervisor. 1.6 Personal protective clothing and equipment is selected, used and maintained.
2 Mark out site for retaining wall	2.1 The position of the retaining wall is marked out according to site and construction plans. 2.2 The location and depth of excavations are determined from site and construction plans. 2.3 Profiles are established to conform to the tolerances designated by the supervisor and/or site and construction plans. 2.4 Survey benchmarks are established.
3 Prepare footings according to industry standards	3.1 Foundations for the retaining wall are excavated to depth and dimensions according industry standards. 3.2 Soil and waste material are removed and stockpiled to ensure a safe working area.

		3.3	Reinforcing and/or steps in the excavated site are located and positioned according to industry standards.
		3.4	Pegs or levels are positioned to maintain even depth and horizontal plane to the top of footings.
		3.5	Footings are placed, consolidated and finished to determined levels, to ensure coverage of reinforcement as necessary and according to industry standards .
4	Prepare and install retaining wall components	4.1	Components for installation are prepared and laid out.
		4.2	Components to be cut are marked out to length and/or shape and cut accurately to the requirements of profiles already established.
		4.3	Drainage media is installed according to supervisors instructions.
		4.4	Base layer of retaining wall is constructed to a point above the top of the drainage media and weep holes are formed where indicated.
		4.5	Fill material is back-filled and compacted behind base of retaining wall.
		4.6	Retaining wall components are constructed to dimensions, profiles and levels as outlined in the specified site and construction plans and/or according to supervisors instructions.
		4.7	Capping to top of retaining wall is set to specified levels with a tolerance appropriate to the style of capping.
5	Clean up site and store tools and equipment	5.1	Soil and waste material from the site is disposed of or recycled to minimise damage to the environment.
		5.2	Unused construction materials are stored and stacked for future re-use according to supervisors instructions.
		5.3	All tools and equipment are cleaned and stored according to supervisors instructions.

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 work instructions might be required for this standard?	Work instructions may include standard operating procedures (SOPs), specifications, work notes, manufacturers instructions, site plans, construction plans or verbal directions from the manager, supervisor, or senior operator.
What services may need to be located?	Services may include water supply, power (electricity), storm water, drainage and sewerage.
What tools and equipment are likely to be used when building retaining walls?	Tools and equipment may include timber or concrete saws, wheelbarrows, concrete mixers, hammers, mallets, and levels.
What materials are likely to be used when constructing a retaining wall?	Materials used may include timber and modular concrete units.
What OHS hazards may be associated with building retaining walls?	Hazards may include solar radiation, noise, heavy materials, sharp tools, uneven surfaces, holes and steep gradients.
What personal protective clothing and equipment may be required?	Personal protective clothing and equipment may include boots, gloves, overalls, sun hat, sunscreen lotion, goggles and earmuffs, knee guards/pads.
What may be used as survey benchmarks ?	Survey benchmarks may include a boundary line, a building or structure, a temporary benchmark or a datum point.
What type of footings may be required when constructing retaining walls?	Footings may include concrete, road rubble and quartz sand.
What industry standards may apply when constructing a retaining wall?	Industry standards may include the type, size and height of the retaining wall. Compliance with the Building Code of Australia requirements may be necessary when constructing retaining walls.
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 constructing retaining walls requires evidence that work can be planned and prepared, that the retaining wall site can be marked out, footings and reinforcing can be located, components for the wall can be installed and the site can be cleared and cleaned up according to supervisors instructions.

The skills and knowledge required to construct retaining walls must be **transferable** to a different work environment. For example, this could include different construction materials, site slopes and locations, and soil types

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:

- different construction materials for retaining walls
- construction approaches and methods
- OHS responsibilities of employees
- safe lifting practices for carrying large and heavy components
- the environmental impact of soil disturbance when excavating an area to be retained and the environmental effects of altering water flow when installing retaining walls, with or without drainage media
- methods of disposing of soil and waste materials in order to minimise damage to the environment
- Building Code of Australia relating to constructing retaining walls.

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 site and construction plans
- calculate the amount of materials required and accurately mark out the area to be retained
- sort soil and waste material from the excavation site in an environmentally aware and sensitive manner, such as sorting it into organic, inorganic and recyclable piles.

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 regarding the tasks to be performed when constructing a retaining wall should be discussed with other members of the work team and/or the supervisor.
2. How can information be collected, analysed and organised (1) ?	Site and construction plans and information regarding industry standards should be obtained from the supervisor and read and interpreted to undertake construction activities.
3. How are activities planned and organised (1) ?	Activities using equipment and materials may need to be planned and organised to ensure completion of the project on time and within budget.
4. How can team work (1) be applied?	Teamwork may be necessary to complete specified tasks in the construction of a retaining wall.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques should be used to measure and calculate construction areas and components.
6. How can problem-solving skills (1) be applied?	Problems may arise when interpreting site and construction plans or with the installation of footings and reinforcement.
7. How can the use of technology (1) be applied?	Equipment and machinery used for installing retaining walls may require the use of technology.

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**.

RTF2207A**Protect trees during construction work**

This competency standard covers the installation and maintenance of devices to protect trees from damage to their root system, trunk and canopy where building and/or landscape construction work is being undertaken.

Work is likely to be performed under routine supervision with intermittent checking. Responsibility for some roles and co-ordination within a team may be required. Tree protection at this level requires the application of knowledge and skills to a broad range of tasks. Tree protection work is usually within established routines, methods and procedures.

Element		Performance Criteria	
1	Prepare to install protection devices	1.1	Enterprise work procedures related to the task are received and confirmed.
		1.2	Trees to be protected, and method of protection to be used, are identified accurately from enterprise work procedures.
		1.3	OHS hazards are identified, risks assessed and reported to the supervisor.
		1.4	Suitable personal protective equipment (PPE) is selected, used and maintained.
		1.5	Tools and equipment appropriate to the task being undertaken are prepared and used according to enterprise OHS requirements .
		1.6	Protection devices , or materials to assemble devices, are collected and checked against requirements as indicated in enterprise work procedures.
2	Install protection devices	2.1	Protection devices are assembled according to enterprise work procedures.
		2.2	Devices are installed in line with protection plans and/or enterprise work procedures.
		2.3	Work is carried out in a manner that minimises risk of damage to trees and the surrounding environment.
3	Complete installation activities	3.1	Protection devices are checked for their effectiveness according to enterprise work procedures.
		3.2	Damaged and/or ineffective devices are reported to the supervisor.

- 3.3 A **clean and safe area** is maintained throughout and on completion of work.
- 3.4 Workplace 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 training and assessment requirements may depend on the work situations available.

What work procedures may be appropriate for this standard?	These may include supervisors instructions, manufacturers guidelines, verbal or written plans and specifications, diagrams, work schedules, enterprise standard operating procedures (SOPs), waste disposal, recycling and re-use guidelines and OHS procedures.
What OHS hazards may be identified in the work area?	Hazards may include solar radiation, dust, noise, pests and diseases, uneven surfaces, holes and poorly or inadequately maintained tools and equipment. Public safety may be a concern if site is a public area.
What PPE may be needed when installing tree protection devices?	PPE may include boots, overalls, gloves, goggles, sun hats and sunscreen lotion and PPE associated with tools and machinery used.
What tools and equipment are used when installing tree protection devices?	Tools and equipment may include digging equipment, carpentry tools, traffic control devices, fencing materials, tree guards, tree plantings and barriers.
What enterprise OHS requirements may be relevant to this standard?	OHS requirements may include appropriate use of personal protective clothing and equipment, safe procedures for working outdoors, safe operation of machinery and equipment, correct manual handling techniques, and recognising and reporting problems to the supervisor.
What protection devices may be installed to protect trees?	Protection devices may include fences, tree guards, barriers, retaining walls, soil coverings, and bunting and traffic re-direction.
What tasks may be undertaken to maintain a clean and safe area ?	Tasks may include cleaning away (stacking or storing neatly) debris and equipment, and cleaning tools and equipment after use.

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 protecting trees requires evidence that a person can demonstrate the selection, construction, installation and checking of protective devices and methods used. They should be able to select, use and clean tools and machinery with safety and identify and report problems with the protection program to the supervisor.

The skills and knowledge required to protect trees must be **transferable** to a different work environment. For example, this could include different protection devices, construction sites and tree species.

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:

- potential damage to trees during construction work i.e. compaction, direct physical damage to trunk and crown, roots, soil contamination, changes in soil properties, environmental damage
- AS1742 Pt 3 1985 - Australian Standard Code of Practice, Work Site Traffic Management (if involved in traffic control)
- principles and techniques relating to the choice of tools and equipment for installing tree protection devices
- techniques for assembling or constructing a range of tree protection devices
- techniques and application of a range of tree protection devices suitable to the requirements of the species
- care and maintenance of trees during protection 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:

- interpret site maps and tree protection plans
- operate equipment such as digging equipment, traffic control devices
- assemble or build protection devices
- read and interpret site maps and protection plans including a range of graphic symbols

- follow directions for the construction or assembly of protection devices
- follow supervisors instructions
- record or report workplace outcomes
- measure materials used in construction and assembly
- calculate quantities and area
- measure and estimate height, depth and distance.

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 about specific tasks associated with the job such as work completion, protection techniques employed and hazards encountered should be discussed with other team members and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Information about tree protection activities such as tree species and appropriate protection devices should be discussed with the supervisor and work team members.
3. How are activities planned and organised (2) ?	Equipment and materials used in the protection program should be established and organised on site before protection work begins.
4. How can team work (1) be applied?	Protecting trees may involve working with other members of a team to complete the protection program.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical techniques may be used for measuring materials for construction or assembly, counting quantities or calculating areas or distances.

6. How can problem-solving skills (2) be applied?	Problems relating to protection techniques, devices, the protection area, tools and equipment, workplace safety, other team members, environmental issues and interruption of protection program may require problem-solving.
7. How can the use of technology (1) be applied?	Technology such as horticultural hand tools and equipment may be used in protection operations.

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**.

RTF2208A

Lay paving

This competency standard covers the process of laying modular paving. Modular paving being pre-cut paving bricks that come in range of sizes and colours.

The work is likely to be under routine supervision with intermittent checking. Competency is demonstrated by the application of knowledge and skills to a range of setting out and laying tasks when paving.

Element	Performance Criteria
1 Plan and prepare for paving work	1.1 Required workplace information is interpreted and confirmed with supervisor.
	1.2 Tools and equipment are prepared and used according to supervisors instructions.
	1.3 The quantity and quality of materials are checked to ensure they conform to the requirements of the job.
	1.4 OHS hazards are identified, risks assessed and reported to the supervisor.
	1.5 Personal protective clothing and equipment is selected, used and maintained.
2 Set out and prepare paving area	2.1 The area to be paved is marked out according to the site plan .
	2.2 The marked out area is checked with the supervisor for compliance with the site plan and OHS requirements , and adjusted where necessary.
	2.3 The reduced levels of the proposed paving area are calculated and pegged from the survey benchmark using the rise and fall method in a closed level run.
3 Undertake ground preparation	3.1 The area is excavated to shape, depth and dimensions to sub base level according to minimal industry standards .
	3.2 The sub base is trimmed to the designated level and falls to ensure that the final level of paving can be achieved.
	3.3 Drainage systems are constructed as necessary according to the site plan.
	3.4 Base material is placed and compacted to the required finished level according to minimal industry standards.

4	Lay bedding material	4.1	Bedding material is spread loosely over the area to ensure the designated bedding depth can be attained according to minimal industry standards.
		4.2	Screed rails are established to ensure the bedding course is maintained.
		4.3	Bedding material is levelled to the designated level and falls and in accordance with minimal industry standards.
5	Lay pavers to a given pattern	5.1	Grid string lines are set to required levels to ensure the designated pattern of the project is attained, and to maintain straight lines of components.
		5.2	Pavers are set out to the required dimensions and pattern according to the site plan.
		5.3	Whole pavers are laid and compacted to the established finish level.
		5.4	Pavers are marked, cut and fitted to accurately fill gaps in the pattern within tolerances nominated within the site plan.
		5.5	Permanent edge constraints are installed to prevent movement of pavers.
6	Clean site and store tools and equipment	6.1	Paving is swept thoroughly to produce a clean and flat surface free of debris.
		6.2	Sand is spread evenly of the paved area and compacted to the finished level.
		6.3	Soil and waste material from the site is disposed of or recycled to ensure minimal impact on the environment.
		6.4	All tools and equipment are cleaned and stored according to supervisors instructions.

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 workplace information might be required for this standard?	Workplace information may include site plans, specifications, procedures for disposing of waste materials, work instructions, or verbal instructions from the supervisor.
What tools and equipment are likely to be used when paving?	Tools and equipment may include brick and concrete saws, mallets, compactors, concrete mixers, stiff brooms, spirit levels, and bricklayers string.

What OHS hazards may be associated with paving installation?	Hazards may include heavy paving materials and equipment, slippery or uneven surfaces, moving machinery and vehicles, solar radiation, dust and noise.
What are the personal protective clothing and equipment requirements associated with the installation of paving?	Personal protective clothing and equipment may include steel capped boots/shoes, overalls, gloves, sun hat, sunscreen lotion, safety goggles, face mask and ear muffs.
What type of site plan may be referred to?	A site plan may include job drawings, a landscape design, a computer generated plan, a concept plan, or any other plan of the site drawn to scale.
What are the OHS requirements in relation to an area to be paved?	The OHS requirements may include the erection of signage, barriers, witches hats and safety lights.
What may be used as a survey benchmark ?	A survey benchmark may include a boundary line, a building or structure, a temporary benchmark, or a datum point.
What are minimal industry standards ?	Minimal industry standards are usually between 20ml and 25ml in depth. The pavers to be used may determine a minimal standard outside these parameters.
What type of drainage systems may be constructed?	Drainage systems may include run off points to agri-drains, stormwater drains, and sumps.
What type of screed rails may be used?	Screed rails may be wooden or metal straps.
What type of pavers may be used?	Pavers may include clay or brick paving bricks.
What are permanent edge constraints made of?	Permanent edge constraints may include concrete, timber or steel constraints.
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 laying pavers requires evidence that work can be planned and prepared, that the paving area can be set out, the ground can be prepared, bedding material can be laid, and pavers can be laid to a given pattern.

The skills and knowledge required to lay pavers must be **transferable** to a different work environment. For example, this could include different pavers, locations and paved structures.

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: • OHS responsibilities of employees • OHS regulations regarding the erection of signs and barriers around the area to be paved • the environmental impact of soil disturbance when preparing to pave, and the environmental effects of altering water flow when installing new drainage systems • methods of disposing of soil and waste materials in order to minimise damage to 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: • read, interpret and apply information from a site plan that is to scale • calculate the amount of materials required, prepare the paving site, and follow a designated pattern • install modular pavers • sort soil and waste material from the excavation site in an environmentally aware and sensitive manner, such as sorting it into organic, inorganic, and recyclable piles.
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 the tasks to be performed when paving should be discussed with other members of the work team and/or the supervisor.
2. How can information be collected, analysed and organised (1) ?	The instructions for the paving work should be interpreted, and clarification sought as necessary.

3. How are activities planned and organised (1) ?	The paving tasks are applied in a logical order.
4. How can team work (1) be applied?	Teamwork may be required to complete specified paving tasks on time and within budget.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques should be used to measure and calculate areas to be paved, and the quantity of bedding material and pavers required.
6. How can problem-solving skills (1) be applied?	Problems may arise when interpreting the site plan and paving to a pattern.
7. How can the use of technology (1) be applied?	Technology may be used in the design of the pattern to be achieved when paving.

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**.

RTF2211A**Prepare a grave site**

This competency standard covers the process of preparing a gravesite. This includes assisting with the excavation of the grave, backfilling the grave and enhancing the gravesite following burial. Preparing a gravesite is likely to be done in association with a fellow worker or work team, under routine supervision and with intermittent checking. An individual involved in excavation work at this level would not be required to operate earth-moving machinery.

Competency is demonstrated by the application of knowledge and skills to a range of grave preparation tasks and roles usually within established enterprise policy.

Element		Performance Criteria	
1	Prepare site for excavation	1.1	OHS hazards are identified, risks assessed and reported to the supervisor.
		1.2	Personal protective clothing and equipment is selected, used and maintained.
		1.3	Tools, equipment and machinery are prepared and used according to supervisors instructions.
		1.4	Surrounding monuments, masonry or headstones that threaten the stability of the new gravesite are inspected and removed if necessary, according to supervisors instructions.
		1.5	Sludge pump is used to remove excess water if required.
		1.6	Gravesite is marked out to suit coffin dimensions and according to supervisors instructions and/or enterprise policy.
2	Assist with the excavation	2.1	Grave is excavated according to enterprise policy.
		2.2	Sides of grave are shored where depth of grave exceeds 1.5 metres or as determined by enterprise policy.
		2.3	Surface area for 400 mm from the edge of the excavation is covered with an approved material to ensure the integrity and stability of the soil.
		2.4	Access to and egress from the excavation site is undertaken according to OHS requirements .
		2.5	Gravesite is secured with protective restraints to limit access to the site while being established and when left unattended.

3	Backfill and enhance the gravesite following burial	3.1	Burial hole is back-filled with soil free from large lumps, plant debris or waste material.
		3.2	Backfilling techniques are employed to consolidate the soil, to minimise cavities and to restore the ground to its original level.
		3.3	Surrounding monuments, masonry or headstones are replaced as necessary.
		3.4	Waste material and plant debris removed from the gravesite are disposed of in an environmentally aware and safe manner according to enterprise policy.
		3.5	Gravesite is enhanced according to supervisors instructions and/or 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 OHS hazards may be associated with gravesite preparation?	OHS hazards may include problems associated with working in confined spaces, e.g., changes in atmospheric pressure, atmospheric contaminants, unsafe oxygen levels and engulfment, solar radiation, uneven surfaces and large obstacles.
What personal protective clothing and equipment are likely to be used when preparing a gravesite?	Personal protective clothing and equipment may include breathing apparatus appropriate for working in confined spaces, boots, gloves, overalls, sun hat, sunscreen lotion, protective headgear and waterproof clothing.
What tools, equipment and machinery may be required when preparing a gravesite?	Tools, equipment and machinery may include spades, shovels, rakes, crowbars, augers, wheelbarrows, earth moving machinery, a sludge pump and compacters.
What are the OHS requirements to be observed with regard to access and egress from the excavated grave?	OHS requirements may include observance of the Approved Code of Practice AS 2885 Safe Work in Confined Spaces, relevant Local Government Acts, General Cemetery Regulations, enterprise policies and the use of an approved ladder - a ladder that complies with the requirements of Australian Standard AS 1892 and extends from the base of the excavation to at least 600mm above the top of the grave.
What protective restraints may apply to this standard?	Protective restraints may include barricades, temporary fencing and reinforced covers.

What is likely to be done to
enhance a gravesite?

Enhancing a gravesite may include placement of monuments, headstones or masonry, planting of flowers or other vegetation, erection of fencing, laying of gravel/pebbles or the installation of other decorative features.

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 a gravesite requires evidence that work can be done with a co-worker or in a team to prepare a site for excavation, assist with and support excavation activities, fill up the hole after burial and enhance the gravesite on completion.

The skills and knowledge required to prepare a gravesite must be **transferable** to a different work environment. For example, a person must have the knowledge to prepare a gravesite in different types of soil, to varying dimensions and depths and with regard to individual client requests for enhancement of gravesites.

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:

- OHS responsibilities of employees
 - applied understanding of safe work practices when working in and around confined spaces
 - the environmental impact of soil disturbance when excavating a grave
 - the environmental implications of pumping sludge water from an excavation site and the effects it may have on surrounding gravesites.
-

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:

- prepare site for excavation
 - assist with the excavation
 - shore up sides of grave as required
 - backfill and enhance the gravesite following burial.
-

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 about the gravesite to be prepared and excavated may need to be discussed with the supervisor or others in the work team.
2. How can information be collected, analysed and organised (1) ?	Information regarding the enhancement of a gravesite after burial may need to be collected, analysed and organised.
3. How are activities planned and organised (1) ?	Tools, equipment, machinery and work procedures for preparing a gravesite may need to be arranged before and after burial and there may be some responsibility for co-ordinating work with others.
4. How can team work (1) be applied?	The preparation of a gravesite may involve working with other members of a team to complete the project.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical ideas and techniques may be used when measuring dimensions and depth of grave to be excavated and also when following correct procedures for shoring of the grave.
6. How can problem-solving skills (1) be applied?	Problems may arise in the excavation or backfilling of a grave relating to soil, water and weather conditions. These problems may need to be addressed quickly.
7. How can the use of technology (1) be applied?	Calculators may be used to determine calculations for the excavation works.

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**.

RTF2215A**Assist with landscape construction work**

This competency standard covers the process of assisting with landscape construction work under limited supervision. It requires the ability to prepare materials, tools and equipment for construction work, undertake construction activities, handle materials and equipment and clean up on completion of work. Assisting with landscape construction work requires knowledge of safe work practices, landscape construction techniques relevant to the industry, tools and equipment, and repair and maintenance of built features.

Element	Performance Criteria
1 Prepare materials, tools and equipment for landscape construction work	1.1 The required materials, tools and equipment are identified according to lists provided and/or supervisors instructions .
	1.2 Checks are conducted on all materials, tools and equipment with insufficient or faulty items reported to the supervisor.
	1.3 Techniques used when loading and unloading materials demonstrate correct manual handling and minimise damage to the load and the vehicle.
	1.4 Suitable personal protective equipment (PPE) is selected and checked prior to use.
	1.5 Construction activities are undertaken according to OHS requirements and according to workplace information .
	1.6 OHS hazards are identified and reported to the supervisor.
2 Undertake landscape construction activities as directed	2.1 Instructions and directions provided by the supervisor are followed and clarification sought when necessary.
	2.2 Landscape construction is undertaken in a safe and environmentally appropriate manner according to enterprise guidelines.
	2.3 Interactions with other staff and customers is carried out in a positive and professional manner.
	2.4 Enterprise policy and procedures in relation to workplace practices, handling and disposal of materials is observed.
	2.5 Problems or difficulties in completing work to required standards or timelines are reported to supervisor.

3	Handle materials and equipment	3.1	Waste material and debris produced during landscape construction is stored in a designated area according to supervisors instructions.
		3.2	Materials, equipment and machinery are handled and transported according to supervisors instructions and enterprise guidelines.
		3.3	A clean and safe work site is maintained while undertaking landscaping activities.
4	Clean up on completion of landscaping work	4.1	Materials are returned to store or disposed of according to supervisors instructions.
		4.2	Tools and equipment are cleaned, maintained and stored according to manufacturers specifications and supervisors instructions.
		4.3	Site is made good according to supervisors instructions and good environmental practices.
		4.4	Work outcomes are reported to the supervisor.

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 included under **landscape construction** work?

Tasks may include:

- construction of landscape features including paths, paving, retaining walls, site structures and furniture, planted areas and irrigation systems
 - maintenance of landscape features including watering, weeding, staking, repairing, painting, and cleaning
 - work with a range of materials including concrete, timber, masonry, stone, metal and plastics
 - establishing work base, clearing site, erecting barriers and signs, unloading and loading of materials, setting out of works, cleaning up site and disposal of debris and materials.
-

What **tools and equipment** may be required for landscaping work?

Tools and equipment may include levelling equipment, wheelbarrow, concrete mixer, string lines, tape measures, marking gauges, spades, shovels, crow bars, chisels, hammers, spanners, nails, handsaws, sanding blocks, paint brushes, trowels and screeding equipment, crow bars, hammers, spanners, metal files, and hacksaws.

What instructions may be relevant to this standard?	Instructions may include standard operating procedures (SOPs), enterprise policy and procedures, specifications, work notes, Material Safety Data Sheets (MSDSs), manufacturers instructions, or verbal directions from the manager or supervisor.
What are the personal protective clothing and equipment requirements associated with landscaping support?	Personal protective clothing and equipment may include steel capped boots/shoes, overalls, gloves, sun hat, sunscreen lotion, safety goggles, face mask and ear protectors.
What workplace information might be required for this standard?	Workplace information may include procedures for disposing of waste materials, work instructions or verbal instructions from the supervisor.
What OHS hazards may be associated with landscaping work?	Hazards may include, solar radiation, dust, noise, air and soil-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, holes, slippery and uneven surfaces.
What waste materials may apply to this standard?	Plant debris, mulches and compost, plastic, metal and paper-based materials, litter and broken components. These may be recycled, re-used, returned to the manufacturer or disposed of according to enterprise work procedures.
What may occur when a site is made good ?	Paths are swept and cleaned, planted areas are checked to ensure they are well presented, damaged turf is replaced/resown, disturbed areas are repaired, all materials, debris, tools and equipment are removed from site, damaged plants are pruned or replaced, and other signs of disturbance or damage are corrected.

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 assisting with landscape construction activities requires evidence that landscaping activities have been carried out according to instructions and within the required timelines. The skills and knowledge that are required to support landscape construction must be **transferable** to different work environments. For example, this could include different landscaping features, work locations and 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 competency standard are listed below:

- safe work practices
- preparing for landscape work and cleaning up on project completion
- basic construction techniques
- landscaping tools and equipment
- maintenance practices for planted areas
- repair and maintenance of landscape features.

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:

- prepare materials, tools and equipment for landscaping work
- undertake landscape construction as directed
- handle materials and equipment
- clean up on completion of landscaping work.

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.

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1. How can communication of ideas and information (1) be applied?	Ideas and information about the job, tasks and problems should be discussed with other members in the work team and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Workplace and supervisors instructions should be located, interpreted and applied with further clarification sought as necessary.
3. How are activities planned and organised (1) ?	Discussions with the supervisor and other team members may be required in order to complete tasks efficiently in a logical sequence and in a timely manner.
-

4. How can team work (1) be applied?	Good communication and co-operation with other staff in completing landscaping tasks.
5. How can the use of mathematical ideas and techniques (1) be applied?	Skills in counting, tallying and estimation are required when handling materials, tools and equipment.
6. How can problem-solving skills (1) be applied?	Problems will require corrective action or consultation with supervisor.
7. How can the use of technology (1) be applied?	Technology may be applied in the use of landscape tools and equipment.

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**.

RTF2311A**Undertake stump removal**

This competency standard covers the work undertaken to remove tree stumps from the ground with the aid of motorised stump grinders.

Stump removal is likely to be under routine supervision with intermittent checking.

Competency requires the application of knowledge and skills to a range of stump removal tasks. The work is usually within established industry guidelines and conforms to strict OHS procedures

Element		Performance Criteria	
1	Prepare for stump removal operations	1.1	Workplace information regarding the removal of stumps is collected and interpreted.
		1.2	All underground services are located according to supply authorities guidelines.
		1.3	Tools and equipment are selected according to supervisors instructions and manufacturers guidelines.
		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	Undertake removal operations	2.1	Pre-operational and safety checks are carried out on stump removing tools and equipment, according to enterprise guidelines.
		2.2	Tools and equipment appropriate to the task being undertaken are used according to OHS requirements .
		2.3	Stump is removed to agreed depth and spread without damage to underground services and surrounding areas.
		2.4	Stump hole is back-filled and consolidated to original ground level according to enterprise policy.
3	Complete stump removal operations	3.1	Waste material is collected and disposed of and/or recycled in a manner that causes minimal damage to the environment.
		3.2	Tools and equipment are cleaned, maintained and stored according to manufacturers specifications and enterprise guidelines.

- 3.3 A **clean and safe work area** is maintained throughout and upon completion of work according to work procedures.
- 3.4 Relevant **records** are maintained according to enterprise guidelines.

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 workplace information may be relevant to stump removal operations?	Standard Operating Procedures (SOP), work notes, manufacturers instructions, site and location plans, removal plans and specifications, waste disposal, recycling and re-use guidelines, or verbal directions from manager, supervisor, or senior operator.
What services may need to be located?	Services may include power (electricity), water supply, irrigation, stormwater, drainage, gas and telecommunications.
What tools and equipment may be used to undertake stump removal?	Tools and equipment may include axe, spade, shovel, crowbar, hand or powered winches, hand tools, stump grinding machine, chainsaw, and safety signs and/or barriers.
What OHS hazards may apply to stump removal operations?	OHS hazards may include, flying debris, use of sharp tools and equipment, moving machinery parts, manual handling, noise, disturbance of underground services, holes, uneven surfaces, and faulty tools and equipment.
What PPE may be needed to remove stumps?	PPE may include boots, overalls, gloves, hard hats, hearing protection, and face shields.
What OHS requirements may be relevant to this standard?	Procedures may include appropriate use of personal protective clothing and equipment, safe operation of machinery and equipment, correct manual handling techniques, recognising and reporting problems to the supervisor, erection of safety signs and barriers, and maintenance and storage of tools and equipment.
What tasks may be undertaken to maintain a clean and safe work area ?	Tasks may include cleaning away (storing or stacking neatly) equipment, disabling machinery after use, and clearing and disposing of plant and equipment debris.
What records may apply to this standard?	Workplace records may include date stump removal carried out, time spent on operation, and problems arising.

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 undertaking stump removal requires evidence that a person working in a horticultural environment is aware of the procedures and methods that are used to undertake stump removal, and is confident in applying these procedures. Skills and knowledge relating to the task, such as operating powered machinery and hand tools, interpreting site and service plans, identifying and minimising hazards, and maintaining clean and safe work areas is also required when undertaking stump removal.

The skills and knowledge required to undertake stump removal must be **transferable** to a different work environment. For example, this could include different situations, tree species and degrees of site access.

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:

- manufacturer guidelines for operating stump grinding machinery
- environmental implications of removal activities including run off, drainage, salinity and soil erosion, and soil disturbance
- removal practices associated with different soil types
- the effect of adverse outdoor climatic conditions (e.g. rain, hail, or wind), which may prevent or impede removal 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:

- prepare for stump removal operations
 - undertake removal operations
 - complete stump removal 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?	Information about specific tasks associated with the job, such as work completion and hazards encountered, may be communicated to work colleagues and the supervisor.
2. How can information be collected, analysed and organised (1) ?	Information such as removal techniques, site and service plans, and appropriate tools and equipment should be discussed with the supervisor and work team members.
3. How are activities planned and organised (1) ?	Pre-operational checks and organisation of all tools, equipment and materials should be arranged before removal begins. Work schedules, location of services, site plans and personnel involved should also be arranged before removal activities begin.
4. How can team work (1) be applied?	Undertaking stump removal may involve working with other members of a team to complete the removal program.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques may be applied when calculating plan dimensions, and depth and volume of removal holes.
6. How can problem-solving skills (1) be applied?	Problems relating to removal techniques, processes, the removal area, tools and equipment, workplace safety, other team members, environmental issues and interruption of removal program may require problem-solving.
7. How can the use of technology (1) be applied?	Technology such as horticultural hand tools and equipment including stump grinders may be used in removal operations.

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**.

RTF2504A**Determine basic properties of soil/growing media**

This competency standard covers the process of determining the basic properties of soil or soil-less growing media. It requires the ability to collect samples and perform basic tests.

It requires knowledge of sample collection techniques, basic soil/growing media properties, and basic understanding of soil/plant relationships. Determining the basic properties of soil or soil-less growing media is likely to be under supervision from others, with checking related to overall progress. The work is usually done within routines, methods and procedures where some discretion and judgement is 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	Collect soil/media samples for testing	1.1 Tools and materials for collecting soil/media samples are prepared. 1.2 Area from which soil/media samples are to be collected is identified from workplace records or supervisors instructions. 1.3 Services are located using site plans and in consultation with the supervisor. 1.4 OHS hazards are identified, risks assessed and controls implemented and reported to the supervisor. 1.5 Suitable safety equipment and personal protective equipment (PPE) are selected, used and maintained. 1.6 Samples are taken randomly from the designated area according to recognised sampling techniques and are prepared for on site or off site analysis 1.7 Samples are labelled and recorded according to organisational procedures.
2.	Perform basic soil/media tests	2.1 Soil profile is determined, where appropriate. 2.2 Soils/media are tested or inspected for physical properties. 2.3 Soils/media is tested for chemical properties . 2.4 Results are recorded according to organisational 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 tools and equipment may be relevant to this standard?	Tools and equipment include spades, augers, soil/media sample storing and recording materials, field test kits and interpreting charts.
What services may need to be located?	Services may include water supply, gas, electricity, telecommunications, irrigation, stormwater and drainage.
What OHS hazards may be associated with performing a soil survey?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving machinery and machinery parts, falling objects, and uneven surfaces.
What PPE may be required to perform a soil survey?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.
What activities may be included in sampling ?	Sampling activities may include collecting, preparing, packaging and labelling soil samples for off-site testing and/or on-site testing and analysis.
What tests may be performed?	Soils/media may be tested for depth, colour, texture, structure, compaction, air-filled porosity, pH, salinity and nutrients.

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 determining basic properties of soils/media requires evidence that sampling, testing, interpreting and recording techniques have been successfully and appropriately carried out. The skills and knowledge required to determine the basic properties of soils/media must be **transferable** to a range of work environments and contexts. For example, this could include different soil/media types tested for different properties for a range of crops or plants.

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:

- soil sampling techniques
- soil/media physical properties
- soil/media chemical properties
- soil/media plant relationships
- basic soil/media field tests
- interpreting laboratory results
- techniques to ameliorate soil properties.

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 soil/media samples
- perform basic soil/media tests
- interpret results from own or laboratory results
- record and store information.

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?	Through reporting results of soil/media tests to supervisor or others orally or in writing.
2. How can information be collected, analysed and organised (2) ?	Through recording, interpreting and filing soil/media results.
3. How are activities planned and organised (2) ?	According to workplace procedures.
4. How can team work (1) be applied?	Through working with other to achieve an outcome.

5. How can the use of mathematical ideas and techniques (2) be applied?	Through the use of accepted soil/media tests and by carrying out the required number of samples from a designated area and in a manner that is random across the designated area.
6. How can problem-solving skills (2) be applied?	Through identifying and resolving problems with the sampling process.
7. How can the use of technology (2) be applied?	Through the use of standard soil/media testing equipment.

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**.

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RTF3001A

Construct turf playing surfaces

This competency standard covers the process of constructing soil profiles for the establishment of high performance sports and recreational turf surfaces.

The construction of soil profiles for high performance turf playing surfaces is likely to be under limited supervision from others, with checking only related to overall progress. The construction of soil profiles is normally done within routines, methods and procedures where some discretion and judgement are 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	Plan for construction activities	1.1	The construction site for high performance turf playing surfaces and the construction method are identified according to the site and construction plans and enterprise work procedures .
		1.2	Soil tests of existing soil are undertaken using representative samples, and according to testing instrument instructions and enterprise work procedures.
		1.3	Locations and layout of services and utilities are identified, depths checked against the site or construction plan, and discrepancies are reported to the supervisor and the relevant authorities.
		1.4	History of site is determined and taken into account in planning construction details.
		1.5	Likely consequences of site aspect, features and run-off from adjacent sites are determined and incorporated in site and construction plans.
		1.6	OHS hazards are identified, risks assessed, controls implemented and reported to the supervisor.
		1.7	Suitable safety equipment and personal protective equipment (PPE) are selected, used and maintained.
2	Survey the construction site	2.1	Surveying equipment is set up and used according to industry standards.

		2.2	Existing levels are surveyed and temporary benchmark established. Details are recorded accurately and legibly according to industry standards.
		2.3	New levels are set according to specifications and pegs placed according to industry convention.
		2.4	Contour map with reduced levels and a cross section is developed and drawn using accepted industry symbols and mapping conventions.
3	Prepare for construction work	3.1	Enterprise work team, contractors and design consultants are identified and, where required, engaged.
		3.2	Work tasks are scheduled in a logical, timely and effective manner in consultation with the supervisor.
		3.3	Materials required are estimated and costed according to accepted industry practice and ordered.
		3.4	Plans for the new construction profile are obtained or developed.
4	Set out site for construction	4.1	Symbols and terminology are interpreted to ensure the concept of the construction plan is clearly understood according to industry practice
		4.2	Boundaries and features contained in the site and construction plans are checked and verified against the actual site and existing features.
		4.3	Finishing levels, provision for drainage and irrigation, and drainage head of the site are identified and checked against the construction plan to ensure nominated levels are workable.
		4.4	Measurements are checked against the construction plan, the construction area is pegged out, and variances are notified to the supervisor according to enterprise work procedures.
5	Excavate the construction site	5.1	Excess soil is removed and the construction site cleared with the stockpile being placed in a designated area according to enterprise work procedures.
		5.2	The base is graded to the level and slope specified in the base design .
		5.3	The base of the profile is consolidated to achieve uniform compaction over the entire site according to the construction plan.
		5.4	Sub-surface irrigation system components and fittings are installed to the required depth and design specified in the construction plan.

6	Install drainage system	6.1	Drainage trenches are dug to the required depth and design specified in the construction plan.
		6.2	Drainage material is laid on the base of the trench, pipes are laid/installed, and trenches are covered according to industry standards.
7	Install soil profile	7.1	Quantities of material required to be spread over the designated area are calculated and measured according to the construction plan.
		7.2	Equipment is calibrated according to manufacturers guidelines to distribute the required amount of material over the designated area.
		7.2	Each profile layer is compacted to reflect the final contour.
		7.3	The interface between profile layers is uniform and unbroken according to the construction plan and enterprise work procedures.
		7.4	Soil amendments are prepared according to enterprise work procedures, mixed thoroughly and applied evenly over the designated area.
		7.5	The finishing soil surface is given a final levelling and consolidated, ready for planting, according to the construction plan and 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 types of high performance turf playing surfaces may require construction of soil profiles for turf establishment?	Surfaces may include sites for high performance sports and recreation such as golfing greens, cricket pitches and purpose built sporting facilities.
What types of construction method may apply to this standard?	Construction methods may include natural or artificial drainage, perched watertable construction method, pure sand construction, and the United States Golf Association (USGA) or modified USGA construction method.

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, construction program, enterprise standard operating procedures (SOP), 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.
What soil tests may be undertaken?	These may include tests for pH, salinity, texture and soil type, and surface and sub-surface infiltration rate test. Samples may include plugs and core samples. Test kits may include a dry test, CSIRO kits, EC meters and pH kits.
Which services and utilities might need to be located on the site?	Services and utilities may include electricity, gas and phone cables, and water source and drainage outlet for planned sprinkler system.
How might the site history affect construction?	The previous use of the site may influence the nature of construction or require remediation activities, for example, former livestock treatment sites, landfill, residential, manufacturing, etc.
What OHS hazards may be associated with the construction of soil profiles?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil and water micro-organisms, chemicals and hazardous substances, manual handling, moving machinery and machinery parts, uneven surfaces, and flying objects.
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 safety equipment may be required?	Safety equipment may include signage and barriers.
What personal protective equipment (PPE) may be required to construct soil profiles?	Personal protective equipment may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.

What surveying equipment may be required?	Surveying equipment may include automatic level, laser level, dumpy level, Cowley level, staff, boning rods, pegs, notebook, pencil and calculator.
What should be included in plans for the new construction profile ?	Plans should include contours, cross-section and profile, and will be based on survey and other research conducted in preliminary phases of the project.
What features may be included in site and construction plans?	Features may include permanent fixtures, buildings, site aspect, shade, trees and tree roots.
What structures may the base design include?	Structures may include a one way fall, a rooftop, multiple rooftop or V inverted saucer design.
What irrigation systems may be relevant to this standard?	Irrigation systems may include tow lines, trailing irrigation, pop-ups, automatic, sprinkler, spray, drip, and hand held hose.
How may soil amendment quantities be measured?	Measuring techniques may include scales, package size, trucks and volume.
What materials may be required for the construction of soil profiles?	Materials may include rootzone, irrigation and drainage materials, and soil amendments such as gypsum, lime or zeolite, artificial fibre, organic matter, mineral fertiliser, turf grids, lock sand and fibre turf.
What soil amendments might be applied?	Soil amendments may include organic matter, zeolite, dolomite, turf starter, and fertiliser.
What factors may the finishing soil surface incorporate?	Factors may include matching levels of soil with the required final levels, aligning the surface with pegs, and ensuring that no depressions exist and the area is consolidated.
What tools, equipment and machinery may be required?	Excavation tools, equipment and machinery may include hand tools such as rakes, shovels, spades, wheelbarrows and hoses, and machinery such as bobcats, ditch witches, backhoes, front-end loaders, graders, trucks, hydraulic trailers, and tractors and 3-point linkage equipment.
What environmental implications may be associated with the construction of soil profiles for high performance turf playing surfaces?	Construction may have beneficial environmental impacts where drainage and irrigation reduce excess water, nutrient and chemical flow into the external environment, including natural waterways, or enable recycling of water run-off thus minimising the draw on water resources. Beneficial impacts may also result from the construction of a soil profile with more efficient water and nutrient utilisation than the original soil profile of the site.

Detrimental environmental impacts may arise where surface construction activities produce excess noise, dust or water, or the drainage and irrigation systems do not optimise water use because of incorrect installation or design faults, such as irrigation overspray or inefficient drainage.

Where new sites are established for sporting enterprises, the interruption of native corridors and degradation of the ecosystem edge may compromise existing native ecosystems.

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 construction activities; safely storing materials on site; using signage and safety barriers during and removing after construction activities are completed; and swiftly and efficiently removing and processing debris and waste from the work area.

What **services** may need to be located?

Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.

What **drainage systems** may be relevant to this standard?

Drainage systems may include earthenware, PVC, surface, sub-surface, spoon, agricultural, strip, aggregate, pits, mole plough, sand slit and sub-surface cultivation.

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 constructing a soil profile for a high performance turf surface requires evidence that the person is able to prepare for construction activities, supervise work groups, set out, survey, test and excavate the construction site, install the soil profile, and apply soil amendments ready for the establishment of the high performance turf playing surface.

The skills and knowledge required to construct a soil profile must be **transferable** to a different work environment. For example, this could include different playing surfaces, soil profiles 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:

- practical understanding of the range and use of materials, tools, equipment and machinery available to the enterprise for construction of soil profiles, including soil amendments and base construction materials
- practical understanding of the range of construction methods that may be used to construct soil profiles for high performance turf surfaces, and the association of construction methods with site limitations, environmental implications, and end use of the turf surface
- practical understanding of surveying principles and techniques
- soil testing techniques and the application of results to the construction process
- awareness of the comparative environmental implications associated with construction and excavation activity, drainage and irrigations systems, soil amendments and waste disposal 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 effectively with work team members, supervisors, contractors and consultants
 - interpret, and draft basic plans
 - utilise proforma reporting, analyses and work procedure documents
 - understand design symbols and information
 - measure materials, interpret site and construction plan specifications, survey and assess site measurements, and interpret and apply test results
 - co-ordinate work group, contractors and own activities to sequentially and effectively complete construction 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 (1) be applied?	Written, oral and tele-communication of ideas and information relating to construction activities and problems encountered will be required with the supervisor, work group, contractors or consultants.
2. How can information be collected, analysed and organised (1) ?	Enterprise work procedures and site and construction plans should be consulted, interpreted and applied to co-ordinate construction activities, with further clarification sought from the supervisor, contractors or consultants where 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 construction program.
4. How can team work (2) be applied?	The construction program will involve facilitating and leading members of a team to complete the construction 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 construction 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 access and apply design specifications, undertake construction 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**.

RTF3004A**Implement a grassed area maintenance program**

This competency standard covers the process of implementing a grassed area maintenance program. The work is likely to be under limited supervision, with checking only related to overall progress. It requires the application of horticultural knowledge and a broad range of grassed area maintenance 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 grassed area maintenance work	1.1	Requirements of the maintenance program are clarified with supervisor and enterprise guidelines.
		1.2	Equipment and material resource requirements are identified according to the scope of the co-ordination work and supervisors instructions.
		1.3	The priorities for maintenance activities and time allocation is identified, documented and presented to the supervisor for verification.
		1.4	The environmental implications of the proposed maintenance work 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	Maintain and repair grassed areas	2.1	Grassed areas are maintained and repaired as authorised by the supervisor and according to enterprise guidelines and work place priorities.
		2.2	Materials to assist in maintenance works are purchased, stored and/or used as required.
		2.4	Delivery of materials to site is organised according to workplace priorities.
		2.5	Machinery and equipment is organised to be on site in good order when they are required.
		2.6	Grassed area maintenance and repairs requiring specialist attention and work are identified and organised according to enterprise guidelines.

3	Co-ordinate and report on grassed area maintenance activities	3.1	Resources are co-ordinated and timed to suit the maintenance activities and priority of work.
		3.2	Machinery operators are informed of appropriate use and their responsibilities in respect to operational maintenance requirements of machinery and equipment.
		3.3	Personnel, activities, timelines and materials 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 report is written to inform management of maintenance 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 grassed area maintenance activities are covered by this unit?	Grassed area maintenance activities covered by this unit include mowing, slashing, minor weed control, watering, line marking, repairs to damaged/vandalised grassed areas, and sourcing contractors for specialist turf renovation work.
What resource requirements are likely to be identified?	Materials may include goods that will be consumed by the maintenance work such as fuels, oils, fertiliser, top-dressing materials, grass seed or other turfing material, irrigation equipment, line marking equipment and materials.
What might be the environmental implications of proposed work site activities?	Environmental implications may include risk of contamination of soils, water or adjoining property through chemicals flowing into drains and water sources, and damage to plants. Compliance with local, State/Territory and Commonwealth environmental legislation is required.
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, 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, and 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.
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 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 unforeseen soil problems.
What might be included in a simple report ?	A report may include the authors name and date, progress of activities completed, 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 co-ordinating machinery and equipment maintenance requires evidence that a person can prepare and plan for maintenance work, organise resources required, and monitor and report on activities undertaken.

The skills and knowledge required to coordinate machinery and equipment maintenance must be **transferable** to a different work environment. For example, this could include different machinery and equipment, workplaces and enterprise guidelines.

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:

- work schedule programming
- possible causes of disruption to work activities and their effect on quality and time schedules
- methods and practices for maintaining grassed areas
- the range, use and availability of materials, equipment and machinery that may be required for the project.
- environmental awareness associated with undertaking maintenance and repair work on grassed areas to ensure the impact on the environment is minimal
- 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
- co-ordinate 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 (2) be applied?

Ideas and information may need to be communicated with the supervisor, such as regular reporting.

2. How can information be collected, analysed and organised (2) ?	Information on grassed area maintenance may need to be collected, analysed and organised according to the scope of work required.
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 down time is minimised for the enterprise.
4. How can team work (2) be applied?	Team work may be applied to ensure that machinery and equipment is properly maintained and operated.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may be applied when organising time frames to meet maintenance priorities.
6. How can problem-solving skills (2) be applied?	Site contingencies, personnel difficulties, timeline failures, 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 activities.

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**.

RTF3005A**Deliver and promote sales
of plants**

This competency standard covers the process of transporting and delivering plants to other nurseries and the associated task of maintaining promotional displays.

This type of work is likely to be under limited supervision from others, with checking only related to overall progress. The provision of product and marketing support requires the application of extensive horticultural knowledge and a broad range of horticultural skills. The work is normally done within routines, methods and procedures where some discretion and judgement are 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 to provide marketing support	1.1	Product list, clients , delivery schedule and transport vehicle are identified according to enterprise work procedures .
		1.2	Tools, equipment and machinery are selected according to delivery requirements and 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	Plants are selected according to orders, sample specifications and delivery schedule, and are prepared and loaded into transport vehicle according to enterprise work procedures.
		1.5	OHS hazards are identified, risks assessed, controls implemented and reported to the supervisor.
		1.6	Suitable personal protective equipment (PPE) is selected, used and maintained.
2	Deliver plants	2.1	Maintenance of stock is undertaken according to enterprise work procedures.
		2.2	Current stock lists are updated and maintained according to enterprise work procedures.
		2.3	Regular delivery service is maintained according to enterprise work procedures.
		2.4	Clients are supplied, on request, with information about stock availability according to enterprise work procedures.

		2.5	Delivery documentation is completed accurately according to enterprise work procedures.
3	Maintain off-site displays	3.1	Off-site product displays are checked regularly according to enterprise work procedures.
		3.2	Maintenance of displays is undertaken according to enterprise work procedures and client requirements.
		3.3	Marketing support is undertaken according to OHS requirements , and with due consideration of the environmental implications .
4	Promote sales	4.1	Retailers are informed of available promotional literature with particular stock lines.
		4.2	Regular sales memos are dispatched according to enterprise work procedures.
		4.3	Advanced lists for seasonal promotions are prepared according to enterprise work procedures.
		4.4	Sales, promotional and marketing documentation are completed accurately 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 training and assessment requirements may depend on the work situations available.

What clients may be relevant to this standard?	Clients may include retail nurseries, branch outlets for larger horticultural companies, and horticultural industry service providers such as landscapers, garden maintenance enterprises and horticultural design consultants.
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, production schedule, marketing and sales plan, supply program, enterprise standard operating procedures (SOP), 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.

What tools, equipment and machinery may be required?	Tools, equipment and machinery may include secateurs, hand weeding tools, wheelbarrow, sacktruck, hose and hose fittings, spray equipment, hydraulic barrow, lifting apparatus, display fittings and stands, and delivery trucks, vans and carriers.
What OHS hazards may be associated with the provision of marketing support?	Hazards may include solar radiation, dust, soil- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving machinery and vehicles, and uneven surfaces.
What PPE may be required to provide marketing support?	PPE may include hat, boots, apron or overalls, gloves, spray clothing, goggles, respirator or face mask, face guard and sunscreen lotion.
What activities may be included in the maintenance of orders, sample stock and stock displays?	Maintenance may include cleaning the display fittings and stands, applying water, nutrients and pest and disease control measures as required, pruning of dead material, hand weeding of pots, replacing dead, damaged or outdated plants with fresh or current stock, and replacing damaged or inappropriate labels, display signage and catalogues.
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 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 delivery of plants to clients and maintenance of displays?	Environmental implications may include the contamination of off-site ground water or soils from solids, debris, nutrients or chemicals; high levels of noise, vehicle traffic, emissions and discharges, and water run-off.

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 providing marketing support for horticultural products and services requires evidence that a person is able to prepare plants for dispatch, interpret and apply delivery schedules, meet client orders, and maintain plant samples and off-site displays to enterprise standards of quality and presentation.

The skills and knowledge required to provide marketing support for horticultural products and services must be **transferable** to a different work environment. For example, this could include different plant species/varieties, delivery arrangements and promotional programs.

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 and industry labelling standards and methods
- enterprise standards and methods of packaging, and delivery of plant orders, samples and displays
- practical understanding of the range of plants available from the enterprise, their botanical, common and trade names, growth habits, and presentation requirements for display
- enterprise standards and methods for the preparation and dispatch of promotional literature and lists for seasonal promotions
- awareness of the environmental implications associated with the preparation, transport and maintenance of plant orders, samples and displays.

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 with clients, work team members and supervisors, interpret and apply delivery schedules and marketing plans, utilise proforma reporting and work procedure documents, and understand labels and symbols
- estimate treatment and product requirements, material sizes and quantities; interpret maps and directories, and calculate orders, sales figures, ratios, proportions and application rates

- co-ordinate own activities with plant production, marketing and sales teams to deliver and maintain plant orders, samples and displays in a timely and cost effective manner and to clients specifications
- drive a motor vehicle.

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 the transportation and maintenance of plants and problems encountered will be required with other work teams, the supervisor, suppliers and clients.
2. How can information be collected, analysed and organised (2) ?	Enterprise work procedures should be consulted, interpreted and applied to co-ordinate work activities, with further clarification sought from the supervisor when necessary.
3. How are activities planned and organised (2) ?	Work activities for self and others in the marketing team will be planned prior to and adjusted during the delivery and maintenance of plant orders, samples and displays.
4. How can team work (2) be applied?	Co-ordination with other team members will be required to complete the delivery of products and services 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 requirements of the delivery and maintenance of plant orders, samples and displays.
6. How can problem-solving skills (2) be applied?	Supply contingencies, shortfall in orders, stock quality, client 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 undertake work 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**.

RTF3007A

Fell large trees

This competency standard covers the process of the safe felling of trees over 6 metres in height, or greater than 1.5 metres DBH. Felling may require the use of multiple back cuts and/or boring techniques, and the use of heavy equipment such as excavators, dozers or other machines.

The felling of large trees is usually undertaken with supervision from others, with checking only related to overall progress. Discretion and judgement is required in the selection of equipment, work organisation, services, actions and achieving outcomes within time constraints. Competency is demonstrated by the application of knowledge and skills to a range of tree felling tasks and roles usually within established enterprise guidelines.

Element	Performance Criteria
1 Prepare for tree removal	1.1 Trees are assessed for size, structural defects, weight distribution and canopy
	1.2 The fall site is assessed considering wind speed and direction, topography, safe fall zone, exclusion zone, any potential danger to the public or property, and environmental implications .
	1.3 Tools, equipment and machinery are selected according to appropriate removal methods .
	1.4 Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise guidelines.
	1.5 OHS hazards are identified, risks assessed and suitable controls implemented
	1.6 Suitable safety equipment and personal protective equipment (PPE) is selected, used and maintained.
2 Coordinate site preparation	2.1 A safe fall zone and exclusion zone are determined considering tree, site, environmental, and safety assessments.
	2.2 A planned escape route, noting debris and other potential hazards is determined.
	2.3 Fall zone and escape route are cleared and surrounding features/structures are protected from damage.
	2.4 Exclusion zone is identified, appropriate safety barriers erected and safety procedures implemented and monitored.

3	Dismantle branches	3.1	Weights of tree branches are ascertained so that they do not exceed the safe working limit of equipment.
		3.2	Branches are dismantled using the “ cut and drop ” method , or cut and lowered by ropes according to accepted rigging techniques .
		3.3	Dismantling techniques are employed to ensure branches fall or are lowered safely into the determined drop zone with no damage to property and equipment, or injury to personnel.
4	Fell trees	4.1	A safety lanyard and climbing spurs are used to ascend tree to perform sectional felling.
		4.2	An elevated platform is used for access to assist sectional felling.
		4.3	A directional scarf and back cut is used to cut and throw sections of a tree in line with industry recognised techniques.
		4.4	Sections of a tree are cut and dropped using a horizontal cut and appropriate hinge wood.
		4.5	A pull rope is used to control fall of tree sections.
		4.6	Industry standard hitches and knots are used in rope lowering of cut tree sections.
5	Fell wind thrown and suspended trees	5.1	The hazard potential of wind thrown or suspended tree to be removed is assessed.
		5.2	Safe work practices which apply to the removal of wind thrown or suspended trees are adopted.
		5.3	Hand or power winches are used to pull out the suspended tree as necessary.
		5.4	The root system of a wind thrown tree lying on the ground is propped.
		5.5	Wind thrown tree is crosscut in correct position to reduce trunk movement and prepare it for removal.
6	Complete felling operations	6.1	Felled trunks and branches are crosscut and trimmed to manoeuvrable lengths ready for disposal.
		6.2	The site is cleared of trunk, branches and tree debris using appropriate timber disposal methods and equipment, and in accordance with manufacturer specifications and safety guidelines.

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 type of trees are likely to be assessed for removal?	Trees that can be safely felled, trees that must be removed in sections due to height and width, and location and hazardous trees such as wind thrown or suspended trees.
What environmental implications may impact on tree felling operations?	Environmental implications may include National, State and local legislation and/or regulations that may address natural heritage, cultural heritage and community use issues.
What tools, equipment and machinery are relevant for this standard?	Tools, equipment and machinery may include axes, sledge hammers, alloy and plastic wedges, ropes, hand winches, ladders, hand saws, secateurs, tape measures, height meters, climbing and rigging equipment, mobile phones or 2-way radios, tree jacks, chain saws and appropriate maintenance equipment, chippers, elevated platforms such as cherry pickers and cranes, bulldozers and vehicles for loading and removing felled trees.
What removal methods may be used to fell large trees?	Removal methods may involve climbing or access via elevated platforms, and may include conventional felling and directional felling techniques, which may require the use of multiple back cuts and/or boring techniques. For example, directional felling techniques include cutting a scarf and making a plunge cut, making a back release leaving standard hinge depth using a falling wedge in the back cut to avoid chainsaw jamming, and to assist the fall and ensure trees fall into desired drop zone.
What OHS hazards associated with felling operations may need to be considered?	OHS hazards may include working near power lines, tree integrity, climbing, manual handling, vehicular and pedestrian traffic, moving equipment and vehicles, sharp hand tools; falling trees, branches and equipment; uneven surfaces, UV radiation, heat and cold, fatigue, working alone, noise, insects and animals.

What suitable controls are likely to be implemented?	Suitable controls may include procedures for handling, transporting and storing petrol, oils, and chemicals; appropriate PPE, approved ladders and ropes, safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, correct manual handling techniques, basic first aid and emergency procedures training, and a two-way radio or mobile phone on site.
What safety equipment may be required?	Safety equipment may include safety signs, barricades, first aid kit, and rescue climbing kit.
What PPE may be required to undertake tree-felling operations?	PPE may include steel cap boots, hard hat, ear protection, eye protection, cut resistant trousers or chaps, reflective vest, gloves and sunscreen lotion.
What methods are likely to be employed to dismantle branches?	Dismantling may involve the use of elevated platforms or tree climbers, cutting sections of branches and throwing them into a drop zone, or lowering branches to ground level using ropes.
What branch releasing cuts are likely to be employed in the “cut and drop” method of dismantling?	Branch releasing cuts may include a single top cut, an undercut then a top cut, a box cut, a scarf undercut then a top cut, and a spearing cut.
What type of ropes are likely to be used?	Different types of ropes may include polyamide (nylon), polypropylene and polyester.
What rigging techniques are likely to be employed to lower branches?	Rigging techniques may include using a branch as friction, setting a pulley or false crotch, setting the rope above branches to be removed, pulling a large section of trunk to ground level, lowering block sections, speed lining and vertical speed lines.
How is the hazard potential of wind thrown or suspended trees assessed?	The hazard potential of a tree may be assessed by visual inspection, and may involve a careful hazard analysis of the tree integrity and structure in terms of operator safety, potential danger to public or property, access hazards for equipment.
What safe work practices are likely to be adopted when felling wind thrown or suspended trees?	Safe work practices may include the erection of warning signs and barriers, the correct use of tools and equipment according to manufacturers specifications, and the wearing of appropriate PPE.

What **timber disposal methods** are likely to be used?

Timber disposal methods may include logging, chipping or burning the branches that are cut off the trunk, and removal from site in trucks or trailers. Felled trees may be cut into manageable lengths, loaded, secured and removed from the site. Processed organic waste may be recycled as compost or mulch, and larger timber milled or sold as firewood.

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 felling large trees requires evidence that a person can complete a tree felling assessment, and can undertake felling operations on large and hazardous trees with due regard for safety and environmental requirements.

The skills and knowledge required to fell large trees must be **transferable** to a different work environment following induction to that new workplace. For example, a person who is competent in felling large trees should have sufficient knowledge and skills to work with a range of tree species and conditions, recognising a variety of tree hazards, and select appropriate techniques and equipment for safely removing those trees.

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:

- safe tree removal methods based on results of tree, site and safety assessments
- maintenance, operation and Safe Working Loads of the tools, equipment and machinery required for given removal methods
- safe working practices for chainsaw operation
- safety procedures and potential hazards for working safely in the amenity tree industry
- emergency and first aid procedures
- environmental implications of tree removal, including National, State and local legislation and/or regulations
- natural heritage, cultural heritage and community use issues that impact on tree removal programs
- principles and methods of inspecting trees to identify structural defects.

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 with work team members, supervisors, suppliers and clients
- interpret felling plans, work procedure documents, and survey symbols and information
- co-ordinate work group, materials, equipment and own activities to sequentially and effectively complete felling operations in a safe and timely manner
- estimate tree height, distance and quantities; and calculate area, angles and fuel requirements
- measure site plan specifications
- apply basic rigging and rope handling techniques in tree removal operations
- describe falling sequence for individual trees
- use basic surveying methods and/or equipment.

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.

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1. How can communication of ideas and information (1) be applied?	Written, oral and telecommunication of ideas and information relating to felling operations and problems encountered will be required with the supervisor, work group, clients, consultants or suppliers.
2. How can information be collected, analysed and organised (1) ?	Enterprise work procedures, site assessment, OHS and environmental requirements should be consulted, interpreted and applied to co-ordinate felling operations, with further clarification sought from the supervisor, clients or consultants where necessary.
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3. How are activities planned and organised (2) ?	Work activities for the work group and self will be planned prior to and adjusted during felling operations. Traffic and weather variations may need to be considered when planning and organising schedules.
4. How can team work (2) be applied?	The felling operation will involve facilitating and leading members of a team to complete the schedule safely, on time and within budgetary constraints.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical application will be required to calculate the spatial and logistical requirements of the felling site, in estimating and calculating tree and branch weights and sizes, and calculating fuel requirements.
6. How can problem-solving skills (2) be applied?	Unexpected hazards such as movement and condition of the tree or branches; rigging, loss of control of tree in falling, equipment malfunction, workplace safety, other team members, environmental issues and interruption of works may require problem-solving.
7. How can the use of technology (2) be applied?	Technological understanding will be required to operate advanced felling machinery, to prepare, use and maintain chainsaws and arboricultural tools, to research information on felling techniques and characteristics of different species of tree, and to 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**.

RTF3010A**Establish turf**

This competency standard covers the process of establishing turf in sporting, public recreational open space, and/or domestic situations. Turf establishment is likely to be under limited supervision from others, with checking only related to overall progress. Turf establishment involves the application of horticultural knowledge with depth in some areas and a broad range of horticultural skills. The work is normally done within routines, methods and procedures where some discretion and judgement is required in the selection of machinery and equipment, work organisation, services, actions, and achieving outcomes within time and budget constraints.

Element	Performance Criteria
1 Collect samples for soil testing	1.1 Soil samples are taken from a representative area and accurately labelled according to enterprise guidelines and consultant requirements.
	1.2 Tools and equipment are chosen appropriate to the task being undertaken, used according to guidelines, and safe working practices are employed according to enterprise OHS guidelines.
2 Plant turf	2.1 Planting site is prepared according to enterprise guidelines.
	2.2 Placement and planting method of the plant material are consistent with the turf type.
	2.3 Newly planted turf is watered and top-dressing is applied according to plan and supervisors instructions.
	2.4 Tools equipment and machinery chosen are appropriate to the task being undertaken, used according to guidelines, and safe working practices are employed.
3 Manage newly established turf	3.1 Newly established turf is watered and fertilised according to need and method of planting.
	3.2 Turf is mowed according to a specified pattern and height according to the requirements of the enterprise.
	3.3 Newly established turf is monitored, problems identified, and any changes are reported to supervisor according to enterprise policy.
	3.4 Top dressing is applied according to the establishment plan.

		3.5	Tools and equipment chosen are appropriate to the task being undertaken, used according to guidelines, and safe working practices are employed.
4	Report and repair areas of damaged turf	4.1	Plants are observed for health properties, specifications and historical data.
		4.2	Turf condition is observed for quality according to enterprise practice and guidelines.
		4.3	Reports and recommendations are made to supervisor according to enterprise guidelines.
		4.4	Tools and equipment chosen are appropriate to the task being undertaken, used according to guidelines, and safe working practices are employed.

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 soil tests may be undertaken?	These may include tests for pH, salinity, texture and soil type. Samples may include plugs and core samples. Test kits may include a dry test, CSIRO kits, EC meters and pH kits.
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 and equipment; appropriate use of personal protective equipment including sun protection; safe operation of tools and equipment; safe handling, use and storage of chemicals and hazardous substances; correct manual handling; basic first aid; personal hygiene, and reporting problems to supervisors.
Where might turfed areas be established?	This unit applies to all turfled areas such as those found in public open space, parks and reserves, public and private gardens, and playing fields.
What turfing material may be used in this standard?	Plant material may include instant turf, sprigs, sod, seed, hydro-seed, and stolons.
What turf planting methods may be used?	Planting methods may include sowing, laying, rolling, chaffing, and sprigging.

What tools, equipment and machinery may be required for turf establishment?	Tools, equipment and machinery may include hand tools such as rakes, spreaders, shovels, turf spades, rollers, wheelbarrows, hoses and hose fittings, and machinery such as trailed or motorised equipment, sod cutters, mechanical rollers, fertiliser spreaders, top-dressing machinery, levellers, front-end loaders, trucks, hydraulic trailers, and tractors and 3-point linkage equipment.
How might newly turf establishment sites vary?	Site may vary in soil types, moisture content, pH levels, salinity, texture, compaction, shade, aspect, climate, and proximity to buildings and roads.
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 unit requires evidence that turfed areas have been successfully established. The skills and knowledge required to establish turf must be **transferable** to a range of work environments and contexts. For example, this could include different using different establishment techniques with different turf material over a range of areas to be planted.

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: • appropriate agricultural chemicals and concentrations • turf identification and growth characteristics • soils and turf nutrition • fertiliser use and application • watering practices • common weeds, pests and diseases.
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 soil samples for analysis • establish turf • use turf establishment machinery and equipment • use fertilisers and irrigation equipment • repair areas of damaged turf.

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?	Communication of ideas and information can be applied through workplace meetings and verbally with supervisors.
2. How can information be collected, analysed and organised (1) ?	Information can be collected, analysed and organised by reporting and recording job progress.
3. How are activities planned and organised (1) ?	Activities are planned and organised on a daily basis to get work completed.
4. How can team work (3) be applied?	Team work can be applied in all aspects of the work to achieve the outcomes of the unit.
5. How can the use of mathematical ideas and techniques (1) be applied?	The use of mathematical ideas and techniques can be applied in estimating and calculating materials.
6. How can problem-solving skills (1) be applied?	Problem-solving skills can be applied in overcoming minor establishment issues as they arise.
7. How can the use of technology (2) be applied?	The use of technology can be applied with the tools and equipment selected to complete the job.

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**.

RTF3011A**Implement a plant establishment program**

This competency standard covers the installation and consolidation of planted areas as part of a horticultural, agricultural or land management tree and shrub planting program. Establishing a planted area is likely to be under limited supervision from others, with checking only related to overall progress. The work requires the application of plant knowledge with depth in some areas and a broad range of horticultural skills. Planting is normally done within 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.

This unit excludes planting of sports and recreational turf, intensive plant crops and revegetation works.

Element		Performance Criteria	
1	Prepare to establish a planted area	1.1	The planting site, planting methods and plant species and cultivars are identified according to the site plan and enterprise work procedures .
		1.2	Materials, tools, equipment and machinery are selected according to planted area design requirements and 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) is selected, used, maintained and stored.
2	Coordinate establishment of the planted area	2.1	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.
		2.2	Establishment of the planted area is undertaken according to OHS requirements , and with due consideration of the environmental implications .
		2.3	A clean and safe work area is maintained throughout and on completion of work.

3	Prepare the planting area	3.1	Layout of services is recognised, depths checked against the site plan, and discrepancies are reported to the supervisor and the relevant authority.
		3.2	Earthworks are undertaken according to enterprise work procedures.
		3.3	Additives are selected and applied, as required, according to site conditions and enterprise work procedures.
		3.4	The planting site is watered, where required, according to the planting method and enterprise work procedures.
		3.5	Positions of plants are marked out on site according to the plant establishment program.
		3.6	Debris and pollutants are removed from the site and disposed of in an environmentally aware and safe manner according to enterprise work procedures and OHS requirements.
4	Undertake planting operation	4.1	All plants are inspected prior to being planted, and plants with major defects are discarded according to enterprise work procedures.
		4.2	Plants with minor defects are trimmed or treated to maintain health and vigour according to enterprise work procedures.
		4.3	Plants are planted at a spacing sufficient to enable them to develop their full potential according to enterprise work procedures and the plant establishment program.
		4.4	Planting methods comply with the growing requirements of individual plant species and cultivars.
		4.5	Newly installed plants are provided with post-planting care according to enterprise work procedures.
		4.6	Pruning is undertaken, where necessary, according to the needs of the species and cultivar to ensure plants develop a sound framework for their growth and habit according to enterprise work procedures.
5	Monitor the plant establishment program	5.1	The plant establishment program is monitored according to enterprise work procedures.
		5.2	Plants incorrectly planted, or situations that will prevent plants from reaching their full potential are identified, recorded and reported according to enterprise work procedures.

		5.3	Remedial action is undertaken to ensure all requirements of the plant establishment program are implemented.
6	Complete program of works	6.1	Earthworks are completed to plan specifications and enterprise work procedures.
		6.2	Waste material is removed from the planting site and disposed of in an environmentally aware and safe manner according to enterprise work procedures and OHS requirements.
		6.3	Tools, equipment and machinery are cleaned, maintained and stored according to OHS and enterprise work procedures.
		6.4	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 planting sites may be relevant to this standard?	Planting sites may include large-scale or broadacre woodlots, parks and gardens, landscaped areas and recreational reserves. It excludes sports turf or recreational turf surfaces, intensive plant production and revegetation areas which are covered elsewhere.
What planting methods may be used to establish a planted area?	Planting methods may include tube planting, hand or machine assisted planting of seedlings, planting of divisions, and transplanting.
What plant species and cultivars may be relevant to this standard?	Species and cultivars may include exotic, native, endemic, evergreen, deciduous, conifer and palm trees and shrubs, ground cover plants, bedding displays, and aquatic plants.
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 plant establishment program, enterprise standard operating procedures (SOPs), specifications, routine maintenance schedules, work notes; product labels and Material Safety Data Sheets (MSDSs); manufacturers' service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.

What materials may be required to implement a plant establishment program?	Materials may include additives, ameliorants, fertilisers, materials for protecting plants, and weed, pest and disease control chemicals and materials.
What tools, equipment and machinery may be required?	Tools, equipment and machinery may include hand tools; trailed, 3-point linkage and motorised machinery for excavation, planting and post-planting care operations; and irrigation and drainage systems and components.
What OHS hazards may be associated with the establishment of planted areas?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil-, water- and air-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, spider and insect bites, uneven surfaces, and flying objects.
What safety equipment may be required?	Safety equipment may include first aid kit, high visibility vests, reversing alarms on mobile equipment, signage and barriers.
What personal protective equipment (PPE) may be required to establish planted areas?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, spray jacket or suit, 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, maintenance and storage 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 establishment of planted areas?	The establishment of planted areas may have beneficial environmental impacts where actively growing young trees and shrubs help to fix carbon dioxide from the atmosphere, lower the watertable and associated likelihood of seepage and salinisation in linked catchment areas, and reduce water, nutrient and chemical flow into the external environment including natural waterways.

	Detrimental environmental impacts may arise where establishment activities produce excess noise, dust or water run-off, or the implementation of post-planting care activities such as fertilisation, irrigation and pest control apply inappropriate levels of chemical, nutrients and water, resulting in escape to the external environment.
What tasks may be undertaken to maintain a clean and safe work area ?	Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of plant establishment activities; safely storing materials on site; using signage and safety barriers during and removing after plant establishment activities are completed; and swiftly and efficiently removing and processing debris and waste from the work area.
What services may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What earthworks may be required when establishing a planted area?	Earthworks may include ripping and cultivating the area to be planted, constructing soil profiles for sports turf playing surfaces, and installation of irrigation and drainage systems.
What additives may be required for the successful establishment of plants?	Additives may include lime, gypsum, emollients, fertilisers, organic materials, and fungal and disease control agents.
What site conditions may affect the plant establishment program?	The establishment program may be affected by soil, moisture content, pH levels, salinity, texture, compaction, aspect, pollutants, toxicity, climate, buildings, roadworks, and shade.
What major defects may require the rejection of plants?	Major defects include any condition that will prevent the plant from reaching its full potential, including wilt, stunted growth, root damage and severely root-bound seedlings.
What minor defects may be repairable in required plants?	Minor defects that may be repaired may include damage or breaks sustained by plants that can be trimmed or treated so that the plants can still reach their desired potential.
What growing requirements may affect the planting method?	Growing requirements may include seasonal aspects, the growth stage at planting, and pruning, depth and drainage required for successful establishment.

What aspects of post-planting care are required when establishing a planted area?	Post-planting care may include watering, fertilisation, controlling pests and diseases, weeding, rolling, mowing, renovating, mulching, pruning, protecting, staking, trellising, and monitoring plant health.
What pruning techniques may be appropriate to this standard?	Techniques may include formative pruning, training, removal of damaged or dead materials, canopy reduction, thinning and lifting.
What waste material may be relevant to this standard?	Waste material may include specified noxious or toxic materials (such as weed seed heads, noxious weeds and toxic chemicals), recyclable materials (such as paper, plastic and metal-based litter), composting waste (such as soft plant materials), reusable materials (such as cloths and containers for washing, woody waste), and returnable materials (such as oils and chemical containers). Waste may be removed to designated areas for recycling, reuse, return to the manufacturer, or disposal.
What growth media disinfestation procedures may be required?	Growth media disinfestation procedures may include fumigation, pasteurisation or sterilisation.
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 establishing planted areas on a large scale requires evidence that a person is able to prepare for establishment activities, co-ordinate work groups, prepare the site, install plants, and monitor the establishment program including post-planting care of the planted area.

The skills and knowledge required to establish planted areas must be **transferable** to a different work environment. For example, this could include different plant species, environments, planted area locations and planting 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: the objectives of the plant establishment program, including finished plant forms, site appearance, end use and time constraints

- the physiology of required plant species and cultivars, culture and planting procedures including growth rates, main nutrient and water requirements, deficiency symptoms, recommended treatments and associated environmental implications
- the identification of pests and diseases, plant symptoms of infections, treatment threshold levels, recommended treatments, methods of application and environmental implications
- soils and soil amelioration techniques
- OHS legislative requirements and codes of practice, OHS procedures, OHS employee and employer responsibilities, and hazard identification, assessment and 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:

- communicate orally and in writing with work team members, supervisors, contractors and consultants
- utilise proforma recording, reporting, analysis and work procedure documents
- interpret site plans, plant establishment specifications and test results
- measure quantities, calculate material requirements, area, volume, ratios and application rates
- co-ordinate work group, contractors and own work activities.

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 tele-communication of ideas and information relating to plant establishment activities and problems encountered will be required with the work group, supervisor, contractors and consultants.
2. How can information be collected, analysed and organised (1) ?	Enterprise work procedures and site and plant establishment plans should be consulted, interpreted and applied to co-ordinate plant establishment 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 plant establishment program.
4. How can team work (2) be applied?	The plant establishment program will involve facilitating and leading members of a team to complete the establishment 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 plant establishment 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 access and apply program specifications, undertake plant establishment 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**.

RTF3012A**Implement a plant nutrition program**

This competency standard covers the process of implementing a plant nutrition program in the horticultural or agricultural industry.

Implementing a plant nutrition program is likely to be under limited supervision from others, with checking only related to overall progress. The work is usually done within a program, 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 implementation of the plant nutrition program	1.1	Goals and target site for implementation of the plant nutrition program including soils , plant species and varieties are identified according to enterprise work procedures .
		1.2	Materials for soil and plant treatments available to the enterprise are identified and the storage site or supplier details located.
		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 personal protective equipment (PPE) is selected, used and maintained.
2	Monitor soil pH	2.1	Soil pH in the implementation site is monitored in relation to plant nutrition and according to enterprise work procedures.
		2.2	Products useful in changing soil pH are identified, compared, selected and sourced according to enterprise work procedures.
		2.3	Product application methods are assessed according to product type, soils, enterprise work procedures, and in due consideration of the environmental implications .
3	Determine nutritional problems in plants	3.1	Common nutrient deficiency and toxicity problems in plants are identified using visual inspection.

		3.2	The supervisor and/or nutritional specialist are consulted, as required, to determine causes of nutritional or toxicity problems.
		3.3	Soil ameliorants to improve soil fertility are identified, compared, selected and sourced according to enterprise work procedures.
4	Prepare to use fertilisers	4.1	The fertiliser to be used is selected according to fertiliser type, soils, enterprise work procedures, and in due consideration of the environmental implications.
		4.2	Fertiliser application methods are assessed according to fertiliser type, soils, enterprise work procedures, and in due consideration of the environmental implications.
		4.3	Fertilisers are applied according to the plant growing cycle and the enterprise fertiliser calendar.
		4.4	Fertilisers are handled and stored safely in a manner that minimises detrimental environmental impact, and according to enterprise work procedures.
5	Prepare application equipment	5.1	Tools, equipment and machinery are selected according to enterprise work procedures.
		5.2	Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures.
		5.3	Tools, equipment and machinery are calibrated and adjusted according to manufacturers guidelines and enterprise work procedures.
6	Apply specific products at appropriate rates	6.1	Specific products are selected based on their analysis to meet plant needs according to enterprise work procedures.
		6.2	Product application rates are calculated to optimise plant benefit and minimise environmental impact according to manufacturers specifications and enterprise work procedures.
		6.3	Specific products are applied at the correct rate, timing and method according to the product type and analysis, manufacturers specifications, enterprise work procedures, and in due consideration of the environmental implications.
		6.4	Product applications are recorded according to enterprise work procedures.

- 6.5 Target plant response to the plant nutrition program, as well as any non-target effects such as environmental impact or pest responses are monitored, documented and reported to the supervisor according to enterprise work 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 particular training and assessment requirements may depend on the work situations available.

What soils may be relevant to this standard?	Soils may include field soil sites and specialist growing media.
What enterprise work procedures may apply to this standard?	Work procedures may include supervisors oral or written instructions, plant nutrition program, enterprise standard operating procedures (SOP), 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.
What materials may be accessed for soil and plant treatments?	Materials may include those to modify soil pH, soil ameliorants to improve soil fertility, and fertilisers to meet the nutritional requirements of plants.
What services may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What OHS hazards may be associated with implementing a plant nutrition program?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil-, air- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, flying objects and uneven surfaces.
What PPE may be required to implement a plant nutrition program?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, spray clothing, hearing protection, sunscreen lotion and hard hat.
What products may be useful in changing soil pH ?	Products may include lime such as ground limestone, dolomite, and a range of fertilisers.
What application methods may be used to change soil pH?	Application methods may include banding, broadcasting, ripping, spraying and fertigation.

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. Responsible fertilisation and watering practices may, however, help to reverse previous environmental degradation by allowing natural recovery and regeneration of native ecosystems.
What soil ameliorants may be used to improve soil fertility?	Soil ameliorants may include cover crops, animal manures, gypsum and lime.
What fertilisers may be used in the plant nutrition program?	Fertilisers may include solids, liquids or gases, which are artificial, organic, applied directly to the soil or to the plant via foliar sprays.
What fertiliser application methods may be used?	Fertiliser application methods may include banding, broadcasting, ripping, spraying and fertigation.
What tools, equipment and machinery may be used to implement a plant nutrition program?	Monitoring equipment may include a pH test kit, electronic pH testing device, hand held salinity or EC meter, tape measure, sample bags, plastic overlays, aerial photographs, charts and tables of soil characteristics and plant soil 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.

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 plant nutrition program requires evidence that a person can assess the nutritional health of plants grown by the enterprise, and access and apply appropriate products to plants and soils to meet the goals and objectives of the plant nutrition program.

The skills and knowledge required to implement a plant nutrition program must be **transferable** to a different work environment. For example, this could include different plant species, nutrition programs 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: • the relationship between soil characteristics and the availability of nutrients, including macro and micro elements, to plants • nutrient cycling and its practical relevance to the specific plants and soils used in the enterprise. • methods of nutrient uptake by plants • 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 • soil ameliorants commonly required to treat the soil 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 • the environmental implications for the external environment of soil ameliorant and fertiliser use, which may include over-spraying, run-off, nutrient overload, erosion, toxicity, noise and dust.
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 with work team members, supervisors, contractors and suppliers, interpret manufacturers and plant nutrition program specifications, utilise proforma reporting, analysis and work procedure documents, and understand labels and symbols • estimate treatment and product requirements, material sizes and quantities, interpret specifications, and calculate areas, ratios, proportions and application rates • co-ordinate own activities with the requirements and schedules of the work group and contractors to sequentially and effectively implement the plant nutrition program 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 the plant nutrition program, and problems encountered will be required with the work group, supervisor, contractors and suppliers.
2. How can information be collected, analysed and organised (2) ?	Enterprise work procedures, plant nutrition program specifications and site plans should be consulted, interpreted and applied to co-ordinate plant nutrition activities, with further clarification sought from the supervisor when necessary.
3. How are activities planned and organised (2) ?	Work activities for the work group, contractors and self will be planned prior to and adjusted during the plant nutrition program.
4. How can team work (2) be applied?	The plant nutrition program may 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 plant nutrition program.
6. How can problem-solving skills (2) be applied?	Nutritional deficiencies and toxicities, the selection and sourcing of treatment 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 plant nutrition activities, communicate, report 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**.

RTF3014A**Implement a propagation plan**

This competency standard covers the process of plant propagation by both sexual and asexual methods.

Competency involves the application of knowledge and skills to a range of propagation tasks, such as the selection of suitable propagation material, selection and preparation of propagation media, and the application of preparatory treatments. The work is carried out within routine methods and procedures under limited supervision, with checking only related to overall progress. 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 propagation activities	1.1	Workplace information is interpreted and tasks organised to achieve daily work routine within time constraints.
		1.2	Tools, equipment and machinery are selected according to propagation method and enterprise work procedures.
		1.3	Growing environment is prepared to suit species and propagation method.
		1.4	Hygiene practices are implemented according to enterprise guidelines.
		1.5	OHS hazards are identified, risks assessed, controls implemented and reported to the supervisor.
2	Select propagation material	2.1	Parent plant is identified and selected according to health, vigour and desired characteristics.
		2.2	Propagation material is selected and collected according to the propagation method, and species.
		2.3	Conditioning and storage requirements are selected to ensure maximum viability of propagating material.
3	Prepare propagating media	3.1	Media components are selected according to manufacturer directions, enterprise guidelines, propagation method and plant needs.
		3.2	Propagation media is tested to ensure the product complies with media specifications .

		3.3	Media and components are handled according to OHS requirements .
		3.4	Storage requirements for the unused propagation media are selected.
		4.1	Propagation material is prepared according to the propagation method and species.
		4.2	Propagation techniques are performed according to plant species and enterprise guidelines.
4	Propagate plants	4.3	Plants are handled in a way that minimises damage.
		4.4	After care is applied to suit the media conditions, plant requirements and propagation techniques employed.
		5.1	Ensure work site is cleaned according to hygiene requirements.
		5.2	Waste is collected and disposed of or recycled to minimise damage to the external environment in accordance with enterprise guidelines.
5	Complete propagation operations	5.3	Records are completed accurately and at the required time 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 propagation activities may be relevant to this standard?	Propagation may include sexual and asexual methods of propagation including tissue culture.

What enterprise work procedures may apply to this standard?	Work procedures will be based on sound horticultural principles and practices and may include supervisor's oral or written instructions, propagation program, enterprise standard operating procedures (SOPs), specifications, production schedules, routine maintenance schedules, work notes, product labels, and Material Safety Data Sheets (MSDSs); Integrated Pest Management (IPM) programs; manufacturers' service specifications and operator's manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.

What tools and equipment may be required for conducting propagation activities?	Tools and equipment may include secateurs, knives and other cutting instruments, sharpening stone, linear measure, grafting machine, plastic containers and trays, scalpel, laminar flow cabinet, autoclave, alcohol, vermiculite boxes, wheelbarrow, trolley, mechanical trolley, shovel, water spray container, dibblers and rubbish bins.
How might the growing environment be prepared ?	Preparation may include setting temperatures controls, setting wind machines, and setting humidity levels.
What hygiene practices may be applied to this standard?	Hygiene practices may include storing different types of media separately to avoid cross contamination, cleaning and disinfecting work areas, tools and equipment between batches, access restrictions, and footbaths.
What OHS hazards might apply to this standard?	OHS hazards may include using hazardous substances, using sharp tools and equipment, slippery uneven surfaces, and manual handling.
What sort of propagation material might apply to this standard?	Propagation material may include seeds, cuttings, spores, rootstock, scion, rootlings, buds, separations/divisions, tissue cultures, rhizomes, and pantalets.
What conditioning and storage requirements may apply to propagation materials?	Conditioning and storage requirements for propagation materials may include bundling, packing and labelling, and controlling environmental parameters such as moisture, air, humidity and temperature.
What propagating media may be used?	Propagating media may include sand, potting mix, agar, gravel, scoria, rock wool, gro-wool, sawdust, pine bark, perlite, vermiculite, and water (hydroponics).
What media specifications may be required for propagation media?	Tests may include pH, drainage, aeration, salinity nitrate levels, water repellence, hormone levels and types, nutrient levels, and sterility.
What OHS requirements may apply to the handling of propagation media and components?	OHS legislation in each state details steps that need to be followed when dealing with hazardous substances. Steps may apply to labelling, MSDSs, equipment used for handling pot media, composts and other organic material; potting areas, and appropriate safety equipment.
What storage procedures might apply to propagation media and components?	Media should be stored in facilities that prevent infestation by root rot organisms, on surfaces and in areas that exclude run-off water and contamination by soil and other contaminated materials; in bins, trailers and trolleys.

What preparatory treatments could be used before commencing propagation activities?	Preparing propagation material may include applying hormones, fungicides, soaking buds, hot water treatment of cuttings, disbudding, hydration, grading, cold/moist stratification, rehydration, heat or chemical disinfection, breaking seed coat, cleaning, division and sterilisation.
What propagation techniques may be relevant to this standard?	Propagation techniques may include seed, cuttings, layering, growing on tissue cultured plants, division or splitting, budding, grafting, spores and cloning.
What after care might be required?	After care may include application of preventative fungicides, fertilisers, water and nutrients.
What waste may be relevant to this standard?	Waste may include pots, discarded propagation material, media waste and chemicals. Waste may be recyclable, re-useable, returnable, or require garbage or toxic handling procedures.
What records may need to be maintained in regard to propagation activities?	Records may include number of plants propagated, source material used, variety, clone, batch number, and treatments applied.
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 propagating plants requires evidence that appropriate propagation material can be selected, growing media and growing site can be prepared, and an appropriate propagation method can be implemented.

The skills and knowledge required to propagate plants must be **transferable** to a different work environment. For example, this could include different plant species, propagation methods and enterprise 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: • quality specifications for parent plants and propagation materials • enterprise and industry hygiene standards required for propagation activities

- common problems that may occur while performing propagation activities in a controlled environment, and preventative/corrective action that may apply
- propagation techniques required for a range of plants
- aftercare requirements for a range of propagated plants
- testing methods applied to propagation media
- preferred types of propagation media for different species.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, some complementary skills are required. These skills are:

- liaising with other work areas and customers
- identifying and assessing hazards in the work area
- recognising and rectifying problems and anomalies with parent plants, propagation material, propagation media, equipment and materials
- propagation techniques for a range of plants
- preparing, mixing and using chemicals as required
- interpreting specifications and industry codes of practice.

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.

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1. How can **communication of ideas and information (1)** be applied?

Ideas and information relating to work issues, tasks and problems may be discussed with suppliers, end users and members of the work team.

This could include giving instructions for propagation support or discussing appropriate treatments, for example, with suppliers or customers.

2. How can information be collected, analysed and organised (1) ?	Information relating to propagation schedules and plant requirements may be accessed from management and interpreted so that daily work actions and outcomes can be organised within required time constraints. Problems and anomalies with daily work routines should be recognised and corrected or reported.
3. How are activities planned and organised (1) ?	Production plans and daily work instructions may need to be reviewed before and between work periods in order to confirm availability of appropriate equipment, planting materials and propagation media. Work teams may need to be organised and tasks allocated in order to achieve production target.
4. How can team work (1) be applied?	Meeting production requirements may require the co-ordination of team activities.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical concepts may need to be used to calibrate spray equipment; and calculate production statistics and quantities of treatment to apply.
6. How can problem-solving skills (1) be applied?	Problems may arise regarding poor germination or strike rate, for example, which should be recognised and resolved either by implementing preventative/corrective action or reporting to management.
7. How can the use of technology (1) be applied?	The testing of propagation media and monitoring of the propagation environment may require the use of measuring equipment such as pH probes. Data bases may be used to 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**.

RTF3015A**Implement a tree maintenance program**

This competency standard describes the work undertaken to implement a tree maintenance program. It requires assisting in the assessment of trees and applying treatments to trees in accordance with the enterprises treatment program.

Tree maintenance is likely to be under limited supervision from others, with checking only related to overall progress. The work requires the application of extensive arboricultural knowledge and a broad range of arboricultural skills. Tree maintenance 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	Contribute to a tree assessment	1.1	Site assessment is undertaken to identify conditions which may impact upon the health and vigour of the tree.
		1.2	Stress inducing factors are identified according to published characteristics of the species.
		1.3	Specimens of stressed material are collected to enable diagnosis of stress according to enterprise guidelines.
		1.4	Environmental issues that could affect the health and vigour of the tree are assessed for impact on growth according to published data and species characteristics.
		1.5	Information relating to the tree assessment is recorded and reported according to enterprise guidelines.
2	Prepare to undertake a treatment program	2.1	Treatment program is interpreted and confirmed with management.
		2.2	OHS hazards are identified, risk assessed and suitable controls implemented.
		2.3	Suitable personal protective equipment (PPE) is selected, used and maintained.
		2.4	Treatment methods and equipment are selected according to published data and enterprise guidelines.

		2.5	Environmental implications of undertaking the treatment program are identified, likely outcomes assessed and, if necessary, responsible action taken.
3	Undertake a treatment program	3.1	Equipment is prepared and used according to enterprise guidelines, OHS requirements and with due regard for environmental implications.
		3.2	Physical and/or chemical treatments are undertaken according to treatment program specifications, OHS requirements, and with due regard for environmental implications.
		3.3	Growing environment is maintained according to the needs of the species.
4	Complete treatment program activities	4.1	Infected plant material is disposed of according to enterprise hygiene guidelines.
		4.2	Equipment is sterilised in accordance with enterprise hygiene guidelines.
		4.3	Physical and/or chemical treatments are followed up according to treatment program specifications and/or manufacturers recommendation.
		4.4	Timetables for follow up treatments are determined and communicated as per enterprise guidelines.
		4.5	Records are maintained in accordance with enterprise guidelines.

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 conditions may affect the health and vigour of a tree?	Conditions may include soil types, moisture content, pH levels, salinity, texture, compaction, aspect, pollutants, toxicity, climate, buildings, road works or shade.
What stress inducing factors may impact upon the health of the tree?	Factors that may cause a tree stress may include pests and diseases, fungal, structural, storm damage, root damage, gassing, compaction, incineration, nutrient deficiencies, chemical, changes in levels, competition, poor drainage, vandalism, salt and drought.
What environmental issues may impact upon the growth of trees?	Environmental issues may include compacted soil, unwettable soil, inadequate irrigation, poor drainage, run off, salinity, soil erosion, lack of companion plants, lack of mycorrhizal fungi, impervious layer covering the soil surface, and intrusion of weeds and pests.

What OHS hazards may be identified?	Hazards may include solar radiation, dust, noise, pruning tools and equipment, falling debris, chemical spills, interruption or disturbance of electricity supply, and moving machinery or empty chemical containers.
What PPE may be used to carry out tree maintenance operations?	PPE may include but is not limited to, boots, overalls, gloves, goggles, sun hats, hearing protection, face shields, hard hats and sunscreen lotion.
What treatment methods may be applied to trees?	Treatment methods may include pruning, repair of damaged material, application of pesticides, application of fertilizers, treatment of soil, reducing compaction/improving aeration and drainage.
What equipment may be used in the maintenance program?	Equipment used in the tree maintenance program may include pruning equipment, chemical applicators, digging and aeration devices.
What OHS requirements are relevant to this standard?	OHS procedures may include safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, appropriate use of personal protective clothing and equipment, correct manual handling techniques, safe use and storage of chemicals, correct disposal of waste chemicals and chemical containers, and basic first aid. When a Code of Practice for Arboriculture is registered, it will provide additional information on OHS requirements.
How is infected plant material disposed of?	Disposal methods may include burning, burying or chemical destruction.
What information relating to tree maintenance is recorded ?	Information recorded may include date and type of treatment, recommended follow up, identified problems associated with this and/or surrounding trees, and relevant site 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 implementing a tree maintenance program requires evidence that a person can contribute to a tree assessment and undertake a tree maintenance program with due regard for safety and environmental requirements.

The skills and knowledge required to implement a tree maintenance program must be **transferable** to a different work environment following induction to that new workplace. For example, a person who is competent in implementing a tree maintenance program should have sufficient knowledge and skills to work with a range of trees, recognising a variety of tree health or stress problems, and select appropriate treatments and treatment methods for those trees.

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 environmental implications of implementing a tree maintenance program in a range of locations such as urban, rural - farming, rural - native vegetation, seaside, and water catchment area
- AS1742 Pt 3 1985 - Australian Standard Code of Practice, Work Site Traffic Management
- industry code of practice
- identification and evaluation of structural defects in trees
- the principles of identifying pests, diseases and physiological damage to trees
- methods of attack of tree pests and diseases
- methods of analysing the nutritional status of trees
- statutory requirements relating to the use of pesticides and herbicides and the environmental implications of using chemicals
- recognition and identification of a range of tree species
- treatments and treatment methods commonly used with trees
- methods of collecting and storing specimens for identification and diagnostic tests
- methods of recording, storing and processing data.

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:

- work using a variety of chemical application tools and pieces of equipment that are suitable for the task, while minimising environmental impact

- dispose of plant and equipment debris in an environmentally aware and sensitive manner, such as sorting plant and paper-based waste for recycling
 - dispose of chemical substances and their containers to minimise environmental impact
 - research published data
 - read labels
 - record field data
 - communicate with fellow team members
 - calibrate chemical application equipment
 - measure quantities, area and distance and time.
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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?	Ideas and information will be communicated both in writing and verbally. Data will need to be recorded as part of the workers contribution towards the assessment of a tree, and again to record treatments given as part of the treatment program. Some enterprises may request this to also be done in a verbal report. Selection of treatment methods and confirmation of treatment program requirements are most likely to be discussed with others in the work team.
2. How can information be collected, analysed and organised (2) ?	Information on stressed material specimens, species characteristics and treatments required should be collected, researched and discussed with other members of the work team.
3. How are activities planned and organised (2) ?	Daily work activities carried out by individuals and team members, worker safety systems, program requirements and timeframes should be arranged before and during work periods.
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4. How can team work (2) be applied?	Implementing a maintenance 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?	Mathematical techniques may be applied when calibrating chemical application equipment, measuring quantities, area, distance and time.
6. How can problem-solving skills (3) be applied?	Problems relating to tree health, workplace safety, tools and equipment, team members, environmental issues and interruption of program due to inclement weather may require problem-solving.
7. How can the use of technology (2) be applied?	Equipment may be used to measure tree health, the Internet may be used for research into species specific information, data relating to tree health or chemical usage, and a database or spreadsheet may be used to record information about the tree and the maintenance program.

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**.

RTF3017A**Implement a tree pruning program**

This competency standard covers the process of implementing a tree pruning program. It covers work undertaken from ladders, ropes in trees and elevated platforms.

Implementing a tree pruning program is likely to be under limited supervision from others, with checking only related to overall progress, and is usually done within routines, methods and procedures and according to an established program plan. Some discretion and judgement is required in the selection of tools and equipment according to the extent of the pruning program required. Competency would require the application of arboricultural knowledge and skills with depth in some areas, such as the use of different types of equipment and machinery to gain access to a tree.

Element**Performance Criteria**

1	Prepare for tree pruning	1.1	Trees are visually inspected and all branches to be removed are identified according to the pruning requirements of the program.
		1.2	Removal stages are nominated to ensure the program is undertaken without unnecessary damage to the trees.
		1.3	OHS hazards are identified, risks assessed and suitable controls implemented.
		1.4	Pruning tools and equipment are selected and prepared according to the extent of the pruning program and enterprise guidelines.
		1.5	Climbing equipment and machinery is selected, checked for damage or imperfections and prepared according to enterprise guidelines and manufacturers specifications.
2	Implement tree pruning	2.1	Climbing equipment and machinery is operated according to OHS requirements and manufactures' specifications.
		2.2	Pruning cuts are implemented according to established pruning techniques .
		2.3	Program is implemented in such a way that no damage occurs to equipment, property or personnel .
		2.4	Site environmental concerns are adhered to in accordance with relevant legislation and/or regulations .

	2.5	Waste material is mechanically processed according to enterprise guidelines and manufacturers' specifications.
	2.6	Tools, equipment and machinery are cleaned, maintained, serviced and stored consistent with enterprise guidelines and manufacturers specifications.
	2.7	Site is cleared and cleaned according to enterprise guidelines.
3	Assess pruning quality	3.1 Trees selected for the pruning program are visually checked to ensure the appropriate trees were pruned.
		3.2 Stub length and pruned height are checked to ensure they meet the pruning requirements of the program.
		3.3 Any incorrect pruning is rectified to ensure the tree is able to sustain its growth, natural habit and form.
		3.4 Completed program of pruning is recorded and communicated to management and/or the client 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 trees are likely to be included in a pruning program?	Any tree that can be accessed by a ladder, the use of ropes or an elevated platform may be included in a pruning program.
What pruning requirements may be included in a pruning program?	Requirements may include size, light, shape, aesthetics, competition, density, structures, growth re-direction, modification of flowering or fruiting behaviour, removal of diseased, broken or damaged material, sight lines, habit and form.
What OHS hazards are likely to be associated with tree pruning?	Hazards may include solar radiation, dust, noise, and damp conditions, sharp/blunt pruning tools and equipment, moving machinery, slopes, water, rock, undergrowth, slash, depressions/holes, falling branches and debris, tangled ropes, power lines, power surges, interruption or disturbance of electricity supply, placement of ladders, climbing ladders, ladder instability and loss of balance.

What suitable controls are likely to be implemented to minimise OHS hazards?	Suitable controls may include personal protective clothing and equipment such as rubber soled/leather boots, cut resistant trousers, gloves, helmets, goggles, safety harnesses, sun hats, hearing protection, face shields and sunscreen lotion; signage and barriers, approved ladders and ropes, safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, correct manual handling techniques, and basic first aid training.
What pruning tools and equipment are likely to be used?	Pruning tools and equipment may include pruners, jacksaws, handsaws, chainsaws, pole saws pouches, steps, epicormic removers, secateurs, chippers and mulchers.
What climbing equipment and machinery is likely to be used?	Climbing equipment and machinery may include ladders, climbing gear such as ropes and harnesses, elevated platforms and cherry pickers.
What pruning techniques are likely to be utilised in a pruning program?	Pruning techniques may include cleaning out, crown lifting, crown reduction, structural integrity, crown renewal, crown thinning, dead wooding, hedging, branch, epicormic and green shoot removal.
How might a pruning program be implemented so no damage occurs to equipment, property or personnel ?	Implementation may involve inspecting overhead obstructions that may interfere with pruning works, lowering of branches on ropes, securing a tail line and tracking progress of the rope during a climbers ascent and descent, ensuring climbers ropes to the ground are clear of obstacles, monitoring climber progress and safety, sending up tools and equipment using ropes, and communicating with above ground workers both verbally and through hand signals.
What legislation and/or regulations may be relevant to a pruning program?	Legislation and/or regulations may include National, State and local government legislation and regulations such as the Environmental Protection Act and Australian Standards for Pruning of Amenity Trees AS4373: 1996, or area specific tree preservation orders, and significant tree registers and/or legislation.

How might a site be **cleared and cleaned** after a pruning program?

Clearing and cleaning a site may include the removal of all debris and rubbish, replacing and levelling soil that is disturbed, re-planting or repairing grassed areas and dead, dying or damaged plants, reinstating or repairing damaged or removed structures such as fences and pergolas, and sweeping and/or hosing down paths and pavements to remove soil and surface materials.

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 tree pruning program requires evidence that a person can prepare for tree pruning, implement tree pruning and assess the quality of pruning in accordance with an established pruning program.

The skills and knowledge required to implement a tree pruning program must be **transferable** to a different work environment. For example, this could include different trees, pruning requirements and work locations.

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

- identification of tree species and their pruning requirements
- CODIT and target pruning techniques
- principles and methods of pruning to achieve given objectives
- relevant legislation and/or regulations that may impact on a tree pruning program
- effect on plant growth and habit after pruning
- rope types and uses
- elevated work platform operations.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, some complementary skills are required. These skills are:

- communicate orally and using hand signals with other site personnel to share relevant workplace information and to ensure effective and safe pruning

- recognise common diseases, pests and nutrition deficiencies in trees
- sharpen and maintain tools required for pruning
- store and carry tools safely
- use appropriate pruning techniques to meet pruning program requirements
- conduct operations in such a way that no damage occurs to equipment, property, environment, trees or personnel.

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?	Communication of ideas and information may be applied when instructing site personnel of the requirements of the pruning program.
2. How can information be collected, analysed and organised (2) ?	Information from an established pruning program may need to be interpreted, analysed and organised to ensure the pruning program is carried out efficiently and safely.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised according to local climatic conditions.
4. How can team work (2) be applied?	Team work may need to be applied when operating climbing equipment and machinery.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical techniques may need to be applied when calculating the extent of a pruning program.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may need to be applied in the event of machinery and equipment failure, and dealing with branches that are difficult to prune.
7. How can the use of technology (2) be applied?	The use of technology may be applied in the operation of elevated platforms and powered pruning equipment.

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**.

RTF3018A**Implement a tree transplanting program**

This competency standard covers the process of implementing a tree transplanting program. This would include co-ordination of excavating the tree, transporting, re-planting and providing post-transplant treatments.

Tree transplanting is likely to be under limited supervision from others, with checking only related to overall progress and is usually done within routines, methods and procedures, and according to an established program. Some discretion and judgement may be required depending on whether the tree was deciduous or evergreen, and what time of the year the transplanting program is to be implemented.

Competency in the implementation of a tree transplanting program requires the application of extensive arboriculture knowledge and skills including how different root systems of different trees will react to transplantation.

Element**Performance Criteria**

1	Prepare for tree transplantation	1.1	OHS hazards associated with transplanting operations are identified, risks assessed and suitable controls implemented.
		1.2	Legislation, local by-laws and regulations governing tree transplanting/removal are identified.
		1.3	Tree is assessed to ensure the appropriate transplanting operations are implemented according to an identified program, and to ensure the safety of personnel, the public and property is maintained throughout and upon completion of work.
		1.4	Root ball and crown treatments are selected, prepared and used according to the needs of the species to ensure the tree remains viable throughout the transplanting process.
		1.5	Site is prepared for transplanting activities including notification of local residents and authorities where necessary.
		1.6	Surrounding property/vegetation is relocated, secured and/or protected from potential damage during tree transplanting.

		1.7	Tools, equipment and machinery necessary to implement tree transplanting activities are selected, prepared and used according to enterprise guidelines and manufacturers recommendations.
2	Implement transplanting operations	2.1	Soil around the root zone is excavated according to enterprise guidelines.
		2.2	Tree is stabilised as the root system is undercut.
		2.3	Tree is lifted and secured for potential storage and/or transportation using safe lifting techniques and in accordance with enterprise guidelines.
		2.4	Tree is re-installed ensuring that the root system can colonise new ground.
		2.5	Tools, equipment and machinery are cleaned and stored according to enterprise guidelines and manufacturers recommendations.
		2.6	Completed transplanting program is recorded and communicated to management and/or the client according to enterprise guidelines.
3	Maintain health and viability of transplanted tree	3.1	Water is applied to the re-installed tree over a sustained period to ensure minimal leaf loss and that new growth is apparent.
		3.2	Plant tonic and/or fertiliser is applied according to the nutritional requirements of the species.
		3.3	Tree protection devices are installed to ensure adequate support and protection is provided.
		3.4	Tree condition and site is monitored to ensure the plant remains healthy.

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 **OHS hazards** may be associated with tree transplanting?

Hazards may include overhead or underground services and utilities, solar radiation, dust, noise, through traffic, holes, moving machinery and machinery parts, blunt/sharp tools, surrounding property, fertilisers, heavy and awkward shaped trees, falling debris, slopes, water, rock, and undergrowth.

What suitable controls are likely to be implemented?	Suitable controls may include procedures for handling, transporting and storing fertilisers, safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, appropriate use of personal protective clothing and equipment such as hats, boots, overalls, sunscreen lotion, gloves and goggles, correct manual handling techniques, safe lifting techniques, and basic first aid training.
What legislation, local by-laws and regulations may be relevant to tree transplanting?	Legislation may include local government by-laws and government legislation such as the Environmental Protection Act, Tree preservation orders, Significant Tree registers and/or legislation, Notification orders, Australian Standards for plant and equipment and traffic control devices, and regulations governing the proximity of powerlines to trees.
What treatments are likely to be done prior to transplanting?	Treatments may include pruning, de-leafing and the application of anti-transpirants.
How might the site be prepared for transplanting activities?	Site preparation may include checking there is easy access for tools, equipment and machinery to the tree and that it can be easily moved to its new location, checking the site for power lines, telecommunication cables, water pipes, gas and sewerage services, etc., watering the tree and the area around it, removing any objects that may affect digging such as rocks, stones and other obstructions, and erecting temporary barriers and warning signs to limit the access of pedestrians and vehicles.
What tools, equipment and machinery may be used in the transplanting process?	Tools and equipment may include lifting chains, frames and clamps, cranes, trucks, tree spades, front end loaders, hand tools for digging and/or cutting parts of the tree such as spades and secateurs, watering equipment, wheel barrow or flat topped nursery trolley, hessian or sacking (also known as burlap), ropes, stakes or long pegs.
What methods are likely to be used when a tree is lifted and secured ?	Lifting and securing may include lifting the tree onto material, wrapping around the root ball before lifting, sliding material under the tree before lifting, bare rooting the tree prior to lifting, using a sling to lift the tree, applying ropes to the material around the root ball, and binding the crown with twine or hessian.

What safe lifting techniques are likely to be employed?	Safe lifting techniques may include bending knees, using legs to lift (not back), and lifting simultaneously with others.
What is likely to be done when a tree is re-installed ?	Re-installing may include the preparation of the planting hole, incorporation of a drainage system to ensure root system survival, modifying the soil according to cultural requirements of the species, and installing tree support devices.
What may be monitored to ensure the plant remains viable?	Monitoring may include regularly checking the stakes to ensure they do not cut into the stem of the tree, observing soil moisture levels at regular intervals over a growing season, checking the tree for pests and diseases, assessing any physical damage to the leaves or trunk of the tree, removing weeds from around the base of the tree, and applying mulch as necessary.

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 tree transplanting program requires evidence that a person can prepare for tree transplanting activities, implement transplanting operations and maintain the health and viability of a tree after transplanting occurs.

The skills and knowledge required to implement a tree transplanting program must be **transferable** to a different work environment. For example, this could include different tree species, transplanting techniques and requirements, soil types and locations.

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 impact of tree removal and transplantation, i.e. the effect of soil disturbance and water run-off • principles and methods of operating tree moving equipment • causes of stress in trees resulting from storage and/or transportation • safety procedures and potential hazards of removing and transplanting trees

- requirements for securing and signage when transporting trees on road vehicles
- problems and methods relating to the aftercare of trees during their establishment period.

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:

- monitor and minimise environmental impacts of transplanting operations
- dispose of plant debris in an environmentally safe and sensitive manner
- calculate tree and branch weights and sizes for safe removal
- communicate with work team members to ensure implementation is carried in accordance with the identified program
- bind and/or wrap root balls and crowns.

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 specific tasks associated with the job such as transplanting methods, appropriate tools and equipment, and hazards encountered may be discussed with work colleagues.
2. How can information be collected, analysed and organised (2) ?	Information on a particular species of tree and its transplanting requirements may need to be collected, analysed and organised.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised according to seasonal conditions.
4. How can team work (2) be applied?	Transplanting trees may involve working with other members of a team to safely lift, transport and re-install the tree.

5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical techniques may be applied when estimating and calculating tree and branch weights and sizes, in particular when calculating safe working loads.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may need to be applied when a transplanted tree shows signs of undue stress.
7. How can the use of technology (2) be applied?	Technology such as arboricultural machinery and equipment including cranes, trucks and front end loaders may be used in the removal program.

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**.

RTF3019A**Remove trees in confined spaces**

This competency standard covers the process of removing trees in confined spaces and in difficult/hazardous circumstances.

Tree removal is likely to be under limited supervision from others, with checking only related to overall progress and is usually done within established routines, methods and procedures, and according to stringent OHS guidelines. Some discretion and judgement may be required depending on whether the tree is to be felled or dismantled.

Competency in the implementation of tree removal work requires the application of extensive arboricultural knowledge and skills including different methods used in the directional felling of a tree, and the use of ropes when dismantling sections of tree.

Element	Performance Criteria
1 Prepare for tree removal	1.1 OHS hazards are identified, risks assessed and suitable controls implement. 1.2 Legislation, local by-laws and regulations governing tree removal are identified. 1.3 Tree is checked to ensure the appropriate removal method is implemented according to an identified plan, and to ensure that the safety of operators, the public and property is maintained throughout and upon completion of work. 1.4 Access to site is determined and confirmed with owner. 1.5 Site is prepared for tree removal activities including notification of local residents and authorities where necessary. 1.6 Signage, barriers, warning devices and traffic management structures are erected as necessary. 1.7 Surrounding property/vegetation is relocated, secured and/or protected from potential damage during tree removal. 1.8 Tools, equipment and machinery necessary to implement tree removal are selected, prepared and used according to enterprise guidelines and manufacturers recommendations.

2	Implement dismantling of trees	2.1	Suspended, wind thrown or damaged trees are stabilised to ensure trunk movement does not occur, and are brought down safely and efficiently according to enterprise guidelines.
		2.2	Weights of tree branches and trunk sections are ascertained so that they do not exceed the safe working limit of equipment.
		2.3	Branches and trunk sections are dismantled using the “cut and drop” method or cut and lowered by ropes according to accepted rigging techniques .
		2.4	Dismantling techniques are employed to ensure branches and trunk sections fall or are lowered safely into the determined drop zone, with no damage to property and equipment or injury to personnel.
3	Implement directional felling of trunk	3.1	Directional felling techniques are employed to ensure trunk of dismantled tree falls safely into the determined drop zone with no damage to property and equipment or injury to personnel.
		3.2	Felled trunks are trimmed to manoeuvrable lengths without injury to the operator.
4	Complete tree removal	4.1	Sufficient material is removed from the stump to prevent re-growth and/or the stump is treated to prevent regrowth.
		4.2	Plant material and debris is disposed of according to enterprise guidelines.
		4.3	Tools, equipment and machinery are cleaned and stored according to enterprise guidelines and manufacturers recommendations.
		4.4	Completed program for the removal of trees is recorded and communicated to management and/or the client according to enterprise guidelines.

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 OHS hazards may be identified in the work area?	Hazards may include solar radiation, dust, noise, and damp conditions, sharp/blunt cutting tools and equipment, moving machinery, slopes, water, rock, undergrowth, depressions/holes, falling branches and debris, tangled ropes, power lines, power surges, interruption or disturbance of electricity supply, placement of ladders, climbing ladders, ladder instability and loss of balance.
What suitable controls are likely to be implemented?	Suitable controls may include procedures for handling, transporting and storing petrol, oils, and chemicals; appropriate personal protective clothing and equipment such as rubber soled/leather boots, high visibility vest, cut resistant leg protection, gloves, helmets, goggles, safety harnesses, sun hats, hearing protection, face shields and sunscreen lotion; signage and barriers, approved ladders and ropes, safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, correct manual handling techniques, basic first aid and emergency procedures training, and a two-way radio or mobile phone on site.
What legislation, local by-laws and regulations may be relevant to tree removal?	Legislation may include local government by-laws and government legislation such as the Environmental Protection Act, Tree preservation orders, Significant tree registers and/or legislation, Notification orders, Australian Standards for plant and equipment and traffic control devices, and regulations governing the proximity of powerlines to trees.
What removal method is likely to be employed?	Removal methods may include felling or dismantling.
What tools, equipment and machinery are likely to be used in the removal process?	Tools, equipment and machinery may include axes, wedges and wedging hammers, hand or power winches, pruning tools, chainsaws, elevated platforms, cherry pickers, cranes, ladders, wood chippers, stump grinders, skid steer loaders, work ropes, harnesses, lifelines, climbing spurs, prussik loops, carabiners, flip lines/pole straps, “D” shackles, pulleys, hobbs, and trifors

How might tools, equipment and machinery be prepared for use?	Preparation may include checking for wear and tear and defects in ropes, checking of working loads and breaking strain ratings of ropes, pre-operational checks of powered equipment and machinery, sharpening of blades and chains, and the cleaning of dust and accumulated wood fibres from tools, equipment and machinery.
In what situations might dismantling be employed to remove trees?	Dismantling may be employed where a tree is too high or wide, or directly above a target. Dismantling may involve the use of elevated platforms or tree climbers, cutting sections of branches and trunks and throwing them into a drop zone, or lowering branches and trunk sections to ground level using ropes.
How are suspended, wind thrown or damaged trees likely to be stabilised ?	Stabilising may include cross cutting or propping. Suspended trees may be mechanically removed by winches or hand levers. Stabilising may be exercised to minimise the risk of a building or structure giving way and to prevent limbs, which are under pressure, “kicking back” as any tension is released.
What branch releasing cuts are likely to be employed in the “cut and drop” method of dismantling?	Branch releasing cuts may include a single top cut, an undercut then a top cut, a box cut, a scarf undercut then a top cut, and a spearing cut.
What type of ropes are likely to be used?	Types of ropes may include polyamide (nylon), polypropylene and polyester.
What rigging techniques are likely to be employed to lower branches and trunk sections?	Rigging techniques may include using a branch as friction, setting a pulley or false crotch, setting the rope above branches to be removed, pulling a large section of trunk to ground level, lowering block sections, speed lining and vertical speed lines.
In what situations might felling be employed to remove trees?	Felling may be employed where a tree can be felled without damaging or getting hung up in another tree, or causing damage to a target (e.g. a building). In a confined situation this may entail the rigging of “head” and “stay” ropes to keep positive control of the felled tree and to ensure it lands into its designated drop zone.
What directional felling techniques are likely to be used to remove trees?	Directional felling techniques may include back release, quarter cut, tongue in groove and large tree diameter method, and each of these may utilise the scarf, the back cut, holding wood, wedges, boring cuts, release cuts and plunge cuts.

How is plant material and debris likely to be disposed of?	Disposal methods may include burning, chipping, shredding, mulching and composting.
How may the height of the tree be determined?	The height of a tree may be determined with a scientific instrument such as a clinometer or in “A Field Guide to the Trees of Britain and Northern Europe”. Mitchell describes a method that requires a 30cm ruler and another person.

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 the removal of trees in confined spaces requires evidence that a person can prepare trees for removal, fell or dismantle trees, and have the work completed according to enterprise guidelines.

The skills and knowledge required to remove trees in an urban landscape must be **transferable** to a different work environment. For example, this could include different tree species, locations and removal 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: • identification and evaluation of structural defects in trees • procedures for calling emergency services at the work site • first aid and rescue procedures applicable to tree work • safe working limit of all climbing, rigging and lowering equipment • an awareness of the environmental implications of soil disturbance and land clearance.
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: • dispose of plant material and debris in an environmentally safe and sensitive manner • minimise noise, dust or high activity vehicle traffic to prevent nuisance-level environmental disturbance

- calculate tree height and weights of branches and trunk sections
 - advanced climbing and rigging techniques
 - use and control elevated work platforms.
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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 associated with the job, such as estimated completion dates and removal costs may be communicated with management and/or the client.
2. How can information be collected, analysed and organised (2) ?	Information regarding the removal program to be implemented may need to be collected, analysed and organised into a logical sequence.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised according to OHS procedures and guidelines.
4. How can team work (2) be applied?	Removing trees in confined spaces may involve working with other members of a team to complete the removal program.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical techniques may be applied when estimating and calculating tree height and branch weights and sizes, in particular when calculating safe working loads.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may need to be applied if any of the climbing equipment is faulty and needs to be replaced.
7. How can the use of technology (2) be applied?	The use of technology may need to be applied when using machinery such as elevated work platforms and stump grinders.

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**.

RTF3020A**Install and maintain
interior plant displays**

This competency standard covers the process of the installation and maintenance work associated with interior plant displays in buildings and offices.

The installation and maintenance of interior plant displays is likely to be under limited supervision from others, with checking only related to overall progress. Some discretion and judgement in assessing locations, selecting equipment and materials, organisation of work, services, actions, and the achievement of outcomes within time and budgetary constraints will be required. Installation and maintenance requires the application of extensive horticultural knowledge and a broad range of horticultural skills.

Element		Performance Criteria	
1	Assess requirements for plantscaping	1.1	Access factors are assessed and recorded prior to installation.
		1.2	Internal environmental parameters are assessed and recorded prior to installation.
		1.3	Light sources in regard to both plant growth and client requirements are noted, and light meter readings taken and recorded to match plants to the lighting available.
		1.4	Growing conditions and constraints are analysed and recorded.
2	Install containerised and direct planted specimens	2.1	Materials, equipment and machinery required for the job are identified and scheduled according to a given plan or specifications.
		2.2	Personnel required for the job are identified and scheduled.
		2.3	OHS hazards are identified, risks assessed and controls implemented and reported to the supervisor.
		2.4	Suitable safety equipment and personal protective equipment (PPE) are selected, used and maintained.
		2.5	Plants are installed securely so that they are well presented, accessible for routine maintenance and conform to the plan or specifications.
		2.6	Damaged or unnecessary material is pruned to enhance the presentation.

	2.7	Plants are watered and fertilised as required according to enterprise policy.
	2.8	The site is left in a clean and tidy state following installation of plants.
3	Maintain indoor plants	3.1 The symptoms of under and over-watering in indoor plants are detected and actioned according to the maintenance agreement.
		3.2 The symptoms of low and high light intensity are detected and rectified.
		3.3 The symptoms of low and high fertiliser concentration are detected and the pH of the growing medium is measured and altered as required.
		3.4 Insects, pests and diseases associated with indoor plants are detected and controlled as required.
		3.5 Appearance of indoor plants is enhanced according to the maintenance agreement.
	3.6	The cost benefit of reviving plants is determined in line with site 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 does the term plantscaping refer to in terms of this standard?	The term plantscaping refers to interior landscaping, and includes the design and installation of containerised and in-ground plants to enhance the interior landscape of businesses, offices, hotels, hospitals, schools, houses, shopping malls and other public buildings. In addition, plantscapes may be used to create privacy screens, direct traffic, create a relaxing atmosphere, highlight a special occasion, and improve air quality of the internal landscape.
What access factors need to be considered when assessing interior spaces?	Access factors include time constraints, parking restrictions, stairs and level changes, watering facilities, room surface finishes, work areas, lift size, equipment needed, loading bay (walls, floor, furnishings), spatial volume and room use.
What environmental parameters may need to be assessed?	Room temperature range, cooling, heating, air circulation and ventilation, humidity, drainage and traffic patterns.

What type of light sources may be used in the interior plantscape?	Light sources may include natural, incandescent, fluorescent and metal halide lights.
What growing conditions and constraints may need to be analysed?	Growing conditions and constraints may include possible plant pests and diseases; growing media and water conditions; available light, spatial volume and room use.
What is the difference between containerised and direct planted specimens ?	Containerised specimens may be portable or fixed pots/decorative containers, and may include live plants (which may be subirrigated), preserved plants and replica plants, whereas direct planted specimens include in-ground specimens and may include irrigated projects.
What materials, equipment and machinery might be required to install plantscapes?	Materials, equipment and machinery may include growing media, fertilisers, fungicides, insecticides, climate controlled trucks, cranes, pulley systems, trolleys, sack trucks, shovels, trowels, secateurs, hand tools, cleaning equipment, sprayers, water spray containers, plant supports, ties, pots, decorative containers, accessories and rubbish bins.
What OHS hazards may be associated with the installation of plantscapes?	Hazards may include disturbance or interruption of services, chemicals, manual handling, moving machinery and machinery parts, uneven surfaces and personnel.
What safety equipment may be required?	Safety equipment may include signage and barriers.
What PPE may be required to install plantscapes?	PPE may include boots, overalls, gloves, goggles, respirator or face mask, and hard hat.
What methods may be employed to water interior plantscapes?	Watering methods may include surface irrigation, sub surface irrigation, hand-watering and spraying.
What symptoms may indicate that plants are suffering from under and over-watering ?	Symptoms of over-watering may include die back on leaf tips, rotting corms, dropping leaves, water logged growing media, or excess overflow in trays. Symptoms of under-watering may include general dehydration, curling leaves, leaf loss or dry growing media.
What symptoms may indicate that plants are suffering from the effects of low and high light intensity ?	Symptoms of low light intensity may include yellowing of leaves, drawn growth, elongated, more prone to pests and diseases. Symptoms of high light intensity may include yellowing or burning of leaves, plant stress or dehydration.

What symptoms may indicate that the plants are suffering from low and high fertiliser concentration ?	Symptoms may include yellow lower leaves; discoloured, stunted, mottled or yellow new leaves, wilting, leaf drop, or failure to flower.
What common insects, pests and diseases associated with indoor plants may need to be detected and controlled?	Common insects, pests and diseases associated with indoor plants may include beetles, mites, borers, thrips, weevils, mealy bug, scale, powdery mildew, root rot and crown rot.
How might the appearance of interior plants be enhanced ?	Enhancement of interior plants may include, pruning, trimming, brading, cleaning, waxing, training, cleaning and polishing accessories.
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 installing and maintaining interior plant displays requires evidence that the area to be plantscaped can be assessed for plants and clients needs, and that appropriate plants can be selected, installed, maintained and revived as necessary.

The skills and knowledge required to install and maintain interior plant displays must be **transferable** to a different work environment. For example, this could include different plant species, display types and locations.

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 and attributes of a range of plants used for interior plantscaping • indoor plant growth requirements • light and moisture tolerance/intolerance for common indoor plant species • photosynthesis, respiration, nutrient uptake and growth rate for indoor plants • acclimatisation techniques for indoor plants • commonly occurring problems with indoor plantscaping • remedial action options.

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:

- identify a range of plants used for interior displays
- communicate with work team members, supervisors, suppliers and clients
- interpret plans and specifications, and product labels
- calculate numbers of plants and materials
- calculate rates of chemicals
- determine spatial measurements of plantscape
- interpret test results as required
- co-ordinate work group, materials, equipment and own activities to sequentially and effectively complete plantscaping in a 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.

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1. How can communication of ideas and information (2) be applied?	Written, oral and telecommunication of ideas and information relating to installation and maintenance of plantscapes, and other problems encountered will be required with the supervisor, work group, suppliers or clients.
2. How can information be collected, analysed and organised (2) ?	Enterprise work procedures, plantscape plan or specifications and test results should be consulted, interpreted and applied to co-ordinate installation and maintenance activities, with further clarification sought from the supervisor where necessary.
3. How are activities planned and organised (2) ?	Installation and maintenance of the plantscape will require planning for site assessment, selection of equipment and materials, and placing of plants and accessories. These actions may have to be co-ordinated and organised around others movements and work activities.
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4. How can team work (2) be applied?	Installation and ongoing maintenance of the plantscape may involve facilitating and leading members of a team to complete activities to plan and on time. Discussion of plantscape requirements and plant suitability may need to be carried out with supervisors or others in the workplace.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical concepts may be used to calculate spatial requirements, test results and cost benefits.
6. How can problem-solving skills (2) be applied?	Variation of the internal environmental, client intervention, pest or disease infestation, watering and nutritional difficulties and timeline failures may require problem-solving techniques.
7. How can the use of technology (2) be applied?	Technological understanding may be required to access and apply plans and specifications, use and/or calibrate testing equipment, 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**.

RTF3021A**Maintain nursery plants**

This competency standard covers the process of monitoring and maintaining plants in a wholesale or production nursery.

Plant maintenance work is likely to be undertaken with limited supervision from others, with checking only related to overall progress. The work involves the application of horticultural knowledge and skills to areas such as monitoring environmental parameters, and monitoring and maintaining nursery plants. Plant maintenance is normally 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	Monitor and maintain the nursery environment	1.1	Environmental parameters are monitored against the needs of the plants and enterprise guidelines.
		1.2	Environmental parameters are altered, as required, to meet the needs of nursery plants and market requirements .
2	Determine daily water requirements	2.1	Water requirements are determined according to the needs of the plant and environmental parameters.
		2.2	Water is applied according to the needs of the crop.
		2.3	Water requirements of the plant are monitored according to enterprise guidelines .
3	Promote plant growth by intervention	3.1	Potting media is tested to ensure quality specifications are met.
		3.2	Health of the plant is monitored according to enterprise guidelines.
		3.3	Plant interventions are undertaken according to marketing plans, appropriate stage of plant growth for the particular intervention, and OHS requirements .
		3.4	Waste is disposed of with full consideration of the environmental implications .
		3.5	Records are kept on all maintenance activities according to 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 particular training and assessment requirements may depend on the work situations available.

What areas may be considered part of the nursery environment ?	Nursery environment may include glasshouses, shadehouses, and hardening-off areas.
What environmental parameters are to be taken into account for this standard?	Environmental parameters may include light, temperature, humidity and wind.
What market requirements may require the modification of environmental parameters?	Market requirements may include size of plant, extent of foliage, colour, time of sale, and number of blooms.
How are daily water requirements determined?	Plant water needs are determined using water monitoring devices or physical observation applying mathematical formulas.
What needs to be monitored to ensure plant water requirements are maintained?	Monitoring plant water needs may include soil moisture, condition and size of plant, and environmental parameters.
What enterprise guidelines may be relevant to this standard?	Enterprise guidelines may include standard operating procedures (SOPs), specifications, production plans, work notes, Material Safety Data Sheets (MSDSs), or verbal direction from manager, or supervisor.
What potting media specifications are relevant to this standard?	Potting media specifications may include pH, drainage, aeration, salinity nitrate levels, water repellence, and nutrient content.
How is the overall health of the plant monitored?	Monitoring the health of the plants may include checking the thickness of stems, evidence of pests and diseases, number, strength and distribution of new roots, maturity and distribution of shoots, visually complete and robust graft union, and no signs of dehydration.
What plant interventions may be utilised to promote plant growth?	Interventions may include pesticides, fungicides, fertilisers, hormones, pruning, hardening off, irrigation, mulching, removing weeds, removing dead material, aeration, staking, tying, spacing and thinning.
What OHS requirements apply to this standard?	OHS requirements may include handling hazardous substances, the use and maintenance of equipment and machinery, and the use of protective clothing.

What environmental considerations may be relevant to this standard?	Environmental considerations may include disposal of chemical containers and left over chemicals, and run off from washing and cleaning equipment and machinery.

What workplace records are relevant to this standard?	Workplace records may include spray diaries, types of interventions applied, accident reports, and machinery log.

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 nursery plants requires evidence that environmental parameters can be monitored, quality of media for growing can be tested, daily water requirements of plants can be determined, and plant growth can be promoted by intervention.

The skills and knowledge required to maintain nursery plants must be **transferable** to a different work environment. For example, this could include different plants, maintenance requirements and nursery 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:

- effects of environmental parameters on plant growth
- methods of calculating daily water needs
- relationship between plant water needs and environmental parameters
- characteristics of various types of potting media
- factors affecting the growth of nursery plants
- optimum growing conditions for a range of plants in a nursery
- quality parameters for a range of nursery plants
- symptoms of unhealthy plants
- basic plant physiology including the principles of transpiration, water intake, nutrient uptake, photosynthesis, respiration, and translocation

- effect of different pruning and intervention methods
- processes for modifying environmental parameters
- phenological stages of plant growth
- treatments required by plants at different phenological stages and environmental parameters
- OHS hazards and the associated risks when maintaining plants
- environmental impacts of applying plant interventions.

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, fit and use appropriate personal protection clothing and/or equipment
 - liaise with other work areas and customers
 - prepare, mix and use chemicals as required
 - interpret and record required workplace information
 - operate irrigation systems.
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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.

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1. How can **communication of ideas and information (1)** be applied?

Ideas and information relating to work issues, tasks and problems may be discussed with suppliers, end users and members of the work team.

This could include giving instructions or discussing watering system requirements, for example, with suppliers.

2. How can information be collected, analysed and organised (1) ?	Information relating to daily site and plant maintenance routines may be accessed from management and interpreted so that daily work actions and outcomes can be organised within required time constraints. Problems and anomalies with daily work routines should be recognised and corrected or reported.
3. How are activities planned and organised (1) ?	Production plans and daily work instructions may need to be reviewed before and between work periods in order to select appropriate equipment, materials and treatment for plant maintenance activities. Work teams may need to be organised and tasks allocated.
4. How can team work (1) be applied?	Meeting production requirements may require the co-ordination of team activities.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical concepts may need to be used to monitor growing conditions, to calibrate spray equipment and calculate quantities of treatment to apply.
6. How can problem-solving skills (1) be applied?	Problems, particularly of a horticultural nature, should be recognised and resolved either by implementing preventative/corrective action or reporting to management.
7. How can the use of technology (1) be applied?	The monitoring of environmental parameters may require the use measuring equipment and data bases.

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**.

RTF3023A

Monitor turf health

This competency standard covers the process of monitoring the health and condition of a range of multi-use and high performance sports turf playing surfaces.

The monitoring of turf health is likely to be under limited supervision from others, with checking only related to overall progress. The work involves the application of extensive horticultural knowledge and a broad range of horticultural skills.

Monitoring is normally done within 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 monitoring activities	1.1 The turf site to be monitored, nature and regularity of monitoring, and time constraints for delivering reports are identified according to enterprise work procedures .
	1.2 Plant tissue and soil analysis consultants are identified and their sampling specifications determined in consultation with the supervisor and/or consultants.
	1.3 Monitoring tools and equipment are selected according to enterprise work procedures.
	1.4 Pre-operational and safety checks are carried out on tools and equipment according to manufacturers specifications and enterprise work procedures.
	1.5 OHS hazards are identified, risks assessed, controls implemented and reported to the supervisor.
	1.6 Suitable personal protective equipment (PPE) is selected, used and maintained.
2 Collect soil and plant tissue samples	2.1 Samples for off-site testing are collected from a representative area and prepared, packaged, accurately labelled and dispatched according to consultants requirements and enterprise work procedures.
	2.2 On-site soil tests are performed according to testing instrument instructions, industry codes of practice and enterprise work procedures.

		2.3	Divots are replaced from soil sampling sites and waste materials disposed of according to enterprise work procedures.
		2.4	Sampling tools and equipment are cleaned of all residue and returned to storage according to manufacturers' specifications and enterprise work procedures.
		2.5	Results of analysis are recorded and compared with acceptable parameters according to researched and experiential awareness .
		2.6	Recommendations are determined for remedial action to address analytically identified deficiencies, and to meet target chemical balances according to researched and experiential awareness, and enterprise work procedures.
3	Visually monitor turf health	3.1	Monitoring of turf health is undertaken according to OHS requirements .
		3.2	Health indicators of the turf are assessed visually with reference to researched and experiential awareness, site conditions , seasonal conditions , and according to enterprise work procedures.
		3.3	Deficiencies in turf quality are identified visually with reference to researched and experiential awareness, site conditions, seasonal conditions, and according to enterprise work procedures.
		3.4	Reports and recommendations are made 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 training and assessment requirements may depend on the work situations available.

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, monitoring program, enterprise standard operating procedures (SOP), 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.

What tools and equipment may be required to monitor turf health?	Soil coring tools, probes and field testing equipment such as pH kits and EC meters may be required.
What OHS hazards may be associated with monitoring turf health?	Hazards may include solar radiation, soil-borne micro-organisms, chemicals and hazardous substances, manual handling, sharp hand tools and equipment, and uneven surfaces.
What personal protective equipment (PPE) may be required to construct soil profiles?	Personal protective equipment may include hat, boots, overalls, gloves, goggles, face mask, and sunscreen lotion.
What soil tests may be undertaken?	These may include tests for pH, salinity, texture and soil type. Samples may include plugs and core samples. Test kits may include a dry test, CSIRO kits, EC meters and pH kits.
What waste materials may result from sampling procedures?	Waste materials may include soil or plant-based materials, and packaging materials of plastic and paper.
What residues may affect sampling and analytical accuracy?	Plant and soil-based residues, and any detergents or other cleaning chemicals may pollute the soil and plant tissue samples taken for analysis.
What researched and experiential awareness may be relevant to this standard?	Knowledge of the species and variety planted may be increased through consultation with team members, the supervisor, own knowledge, specific literature, supplier specifications, local historical performance data, and industry best practice guidelines.
What remedial action may be included in recommendations?	Remedial action may include chemical, organic or manual action to repair assessed deficiencies in turf nutrition, health or quality. Methods to minimise the environmental impact of the intervention procedure should also be included.
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 and equipment; appropriate use of personal protective equipment including sun protection; safe operation of tools and equipment; safe handling, use and storage of chemicals and hazardous substances; correct manual handling; basic first aid; personal hygiene, and reporting problems to supervisors.
What health indicators of the turf may be evident from observation?	Health properties may include turf strength, wear tolerance, growth rate, plant density, colour and recovery rate.

What site conditions may affect turf health?	Site conditions may include soil types, moisture content, pH levels, salinity, texture, compaction, aspect, pollutants, toxicity, climate, buildings, roadworks, shade and competing plants such as trees and tree roots.
What seasonal conditions may affect turf health?	Seasonal conditions may include day length, warmth, dormancy, frost and rainfall.
What factors may indicate level of turf quality ?	Factors may include upright growth, apparent stress, and uniformity or variation in the growing pattern.

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 monitoring turf health requires evidence that a person is able to organise and co-ordinate selection of equipment, sample collection, visual observation and analysis services to achieve monitoring outcomes within time constraints.

The skills and knowledge required to monitor turf health must be **transferable** to a different work environment. For example, the use and care of monitoring tools and equipment, interpretation and application of monitoring observations, and analytical results may be required in implementing a turf health program. The identification of plant pest and disease symptoms and their relation to levels of turf health may also be useful in determining the threshold at which to apply control measures when implementing an Integrated Pest Management program.

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: • practical understanding of soil and plant tissue analysis as a monitoring and turf management tool, the main elements of analysis, and their significance as indicators of nutritional deficiency and toxicity • awareness of the role of trace elements and nutrients required by turf grass plants, and symptoms of toxicities and deficiencies • turf grass diseases, including commonly occurring regional diseases, seasonality, history of site and visual disease symptoms

- main, simple and compound fertiliser products available to the enterprise including analysis, solubility, salt index, rates and cost
- rates and regularity of recommended fertiliser and pesticide application to achieve optimum plant health objectives, while minimising external environment impact through leaching, excessive spraying and overuse.

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 with work team members, supervisors and consultants
 - utilise proforma reporting, analysis and work procedure documents
 - measure materials and interpret specifications and analytical results
 - co-ordinate work groups, consultants and own activities to sequentially and effectively complete monitoring in a timely and cost effective manner.
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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.

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1. How can communication of ideas and information (1) be applied?	Written, oral and telecommunication of ideas and information relating to monitoring activities and problems encountered will be required with the work group, supervisor and consultants.
2. How can information be collected, analysed and organised (1) ?	Enterprise work procedures and turf health literature should be consulted, interpreted and applied to co-ordinate monitoring activities, with further clarification sought from the supervisor when necessary.
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3. How are activities planned and organised (1) ?	Work activities for the work group, consultants and self will be planned prior to and adjusted during the monitoring program.
4. How can team work (1) be applied?	Maintenance and repair works to improve turfed surfaces rely on the application of monitoring results and recommendations.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical application will be required when quantitatively interpreting analytical results and observations, assessing the level of damage to the turf, and calculating the amount of remedial chemical or manual intervention that may be required
6. How can problem-solving skills (1) be applied?	Problems in turf health and quality of appearance will require techniques such as ongoing setting of targets for improvement, and recommendations for action to meet those targets.
7. How can the use of technology (1) be applied?	Technological understanding will be required to use monitoring tools and equipment, interpret test results, assess turf health, report, recommend remedial action, 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**.

RTF3025A

Prepare specialised plants

This competency standard covers the process of preparing specialised plants for sale. Preparation involves the use of specialist techniques such as formative and decorative pruning, staking, tying and training, and working with other aids such as baskets, frames, specialist tools and materials. Preparation of these plants is likely to be 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. Specialist plant preparation is usually done according to established enterprise guidelines 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 to treat specialised plants	1.1 Production plans and customer requirements are analysed and clarified with the supervisor.
	1.2 Specialist plants requiring treatment are selected according to enterprise quality standards .
	1.3 Treatments appropriate to the specialised plant are selected according to production and/marketing plan.
	1.4 The timing of the treatments is determined according to the production and/or marketing plan.
	1.5 OHS hazards in carrying out specialist plant treatments are identified, risks assessed and controls implemented.
2 Implement treatments	2.1 Materials, tools and equipment required for the job are selected, prepared and used.
	2.2 Treatments are undertaken to meet the aesthetic requirements of the plant.
	2.3 Treatments are carried out according to enterprise OHS requirements .
3 Maintain aesthetic appearance of specialised plants	3.1 The health and aesthetic appearance of the plant is monitored to ensure enterprise quality standards are met.
	3.2 Water is applied according plant requirements.
	3.3 Environmental parameters are modified to ensure optimum growth of plant.
	3.4 Remedial or preventative measures are applied to the plants to ensure they maintain their aesthetic appearance.

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 specialised plants apply to this standard?	Specialised plant may include weeping specimens, potted trees and shrubs, bulbs, bonsai, ferns, cacti, succulents, indoor foliage, espaliering, topiary, and ready-made hedges.
What enterprise quality standards may apply to preparing specialised plants?	Enterprise quality standards may include Nursery Industry Association of Australia (NIAA) Best Practice Guidelines, size of plants, shape, vigour and health.
What specialised treatments may be applied to specialised plants?	Treatments may include hormones, pruning, staking, wiring, growth regulators, root pruning and grafting.
What factors may affect the timing of plant treatments ?	Factors affecting the timing of treatments may include stage of growth such as budburst or seedlings, time of year, climatic conditions and market requirements.
What OHS hazards may be associated with the preparation of specialised plants?	Hazards may include the use of chemicals and hazardous substances, sharp hand tools, manual handling, and operating spray equipment.
What materials, tools and equipment may be required?	Materials, tools and equipment may include growing media, pots, wire, string, support structures, secateurs, knives, water spray containers, sprayers, plant supports, ties, wheelbarrow, sack truck, hose and hose fittings, and rubbish bins.
What OHS requirements 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; safe operation of tools and equipment; safe handling, use and storage of chemicals and hazardous substances; correct manual handling; basic first aid; personal hygiene, and reporting problems to supervisors.
What aesthetic requirements may apply to preparing specialised plants?	Aesthetic requirements may include container shape, size and decoration, placement of plant in containers, shape, symmetry, balance, size, condition of plants, and potting mix used.

What environmental parameters may affect the growth of the plant?	Environmental parameters may include heat, wind, humidity and temperature.
What remedial or preventative measures may be relevant to this standard?	Preventative and remedial measures may include plant nutrition, pesticides, fungicides, growth regulators, growth promotants, and bio-agents. Application may be by mechanised or non-mechanised operations.

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 plant displays requires evidence that a person can select the plants requiring treatments, select the treatments, determine the timing for the treatments, apply the treatments, and apply preventative or remedial measures to the specialised plants.

The skills and knowledge required to prepare the display must be **transferable** to a different work environment. For example, this could include different plants, display approaches, remedial actions and nursery 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: • nursery Industry Association of Australia (NIAA) Best Practice Guide • characteristics of a range of potted plants commonly treated for special aesthetic purposes • different treatments which are applied to specialised plants to get desired aesthetic appearance • optimum timing of treatments • aftercare requirements of treated plants.
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 with work team members, supervisors, suppliers and clients • interpret production/marketing plans and plant quality specifications

- organise and co-ordinate planned activities
 - estimate treatment and plant requirements, sizes and quantities; and calculate ratios, proportions and application rates
 - co-ordinate work group, materials, equipment and own activities to sequentially and effectively complete operations in a 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 (1) be applied?	Written, oral and telecommunication of ideas and information relating to treating specialised plants will be required with the supervisor, work group, suppliers or clients.
2. How can information be collected, analysed and organised (1) ?	Enterprise work procedures, production/propagation plan and plant quality specifications should be consulted, interpreted and applied to specialised plant production operations, with further clarification sought from the supervisor where necessary.
3. How are activities planned and organised (1) ?	The preparation of specialised plants will require planning for plant selection, treatment and maintenance; selection and preparation of equipment and materials, and meeting seasonal requirements. These operations may have to be co-ordinated and organised around others' movements and work activities.
4. How can team work (2) be applied?	Specialised plant work may involve facilitating and leading members of a team to complete activities to plan and on time. Discussion of availability of suitable specimens, timing and application of treatments and remedial measures may need to be carried out with supervisors or others in the workplace.

5. How can the use of mathematical ideas and techniques (1) be applied?	Calibrating spray equipment and determining quantities and application rates for treatment of specialised plants will require mathematical application.
6. How can problem-solving skills (1) be applied?	Seasonal variation; plant treatment and hygiene; client preferences, and timeline failures may require problem-solving techniques.
7. How can the use of technology (1) be applied?	Technology may be required to access production/propagation plans and plant quality specifications, monitor application equipment, 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**.

RTF3026A**Receive and dispatch plants
and other nursery products**

This competency standard covers the process of co-ordinating the receiving and dispatching of plants and other nursery products from a production, wholesale or retail nursery.

The receiving and dispatching of plants and other nursery products is likely to be under limited supervision from others, with checking only related to overall progress, and is usually done within established routines, methods and procedures. Some discretion and judgement may be required in relation to the selection, presentation and transportation of particular nursery products. Receiving and dispatching involves the application of horticultural knowledge including warehousing, storage and transportation techniques.

Element	Performance Criteria
1 Prepare for the dispatch of products	1.1 Materials, equipment and personnel required for the job are identified and work tasks are co-ordinated in a sequential, timely and effective manner in consultation with supervisor.
	1.2 OHS hazards are identified, risks assessed and suitable controls implemented.
	1.3 Orders are selected from stock batches in accordance with order forms and collated in the dispatch area according to enterprise guidelines.
	1.4 Product presentation , packaging and labelling are organised according to enterprise guidelines.
	1.5 All orders are thoroughly checked for accuracy.
	1.6 Product levels are monitored and maintained according to enterprise guidelines.
2 Receive and dispatch products	2.1 Incoming product is received, checked and stored according to enterprise guidelines and sound horticultural practices .
	2.2 Dispatch areas and packing/packaging materials are maintained and tidied according to enterprise guidelines.
	2.3 Transportation is organised according to product requirements and to ensure the product is delivered and/or received in the best possible condition.
	2.4 Contractual arrangements are met according to enterprise guidelines and sound horticultural practices.

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 materials and equipment may be required for receiving and dispatching products?	Materials and equipment may include packaging materials, labels, labelling equipment, computer, barcode scanner, calculator, scissors or knives, forklift, hand trolley, motorised trolley, wheelbarrow, small tractor, trailer, secateurs and hand tools.
What OHS hazards may be associated with the receiving and dispatching of products?	OHS hazards may include working with hazardous goods, manual handling, moving equipment and vehicles, sharp hand tools and equipment, solar radiation, dust, noise, and slippery or uneven surfaces.
What suitable controls are likely to be implemented?	Suitable controls may include appropriate personal protective clothing and equipment (PPE), correct manual handling and safe lifting techniques, and licences and permits for the use of forklifts and other transportation vehicles.
What information is likely to be included on an order form ?	An order form may include client details, plant numbers, the selection system (e.g. to be selected by hand or using a tractor and picking trailer), growing bay, batch or lot details, delivery dates, presentation, packaging, storage and transportation requirements.
What type of product presentation is likely to be used?	Product presentation may include sleeving for seasonal times and overall sleeving for protection during transport.
How would product levels be monitored and maintained ?	The monitoring and maintenance of product levels may include stocktakes, checking of invoices against orders, updating of computer/manual records, regular communication with clients, suppliers and work team members, ordering of more product, and the checking of products on receipt.
What incoming product is likely to be received?	Incoming product may include tube stock, propagation units, stock from quarantine, treatments, tools and equipment, seedlings, containerised and bare-rooted plants, bulbs, and seeds.

What do sound horticultural practices refer to?	Sound horticultural practices include Nursery Industry Association of Australia (NIAA) Best Practice Guidelines, hygiene and quarantine policies and plant species requirements.
What packing/packaging materials are likely to be used?	Packing/packaging materials may include pallets, sleeving, plastic wrapping, boxes and trays.
What may need to be organised in relation to transporting products?	Organisation may include arrangement of shelves in trucks/containers, arrangement of loading/unloading equipment or machinery, checking hygiene standards of trucks/containers, and environmental controls such as temperature, humidity and air while being transported.
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 co-ordinating the receiving and dispatching of plants and other nursery products requires evidence that orders can be selected from stock, presented, packaged and dispatched according to enterprise guidelines, and that orders can be received, checked and stored according to sound horticultural practices.

The skills and knowledge required to receive and dispatch products must be **transferable** to a different work environment. For example, this could include different plants, products, types of enterprises 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 competency standard are listed below: • environmental controls necessary for transporting plants • common sources of cross contamination from transport vehicles • enterprise quarantine policies and relevant quarantine legislation • enterprise stock control procedures • best practice guidelines for nursery hygiene • enterprise quality standards for the packing, packaging and labelling of products.

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 with clients, suppliers and work team members re product requirements
- interpret order forms
- maintain product records accurately, either manually or on a computer
- use a calculator.

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 may be applied when interpreting the detail from order forms.
2. How can information be collected, analysed and organised (2) ?	Information from order forms may need to be collected, analysed and organised before products can be selected, packed and transported.
3. How are activities planned and organised (2) ?	Activities may be planned and organised according to the priority of orders or other contractual arrangements with clients and/or suppliers.
4. How can team work (2) be applied?	Team work may need to be applied when product is packed/package ready for dispatch.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may need to be applied when monitoring product levels.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may need to be applied when there is not enough product to complete an order.
7. How can the use of technology (2) be applied?	The use of technology may be applied if a computerised product control system is maintained.

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**.

RTF3027A

Renovate sports turf

This competency standard covers the process of renovating sports turf.

Renovation of sports turf is likely to be 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. Turf renovation is normally done within 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 the turf renovation program	1.1	The turf renovation site and renovation program are identified according to the site plan and enterprise work procedures .
		1.2	Turf and renovation materials are selected according to enterprise work procedures.
		1.3	OHS hazards are identified, risks assessed, controls implemented and reported to the supervisor.
		1.4	Suitable safety and personal protective equipment (PPE) are selected, used and maintained.
2	Prepare renovation 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 manufacturers guidelines and enterprise work procedures.
3	Implement the renovation 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 renovation site in an efficient, sequential and co-ordinated manner according to enterprise work procedures.
		3.3	Renovation tasks are undertaken according to OHS requirements and with due consideration of the environmental implications .

		3.4	Renovation 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 renovation activities	4.1	Waste material is removed from the renovation 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 training and assessment requirements may depend on the work situations available.

What tasks may be undertaken in the turf renovation program ?	The program may include fertilising, over-sowing, turf plant replacement, top dressing, watering, levelling, scarifying, de-thatching, checking surface and/or sub-surface drains, and soil aeration.
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, renovation program, enterprise standard operating procedures (SOP), 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.
What turf materials may be selected for the renovation program?	Turf materials may include cool or warm season turf seed or plants of the species and cultivar specified by the supervisor and/or the turf renovation program.
What renovation materials may be required?	Renovation materials may include sand, organic matter, fertilisers and soil ameliorants such as gypsum and lime.

What OHS hazards may be associated with the renovation of sports turf?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, 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 to renovate sports turf?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.
What tools, equipment and machinery may be required for the renovation of sports turf?	Tools, equipment and machinery may include hand tools such as rakes, spreaders, shovels, turf spades, rollers, wheelbarrows, hoses and hose fittings, and machinery such as trailed or motorised renovating equipment, scarifiers, de-thatchers, coring machines and core harvesters, mechanical rollers, front-end loaders, trucks, hydraulic trailers, and tractors and 3-point linkage equipment.
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 the renovation of sports turf surfaces?	Turf renovation may have beneficial environmental impacts where excess water, nutrient and chemical flow from the existing turf surface into the external environment, including natural waterways, are reduced by the application of materials to assist with soil drainage or water holding capacity. Detrimental environmental impacts may arise where renovation 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 renovation activities; safely storing materials on site; using signage and safety barriers during and removing after renovation 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 unused renovation materials, and 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. Waste may be removed to designated areas for recycling, reuse, return to the manufacturer or disposal.
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 renovating a sports turf surface requires evidence that a person is able to prepare for renovation activities, co-ordinate work groups, prepare renovation tools, equipment and machinery, and apply soil and plant treatments without damage to the existing sports turf surface.

The skills and knowledge required to renovate a sports turf surface must be **transferable** to a different work environment. For example, this could include different turf species, renovation methods, 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:

- how turf renovation methods can achieve enterprise and industry standards for turf surface appearance and quality relevant to the end use of the turf surface
- comparative environmental implications associated with renovation activity, turf and soil treatments and waste disposal procedures

- different planting, care and renovation scheduling requirements of cool and warm season grass species and cultivars because of the different times of the year that they are at the height of their performance.

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 with work team members, supervisors and contractors
 - interpret and draft basic plans
 - utilise proforma reporting, analysis and work procedure documents
 - understand design symbols and information
 - measure materials
 - interpret and apply site plans and renovation program specifications
 - co-ordinate work group, contractors and own activities to sequentially and effectively complete turf renovation in a timely and cost effective manner.
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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 renovation 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 renovation 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 renovation program.
4. How can team work (1) be applied?	The renovation program will involve facilitating and leading members of a team to complete the renovation 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 renovation 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 renovation tools, equipment and machinery, undertake renovation 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**.

RTF3028A**Perform specialist amenity pruning**

This competency standard covers the process of performing specialist amenity pruning, and covers plants that require special treatment and the application of specialist techniques. It requires the ability to prepare for, undertake and assess specialist pruning.

Performing specialist amenity pruning requires knowledge of pruning tools and equipment, principles and techniques of specialist pruning, and identification of relevant plants.

Element**Performance Criteria**

1	Prepare for specialist amenity pruning	1.1	Plants are visually inspected and pruning strategy is determined according to the plants characteristics or desired outcome.
		1.2	OHS hazards are identified, risks assessed and suitable controls implemented.
		1.3	Pruning tools and equipment are selected and prepared according to the extent of the pruning program and enterprise guidelines.
		1.4	Where required, references are consulted to determine best pruning strategies for special plants .
2	Undertake specialist pruning	2.1	Equipment is used according to OHS requirements and manufactures specifications.
		2.2	Pruning is undertaken according to established and specialist pruning techniques .
		2.3	Site environmental concerns are adhered to in accordance with relevant legislation and/or regulations.
		2.4	Waste material is disposed of according to enterprise guidelines.
		2.5	Tools, equipment and machinery are cleaned, maintained, serviced and stored consistent with enterprise guidelines and manufacturers specifications.
		2.6	Site is cleared and cleaned according to enterprise guidelines.
3	Assess pruning quality	3.1	Plants selected for specialist pruning are visually checked to ensure pruning requirements have been met.

- 3.2 Where required, remedial work is carried out to ensure the pruning work meets objectives.
 - 3.3 Completed pruning is recorded and communicated to management and/or the client 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 OHS hazards are likely to be associated with tree pruning?	Hazards may include solar radiation, dust, noise, sharp/blunt pruning tools and equipment, slopes, climbing ladders, ladder instability and loss of balance.
What pruning tools and equipment are likely to be used?	Pruning tools and equipment may include secateurs, pruners, handsaws, steps, chippers and mulchers.
What references are applicable to this standard?	References include specialist texts, horticultural fact sheets and grower notes, Internet and consultants.
What special plants are likely to be included in a pruning program?	Plants covered by this unit include fruit trees and vines, ornamental flowering trees and shrubs, standards, topiaries, pleached arbors, roses, and other plants that have special pruning requirements due to flowering, growth or other characteristics.
What pruning techniques are likely to be utilised in a pruning program?	Pruning techniques may include cleaning out, crown lifting, crown reduction, structural integrity, crown renewal, crown thinning, dead wooding, hedging, branch, root pruning, espaliers, topiary, preparation of standards, bonzai, hedging, epicormic and green shoot removal.
What specialist pruning requirements may be included?	Requirements may include size, light, shape, aesthetics, competition, density, structures, growth re-direction, modification of flowering or fruiting behaviour, removal of diseased, broken or damaged material, sight lines, habit and form.

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 unit requires evidence that a person can perform specialist amenity pruning that preserves the integrity of the plant and meets client and industry standards for pruning.

The skills and knowledge required to perform specialist amenity pruning must be **transferable** to a different work environment. For example, this could include different plants, pruning strategies and work locations.

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

- identification of plant species and their pruning requirements
- principles and methods of specialist pruning to achieve given objectives
- effect on plant growth and habit after pruning
- specialist tools and equipment.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, some complementary skills are required. These skills are:

- recognise common diseases, pests and nutrition deficiencies in trees
 - sharpen and maintain tools required for pruning
 - store and carry tools safely
 - use appropriate pruning techniques to meet pruning program 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?	Communication of ideas and information may be applied when instructing other members of the work team or informing clients or their agents.
2. How can information be collected, analysed and organised (2) ?	Information from specialist publications may need to be interpreted, analysed and organised to ensure that pruning is carried out efficiently and safely.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised to meet job deadlines.
4. How can team work (1) be applied?	Teamwork may need to be applied when establishing pruning programs and priorities.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques may need to be applied when recording information about the program.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may need to be applied when trying to achieve specialist pruning outcomes.
7. How can the use of technology (1) be applied?	The use of technology may be applied in the operation of specialist tools and equipment.

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**.

RTF3031A**Undertake complex tree climbing**

This competency standard covers tree climbing and rigging associated with tree operations such as tree pruning and tree removal in complex circumstances.

Complex tree climbing and rigging is likely to be undertaken with limited supervision, with general guidance on progress sought by others. Complex tree climbing and rigging requires a broad range of Level 2 skills, but requires the application of specialised in the use of ropes, climbing tools and equipment.

Element**Performance Criteria**

1	Prepare for climb and tree operations	1.1	Team members are informed of their role and duties in the climbing and tree operations according to work procedures .
		1.2	Ropes are selected according to industry specifications and required tree works.
		1.3	Ropes are assessed prior to use with damaged and faulty ropes discarded according to enterprise policy.
		1.4	Appropriate climbing tools and equipment are selected according to enterprise standards and manufacturers guidelines.
		1.5	Ropes, tools and equipment are checked, handled, maintained and stored according to safe work practices, manufacturers specifications and enterprise OHS policies .
2	Access and descend from trees in complex situations	2.1	Hazards that place climbers, ground support workers, the general public and property at risk are identified and appropriate actions taken to minimise that risk.
		2.2	Personal protective and safety equipment is used and adjusted according to manufacturers guidelines and enterprise OHS policies.
		2.3	Trees are accessed using appropriate techniques and equipment according to enterprise policy, procedures and safe work practices.
		2.4	Safe anchor points are selected according to strength and suitability requirements.
		2.5	Tree is descended in a controlled manner according to enterprise procedures.

3	Undertake tree operations in complex situations	3.1	Required tree operations are carried out according to treatment plans and work procedures.
		3.2	Load is lowered in a controlled manner using appropriate crane points according to safe work practices, branch weight and rope characteristics.
		3.3	Staff are communicated with during operations, as required, verbally and by hand signals.
		3.4	Tools and equipment are cleaned and stored according to manufacturers instructions and 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 training and assessment requirements may depend on the work situations available.

What work procedures are appropriate for this standard?	These may include climbing plans and specifications, location and site plans, manufacturers guidelines, work schedules, treatment plans, emergency rescue procedures, enterprise standard operating procedures (SOP), and OHS procedures.
What industry specifications for ropes may be applicable to this standard?	Specifications may include type, dynamics, diameter, tensile strength, breaking strain, safe working load (SWL), and melting point.
What tools and equipment may be used in climbing operations?	These may include ropes, safety harnesses, ascending and descending devices, ladders, safety equipment (helmets, ear and eye protection, gloves, boots, etc.), pulleys and blocks, shackles and carabines.
What enterprise OHS policies may be relevant to this standard?	OHS policies may include safe operation and maintenance of machinery and equipment, safe systems for working at heights in trees, safe procedures for working outdoors, appropriate use of personal protective clothing and equipment, correct manual handling techniques, and procedures for calling emergency services.

In what complex situations may climbers be required to work?	These may include situations made hazardous by tree branches vulnerable to failure under a load, trees affected by decay, disease and/or pests, trees with embedded objects such as wire, nails or spikes, proximity of power lines, adjacent property, or intruding branches. The trees height, size, trunk characteristics, shape and weight distribution of the crown may contribute to making conditions hazardous to a climber or a felling or trimming operation. Inclement weather may also contribute to making working conditions difficult and hazardous.
What personal protective (PPE) and safety equipment may be used to when climbing trees?	Equipment may include boots, overalls, gloves, hard hats/helmets, ear and eye protection, safety harnesses, ropes, sun hats and sunscreen lotion.
What techniques are used to access trees in complex situations?	Techniques may include setting false anchor points, footlocking and using climbing spikes.
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 undertaking complex tree climbing requires evidence that a person can select the appropriate equipment for climbing, and access and descend trees in complex situations whilst undertaking tree operations such as pruning or removal.

The skills and knowledge required to undertake complex tree climbing must be transferable to a different work environment. For example, this could include different tree species, locations, and climbing approaches and 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: • standard tree climbing practices and principles including the use of PPE and secondary attachments • types, uses and safe working limit of ropes and all other equipment • first aid and rescue procedures applicable to tree work • industry codes of practice

- a broad range of tree treatments and the most appropriate method of application specific to the requirements of the tree.

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:

- climb trees and use ropes
- apply a range of tree treatments
- interpret climbing plans and specifications
- communicate written and verbal instructions to fellow team members
- calculate tree heights and safe working and lifting loads.

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 specific tasks associated with the job such as climbing methods and procedures, safety concerns, or any hazards encountered should be communicated with other members of the work team.
2. How can information be collected, analysed and organised (2) ?	Ideas and information about climbing strategy, methods and safety requirements should be discussed and analysed with the work team.
3. How are activities planned and organised (2) ?	All tools, equipment, materials and personnel involved in the climbing operations should be selected and organised before climbing work begins.
4. How can team work (2) be applied?	Complex tree climbing involves working with other members of a team to safely complete tasks.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical techniques may be applied when calculating heights of trees and safe working loads.

6. How can problem-solving skills (2) be applied?	Problems relating to climbing techniques and methods, workplace safety including working above ground level, access of trees, tools and equipment, emergency situation procedures, inclement weather and interruption in climbing activities may require problem-solving.
7. How can the use of technology (2) be applied?	Technology such as arboriculture climbing equipment and machinery may be used to climb trees safely.

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**.

RTF3032A**Install cable and bracing**

This competency standard covers the process of installing cable and bracing in a tree.

Competency requires the application of extensive arboricultural knowledge.

The installation of cable and bracing is likely to be under limited supervision from others, with checking only related to overall progress, and is usually done within routines, methods and procedures, and according to an established plan. Some discretion and judgement may be required in the selection of materials, tools and equipment according to the extent of pruning, and cable and bracing required for a particular tree.

Element		Performance Criteria	
1	Read and interpret a plan for cable and bracing	1.1	Cable and bracing plan is read and understood.
		1.2	Materials required for installing cable and bracing are determined from the plan and obtained with adequate lead time for the proposed work.
		1.3	Tools and equipment are selected according to enterprise guidelines.
		1.4	OHS hazards are identified, risks assessed and suitable controls implemented.
2	Prepare trees for cable and bracing	2.1	Branches are examined and their vitality and integrity of attachment ascertained to ensure the bracing can be safely implemented according to the provided plan.
		2.2	Preliminary pruning is undertaken to aid cable and bracing installation.
3	Install cable and bracing	3.1	Planned approach to cable and bracing is communicated to other members in the work team in a clear and concise manner.
		3.2	Cable and bracing is installed in line with the provided plan and enterprise guidelines.
		3.3	Completed program is checked for quality of work and recorded according to enterprise guidelines.
		3.4	Further pruning is carried out to ensure the tree is able to sustain its growth and be restored to its natural habit and form.

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 be included in a cable and bracing plan ?	A cable and bracing plan may include methods to cause minimal stress to the tree in accordance with compartmentalisation of decay in trees (CODIT) principles, it may include pruning requirements, the quantity of cable and bracing materials required, appropriate tools and equipment, OHS requirements, and any legislation or regulations that may need to be observed.
What tools and equipment are likely to be used when installing cable and bracing?	Tools and equipment may include ladders, ropes, pruning shears, secateurs, garden saws, clippers, hammers, wrenches, spanners and a safety harness.
What OHS hazards are likely to be associated with installing cable and bracing?	OHS hazards may include access, overhead services and utilities, space and height factors, position, angle, shape and condition of the tree.
What suitable controls are likely to be implemented to minimise OHS hazards?	Suitable controls may include personal protective clothing and equipment such as rubber soled boots and a safety harness, signage and barriers, first aid kit, and approved ladders and ropes.
Where are trees requiring cable and bracing likely to be located?	Trees may be located in parks, streetscapes, domestic environments, on farms or other rural properties, lining roads and highways, in established plantations and forests, or commercial enterprises.
What are the likely benefits of further pruning ?	Further pruning may improve size, access to light, general clearances, sight lines, aesthetics, competition, structure, shape, density and growth re-direction, it may modify flowering/fruiting behaviour and minimise the possibility of further damage or decay.

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 installing cable and bracing requires evidence that a cable and bracing plan can be interpreted, a pruning program implemented, and cable and bracing installed according to the provided plan.

The skills and knowledge required to install cable and bracing must be **transferable** to a different work environment. For example, if cable and bracing can be installed in a relatively small backyard tree, the same principles can be applied to a large tree in parklands.

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:

- pruning techniques
- CODIT principles
- OHS issues in relation to working in hazardous situations with trees
- cable and bracing and the way an individual tree will respond
- different types of trees and their structures.

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:

- climb and manage heights
 - read and interpret plans
 - communicate information to other work team members regarding proposed cable and bracing plans
 - identify OHS hazards in relation to specific trees and 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 (1) be applied?	Communication of ideas and information may be applied when informing work team members of the cable and bracing plan.
2. How can information be collected, analysed and organised (1) ?	Information regarding the materials required for cable and bracing may need to be collected, analysed and organised.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised to minimise OHS hazards.
4. How can team work (2) be applied?	Team work may need to be applied to cable and brace weakened tree limbs.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may need to be applied when measuring lengths of cable.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may need to be applied when assessing what further pruning may be required after cable and bracing is installed.
7. How can the use of technology (2) be applied?	The use of technology may be applied to brace tree limbs.

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**.

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 health of the plants, 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 plant health	1.1	Workplace information is interpreted and clarified with the supervisor.
		1.2	Growth rate of plants are assessed against targets set in the production plan.
		1.3	Plants are assessed for overall health according to sound horticultural practice.
		1.4	Plant is assessed for onset of fruit according to production plan.
2	Monitor the hydroponic environment	2.1	Environmental parameters are monitored according to the production plan and adjustments made as required.
		2.2	Samples are collected and sent off for analysis to identify potential sources of contamination .
		2.3	Hygiene procedures are monitored and adjusted according to enterprise guidelines.
		2.4	Disposal of materials is monitored to ensure it follows enterprise guidelines, and with due consideration of the environmental implications .
3	Monitor nutrient solution	3.1	Ingredients of the hydroponic nutrient solution are identified.
		3.2	Samples are taken for testing and analysis.

		3.3	Results are interpreted and discussed with the supervisor.
		3.4	Nutrient solution is modified in accordance with results to ensure the correct balance of ingredients for optimum growing conditions.
4	Perform routine maintenance checks	4.1	All buildings and structures are inspected and checked for wear and tear.
		4.2	Equipment for delivering the nutrient solution is checked according to enterprise guidelines.
		4.3	Equipment controlling the atmospheric and root zone environments is checked according to enterprise guidelines.
		4.4	OHS hazards are identified, risk assessed and suitable controls implemented according to enterprise guidelines.
5	Complete monitoring activities	5.1	Any significant problems are reported to the manager and/or owner operator.
		5.2	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 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 deficiency symptoms, and stunted or spindly growth.
What environmental parameters are likely to be monitored?	Environmental parameters may include temperature, light, humidity, carbon dioxide concentration and wind.
How can environmental parameters be adjusted ?	Adjusting environmental parameters may include using fans, heaters, opening and shutting louvres and windows, using misters and artificial lighting.
What are likely to be sources of contamination in hydroponic systems?	Sources of contamination may include water, soil, vegetable matter, smoke, 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, 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, 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, fans (to circulate carbon dioxide), misting systems, humidifiers or fogging machines, exhaust fans, air vents, UV sterilisers and ORP generators.
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 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
 - characteristics 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, appropriate literacy and numeracy levels as well as 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.
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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 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**.

RTF3035A**Implement a tree protection program**

This competency standard covers the work undertaken to implement a tree protection program. The work includes working from the tree protection plan, organising resources, constructing and installing tree protection devices and then monitoring the effectiveness of the installed devices. Other personnel may undertake the installation of tree protection devices.

Tree protection work is likely to be under limited supervision, with checking only related to overall progress. The work requires the application of extensive horticultural knowledge and a broad range of horticultural skills. Tree protection is normally 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	Determine the implementation requirements of the tree protection program	1.1	Trees to be protected, reason for protection and type of protection methods are identified according to the tree protection plan and enterprise work procedures .
		1.2	Any OHS controls necessary to ensure the safety of operators, the public and property throughout the tree protection program are identified and taken into account during implementation planning.
		1.4	Any environmental implications of the tree protection program are assessed and taken into account during implementation planning.
		1.3	Resources required to implement the tree protection program are identified from the plan, and availability confirmed with relevant personnel or suppliers.
		1.4	Implementation tasks are determined, scheduled, tasks allocated, and allowance made for contingencies .
		1.5	Information relating to the implementation of the tree protection program is communicated to appropriate personnel in accordance with enterprise guidelines.
2	Make site preparations	2.1	Suitable Personal Protective Equipment (PPE) is selected, used and maintained.

	2.2	Location of protection areas are marked out on the site according to protection plan and specifications.
	2.3	Safety barriers and signage are erected around holes, other disturbed surfaces and hazardous areas during and between work periods to ensure public and operator safety.
	2.4	Pre-operational and safety checks are carried out on all tools, equipment and materials with defective, faulty or out-of-standard components discarded and replaced.
3	Construct protective devices	3.1 Tools, equipment and materials appropriate to the task are used according to enterprise work procedures.
	3.2	Tree protection devices are constructed and/or assembled according to tree protection plan and any needs specific to the species or individual tree.
	3.3	Protection devices are installed according to enterprise work procedures and protection program.
	3.4	Completed protection devices are inspected for viability and remedial action undertaken when necessary.
4	Monitor protection program	4.1 Tree health is monitored during the protection program and remedial action taken to ensure the health and vigour of the tree is maintained.
	4.2	Protection devices are periodically checked for their effectiveness according to protection plan requirements.
	4.3	Broken, damaged or ineffective components are reported and/or repaired according to enterprise guidelines.
	4.4	Damaged trees are repaired and/or replaced according to protection plan requirements.
	4.5	Protection devices are dismantled and removed according to protection plan requirements.
	4.6	Tools and equipment are cleaned, maintained and stored consistent with enterprise guidelines.
	4.7	Records are maintained in accordance with enterprise guidelines.

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.

In what situations may trees require protection?	Protection devices are installed for the following situations: construction, vandals, animals, vermin, pollution, chemical, mechanical, insects, waterlogging and weeds. Type and extent of protection required may be influenced by site conditions, tree size, aesthetics, duration of program, expected threats, cost and significance of tree.
What protection methods may be installed to protect trees?	Protection methods may include installation of fences, tree guards, tree plantings, barriers, retaining walls, and soil coverings. It may also include erection of signs and bunting, and traffic re-direction.
What work procedures are appropriate for this standard?	These may include tree protection plans and specifications, site and location plans, manufacturers guidelines, client instructions, work schedules, waste disposal, recycling and re-use guidelines, company standard operating procedures (SOP), and OHS procedures.
What OHS controls may be relevant to this standard?	These may include procedures for handling, transporting, storing and disposing of chemicals and fertilisers, safe operation and maintenance of machinery and equipment, safe control of traffic, safe procedures for working outdoors, appropriate use of PPE, and correct manual handling techniques.
What environmental implications may be relevant to implementing a tree protection program?	Detrimental environmental implications may include effect of dust and noise, spread of pests and diseases, disposal of waste soil and debris, risk of chemical spillage, fertiliser and chemicals flowing into drains and water sources, and damage to flora and fauna. Ensuring that the health of trees is not compromised by external factors means that the trees are available for the purpose intended, for example, shade, shelter, aesthetic value, habitat to native fauna, effect on water table, etc.

What resources that may need to be considered as part of the implementation of the tree protection program?	Resources required may include the type and level of skill, number of personnel, protection devices or materials to construct them, tools and equipment, time, transport, traffic control devices, safety barriers and signage.
What contingencies may occur during a tree protection program?	Contingencies may include inclement weather, supply of materials/devices not reliable, tools, equipment breakdown, human resource issues, and unexpected traffic movement.
What communications (to appropriate personnel) might be applicable?	Communications may be written or verbal and be directed to supervisor, management and/or client. It may also include information directed to work team members, and communicating with other contractors on work sites.
What PPE may be relevant to this standard?	Equipment may include boots, overalls, gloves, goggles, hearing protection, sun hats and sunscreen lotion.
What tools, equipment and materials may be used in the protection program?	Tools and equipment may include digging equipment, carpentry tools, traffic control devices, fencing materials, tree guards, tree plantings and barriers.
What information relating to tree protection is recorded ?	Information recorded may include date and description of protection device, recommended follow up, identified problems associated with this and/or surrounding trees, and relevant site 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 implementing a tree protection program requires evidence that a person can determine the protection requirements of trees, set out a site according to the requirements of the protection program, construct protective devices appropriate to the needs of the tree, and monitor the protection program.

The skills and knowledge required to implement a tree protection program must be **transferable** to a different work environment. For example, this could include different tree species, protection approaches and programs, 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:

- protection requirements in relation to tree species, position, location and potential threats
- principles of evaluating the effect of damage to trees during construction programs
- environmental factors that may affect individual and plantation trees
- improvements to tree health that can be achieved through modifying environmental influences
- principles, regulations and practices relating to restricting access
- AS1742 Pt 3 1985 - Australian Standard Code of Practice, Work Site Traffic Management
- industry codes of practice
- specifications and construction methods when installing protection devices.

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:

- build protection devices
- recognise healthy/stressed and damaged trees
- participate in a team working situation
- work in chemical, toxic or hazardous areas
- dispose of chemical substances and their containers to minimise environmental impact
- disposal of plant and equipment debris in an environmentally aware and sensitive manner, such as sorting plant and paper-based waste for recycling
- minimise noise, dust, high activity vehicle traffic and water run-off to prevent nuisance-level environmental disturbance
- read protection plans
- interpret site maps
- read chemical labels

- interpret and communicate instructions with fellow team members
- estimate and calculate program requirements
- construct and install protection devices.

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 specific tasks associated with the job such as protection methods, appropriate tools and equipment, and hazards encountered should be discussed with work colleagues. Estimated completion dates, costs, timeframes and methods should be communicated with suppliers, clients and end users.
2. How can information be collected, analysed and organised (2) ?	A visual inspection of the site may reveal site characteristics, site access, size of the tree, potential threats and environmental factors, which should be discussed with other members of the work team. Information and ideas on protection techniques, methods and requirements, worker safety systems and work schedules should also be discussed with the work team.
3. How are activities planned and organised (3) ?	Daily work activities carried out by individuals and team members, and project timeframes should be arranged before and during work periods to ensure the protection program is completed on time.
4. How can team work (2) be applied?	Protecting trees may involve working with other members of a team to complete the protection program.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical techniques may be applied when estimating and calculating project resources and costs.

6. How can problem-solving skills (3) be applied?	Problems relating to site conditions, site access, protection program and methods, workplace safety, tools and equipment, team members, inclement weather and environmental issues may require problem-solving.
7. How can the use of technology (2) be applied?	Technology such as arboricultural tools, equipment and materials may be used in the tree protection program. Records may be kept in electronic files.

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**.

RTF3036A**Plan and establish plant displays**

This competency standard covers the process of planning and establishing plant displays either indoors or as seasonal displays of annual and perennial plants in garden beds.

The planning and establishing of plant displays requires the application of horticultural knowledge including plant types, condition and requirements to maintain the plants in prime condition throughout the duration of the display. The work is normally done using established routines, methods and procedures. 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 plans for plant displays	1.1 Display site is inspected for aesthetic, environmental and physical attributes.
	1.2 OHS hazards are identified, risks assessed, controls implemented and reported to the supervisor.
	1.3 Location and projected life of display are identified on the display plan.
	1.4 Plant types suitable for aesthetic effects, environmental and physical attributes are identified on the display plan.
	1.5 Actions, timelines and work organisation are identified on the display plan in consultation with the supervisor.
	1.6 Availability of plants, materials and services for preparing the display are confirmed.
	1.7 Materials, tools, equipment and machinery are selected according to the display plan and enterprise work procedures.
	1.8 Suitable safety equipment is selected, and used.
2 Select plants	2.1 Plants selected are healthy and vigorous and comply with enterprise specifications for quality .
	2.2 Number and size of plants are selected according to the display plan.
	2.3 Plants selected display the ability to survive in the display position for the length of the display.

3	Place plants	3.1	Plants are placed in a pattern specified by the plan.
		3.2	Accessories and materials are chosen as specified in the plan.
		3.3	Work is undertaken according to OHS requirements.
4	Maintain plants	4.1	Health of the plants is monitored to ensure retain optimum appearance.
		4.2	Plants are fertilised and watered to maintain optimum health and appearance.
		4.3	Plants are replaced when no longer at optimum health and appearance.
		4.4	Rubbish, litter and decaying material are removed from plants, pots and surrounds to maintain optimum appearance of display.

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 plant displays in the context of this standard?	Plant displays include displays for functions, annual bedding displays, herbaceous perennial displays, and indoor presentations.
What aesthetic, environmental and physical attributes should be taken into account?	Aesthetic, environmental and physical attributes may include light, air, humidity, desired effect, nature of event or exhibition, time-span of display, size of display, barriers preventing display in particular locations, access restrictions.
What OHS hazards may be associated with the preparation of plant displays?	Hazards may include interference with services, manual handling, moving machinery and machinery parts, and solar radiation.
What does a display plan include?	A display plan may include action required, display location, plants required, materials, who is responsible, deadlines, assistance required, maintenance requirements, and access availability.
What determines the plant types selected for display?	Choice of plants may be influenced by factors including colour of foliage or flowers, shape and growth of foliage, texture, size, longevity, portability hardiness in particular environmental conditions.

What tools, equipment and machinery may be required?	Tools, equipment and machinery may include hand tools such as rakes, shovels, spades, wheelbarrows, hoses, forklifts, backhoes, and trolley.
What safety equipment may be required?	Safety equipment may include signage and barriers.
What enterprise specifications for quality may apply to this standard?	Enterprise specifications for quality may include the shape of plant, vigour, colour, height, and the absence of pests and diseases.
What accessories and materials may be used for the preparation of plant displays?	Accessories and materials may include sculptures, rocks, water, surface and edge treatments, garden furniture, nursery products, signage, stands, boxes, fabrics and other decorative materials.
What OHS requirements are relevant to this standard?	OHS requirements may include 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.
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 and establishing plant displays requires evidence that plant displays can be planned and established to a level which satisfies client needs and plants suitable for the display are selected and maintained in a healthy, optimal state.

The skills and knowledge required to prepare the display must be **transferable** to a different work environment. For example, this could different environments, display themes, plant species, and seasons.

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: • aim and purpose of building plant displays • design principles for plant displays • features and characteristics of a range of plants used for display purposes

- growing requirements of a range of common plants used in plant displays
- common problems occurring with display plants
- remedial action required for display plants displaying health problems.

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 with work team members, supervisors, suppliers and customers
- interpret design plans and specifications
- calculate number of plants and materials
- determine spatial measurements of display site
- co-ordinate own activities sequentially
- effectively complete plant display in a 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.

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1. How can **communication of ideas and information (2)** be applied?

Written, oral and telecommunication of ideas and information relating to suitability and availability of stock and materials and problems encountered, will be required with the supervisor, work group, suppliers or clients.

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2. How can **information be collected, analysed and organised (2)**?

Enterprise work procedures, customer impact criteria and the display plan should be consulted, interpreted and applied to co-ordinate display activities with further clarification sought from the supervisor where necessary. Information on enterprise and plant environmental requirements may need to be collected to ensure suitable plants for display are chosen.

3. How are activities planned and organised (2) ?	Preparing the display may require planning in the selection and placing of plants. Work activities for the work group and self may need to be adjusted throughout the duration of the display.
4. How can team work (2) be applied?	Preparing the display may involve working as part of a team to complete the display to plan and on time. Discussion of display design and plant suitability may need to be carried out with supervisors or others in the workplace.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical concepts may be used to calculate design requirements such as space and stock requirements.
6. How can problem-solving skills (2) be applied?	Plant selection, environmental variation, client intervention, personnel difficulties and timeline failures may require problem-solving techniques.
7. How can the use of technology (2) be applied?	Technological understanding may be required to access information about suitable plants and design ideas, 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**.

RTF3203A**Construct brick and/or
block structures and
features**

This competency standard covers the process of constructing brick and/or block structures and features as a component of landscape project works. These structures and features may include steps, edgings, walls, fences, BBQ and entertaining areas, and ornamental garden elements.

The construction of brick and/or block structures and features is likely to be under limited supervision from others, with checking only related to overall progress. Work is usually done within established guidelines, although some discretion and judgement may be required depending on the type of structure or feature to be constructed.

Element		Performance Criteria	
1	Plan and prepare work	1.1	Plans and specifications are interpreted and clarified with the supervisor.
		1.2	The quantity and quality of materials are checked to ensure they conform to design drawings and specifications.
		1.3	Tools and equipment are selected and checked for serviceability according to enterprise guidelines.
		1.4	OHS hazards are identified, risks assessed and controls implemented.
		1.5	Environmental implications of erecting brick and/or block structures are identified and reported to the supervisor.
2	Set out and prepare the site	2.1	Services are determined and located from site plans.
		2.2	The position of the structure or feature is marked out according to design drawings and specifications.
		2.3	Profiles are established to conform to the tolerances nominated within the design drawings and specifications.
		2.4	Subsoil is prepared by removing all debris, vegetable matter and topsoil to provide a solid foundation for construction.
		2.5	Drainage systems are installed according to design drawings and specifications.

		2.6	Sub-base material is placed and compacted to the required finished levels.
3	Construct structure or feature	3.1	Mortar is mixed to determined ratio and appropriate admixes including bonding and colouring agents are added, as required, and in accordance with specifications.
		3.2	Damp proofing and base course of brick and/or block work is laid according to design drawings and specifications.
		3.3	Courses of brick and/or block work are laid using designated bond(s) in a manner that will ensure the viability and stability of the structure, and according to design drawings and specifications.
		3.4	Finishes are applied to brick or block work in accordance with specifications.
4	Check quality of work and clean up site	4.1	Quality of finished works is inspected to ensure the standard of the finished structure or feature is in accordance with design drawings and specifications
		4.2	Brick and/or block work surfaces are cleaned down in an environmentally safe and sensitive manner.
		4.3	Tools and equipment are cleaned and stored according to enterprise guidelines.

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 tools and equipment are likely to be used when constructing concrete structures and features?	Tools and equipment may include levelling equipment, string lines, tape measures, spades, shovels, trowels, wheelbarrow and concrete mixer.
What OHS hazards apply to this standard?	OHS hazards may include manual lifting, use of power tools, use of sharp hand tools, dust, and sun exposure.
What OHS controls may be relevant to this standard?	OHS controls may include safe lifting and transporting techniques, the drinking of fluids, basic first aid, and the appropriate use of personal protective clothing and equipment such as overalls, boots, hat, gloves, the erection of safety signs and barriers, the identification of site access points, and the safe storage of materials on site.

What environmental implications are likely to be considered?	Consideration may be given to the impact of soil disturbance and the alteration to water flow during construction and after the structure or feature has been constructed.
What services are likely to be located on site?	Services may include power, gas, water, stormwater, sewerage or septic connections, phone and optical cables.
What drainage systems are likely to be installed?	Drainage systems may include sumps, agricultural drains, storm water pipes, slotted pipes, open drains and channels.
What finishes may be relevant to this competency standard?	Finishes may include acrylic render, sand/cement render, oxides and other colours, mouldings and cappings.
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 constructing brick and/or block structures and features requires evidence that work can be planned and prepared, that the construction site can be set out and prepared according to design drawings and specifications, and that the structure or feature can be constructed according to the required standards.

The skills and knowledge required to construct brick and/or block structures and features must be **transferable** to a different work environment. For example, a person should be able to apply the same principles of brick and/or block work construction whether they are building a wall, a barbecue, or some other garden element.

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: • comparative environmental implications associated with soil disturbance and the establishment of drainage systems • components of mortar, including admixes such as bonding and colouring agents, used in the construction of brick and/or block structures and features.

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 design drawings and specifications, and transpose the information to site
 - measure and construct profiles using mathematical techniques
 - use of levelling equipment.
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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 regarding the type of bonding agent to be used may need to be communicated to other members of the work team.
2. How can information be collected, analysed and organised (2) ?	Information from design drawings and specifications may need to be collected, analysed and then organised to transpose it on to site.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised to meet timelines and to finish the project according to budget.
4. How can team work (2) be applied?	Team work may need to be applied when setting out and preparing a site for construction.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may be applied when calculating quantities of materials required.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may be applied if the mortar is mixed to the incorrect consistency.
7. How can the use of technology (2) be applied?	The use of technology may be applied when marking out the site for construction.

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**.

RTF3204A

Construct concrete structures and features

This competency standard covers the process of constructing concrete structures and features as a component of landscape project works. These structures and features may include paths, driveways, edgings, footings, floors, steps, walls, fences, pool surrounds, entertaining areas and ornamental garden elements.

The construction of concrete structures and features is likely to be under limited supervision from others, with checking only related to overall progress and is usually done within established routines, methods and procedures. Some discretion and judgement may be required depending on the type of structure or feature to be constructed. For example, it may be a driveway at ground level or a fence that is constructed vertically.

Element	Performance Criteria
1 Plan and prepare work	1.1 Plans and specifications are interpreted and clarified with the supervisor.
	1.2 The quantity and quality of materials are checked to ensure they conform to design drawings and specifications.
	1.3 Tools and equipment are selected and checked for serviceability according to enterprise guidelines.
	1.4 OHS hazards are identified, risks assessed and controls implemented.
	1.5 Environmental implications of constructing concrete structures are identified and reported to the supervisor.
2 Set out and prepare the site	2.1 Services are determined and located from site plans.
	2.2 The position of the structure or feature is marked out according to design drawings and specifications.
	2.3 Profiles are established to conform to the tolerances nominated within the design drawings and specifications.
	2.4 Subsoil is prepared by removing all debris, vegetable matter and topsoil to provide a solid foundation for concrete.
	2.5 Drainage systems are installed according to design drawings and specifications.

		2.6	Form work is installed to the site in a manner that will ensure it remains rigid during concrete pouring operations.
		2.7	Sub-base material is placed and compacted to the required finished levels.
		2.8	Preparation of the site is completed according to the type of structure or feature to be constructed.
3	Mix and pour concrete	3.1	Proportions for concrete mix are determined according to the strength requirements of the project.
		3.2	Volume of dry materials necessary to produce final concrete mix is determined.
		3.3	All dry ingredients and required additives are mixed together to ensure a thorough blending of all materials is achieved.
		3.4	Sufficient water is introduced to produce a concrete mix to the required consistency.
		3.5	Concrete mix samples are taken for testing , if required, to check for conformity to specifications.
		3.6	Concrete is poured to designated levels in a manner to avoid segregation of materials.
		3.7	Concrete is consolidated using an approved vibration method to industry standard (AS3600) to ensure air pockets are eliminated.
4	Finish concrete	4.1	Concrete is screeded to a flat surface to maintain the desired finished level.
		4.2	Surface is trowelled according to design drawings and specifications.
		4.3	A Concrete is finished off according to design drawings and specifications.
5	Check quality of work and clean up site	5.1	Quality of finished works is inspected to ensure the standard of the finished structure or feature is in accordance with design drawings and specifications.
		5.2	Form work is removed and cleaned in a manner which will allow for re-use of the form work.
		5.3	All debris is removed and disposed of in a manner that minimises risk to the environment.
		5.4	All tools and equipment are cleaned and stored according to enterprise guidelines.

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 tools and equipment are likely to be used when constructing concrete structures and features?	Tools and equipment may include levelling equipment, string lines, tape measures, spades, shovels, wheelbarrow, concrete mixer, trowels and screeding equipment.
What OHS hazards may apply to this standard?	OHS hazards may include manual handling, solar radiation, obstacles, and slipping on wet surfaces.
What OHS controls may be relevant to this standard?	OHS controls may include safe lifting and transporting techniques, the drinking of fluids, basic first aid, and the appropriate use of personal protective clothing and equipment such as boots, overalls and sun hat, erection of safety signs and barriers, the identification of site access points, and the safe storage of materials.
What environmental implications are likely to be considered?	Consideration may be given to the impact of soil disturbance and the alteration to water flow during construction and after the structure or feature has been constructed.
What services are likely to be located on site?	Services may include power, gas, water, stormwater, sewerage or septic connections, phone and optical cables.
What drainage systems are likely to be installed?	Drainage systems may include sumps, agricultural drains, storm water pipes, slotted pipes, open drains and channels.
What other preparation tasks may need to be completed before the placement of concrete?	Other preparation tasks to be completed may include the installation of a waterproof membrane, reinforcement according to industry standards (AS1554.3), and the application of a release agent to form work.
What concrete additives may be relevant to this standard?	Additives may include colouring agents, retardants and accelerants.
What testing is likely to be undertaken on the concrete mix?	Testing may include a concrete slump test and Mpa testing.
How is the concrete likely to be finished off ?	Finishing off the concrete may include the addition of a curing agent, insertion of expansion jointing and control joints, or diamond saw cuts after a period of drying.

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 constructing concrete structures and features requires evidence that work can be planned and prepared for, that a site for concrete placement can be prepared according to design drawings and specifications, and that concrete can be mixed, placed and finished according to the required standards.

The skills and knowledge required to construct concrete structures and features must be **transferable** to a different work environment. For example, this could include different structures and features, concrete mixes and locations.

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:

- Mpa testing theory and what effects Mpa specifications in a concrete mix
- the comparative environmental implications associated with soil removal and the establishment of drainage systems
- industry standards in relation to reinforcing and consolidating concrete.
- sub-base and sub-grade materials and preparation.

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 design drawings and specifications and transpose the information to site
- measure and construct profiles using mathematical techniques
- establish levels using levelling equipment
- undertake and interpret tests performed on a concrete mix
- place, consolidate and finish concrete.

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 regarding what type of structure or feature is to be installed may need to be communicated to other members of the work team.
2. How can information be collected, analysed and organised (2) ?	Information on tests applied to the concrete mix may need to be collected, analysed and acted upon.
3. How are activities planned and organised (2) ?	The installation of concrete structures and features may need to be planned and organised according to the prevailing weather conditions.
4. How can team work (2) be applied?	Team work may be applied when undertaking concrete pouring operations.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may be applied when calculating the volume of concrete required for the job.
6. How can problem-solving skills (2) be applied?	Problems may arise with the stability of the form work applied to a concrete site.
7. How can the use of technology (2) be applied?	Technology may be applied when working out the volume of concrete needed, or researching what type of curing agent/method to use.

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**.

RTF3207A**Implement a landscape maintenance program**

This competency standard covers the work undertaken by those employed in the maintenance of newly constructed or established landscapes.

Maintenance is likely to be in accordance with an established landscape maintenance program and 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. Landscape maintenance is normally 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	Interpret a landscape maintenance program	1.1	Scope of maintenance works is determined according to the landscape maintenance program.
		1.2	Frequency of maintenance works is determined and implemented according to the landscape maintenance program.
		1.3	Landscape maintenance standards are established in line with the landscape maintenance program.
		1.4	Maintenance works are planned and prepared .
		1.5	OHS hazards are identified, associated risks assessed and suitable controls implemented.
		1.6	Environmental impact of landscape maintenance activities are identified.
2	Identify and replace diseased or damaged plants	2.1	Diseased or damaged plants are identified and recorded.
		2.2	Plants are treated or removed and replaced according to terms and conditions of the maintenance program.
		2.3	Diseased or damaged plants which are beyond the scope of the maintenance program are reported to the nominated person.
		2.4	Aftercare is provided to re established plants to ensure their health and vigour are maintained.
3	Monitor and maintain landscape areas	3.1	A site inspection checklist is established according to the landscape maintenance program.

- 3.2 Site is regularly inspected according to the checklist.
 - 3.3 Check and repair **plant protection devices**.
 - 3.4 Remedial action and repairs are identified to restore site to full effectiveness.
 - 3.5 Results of maintenance works are assessed and recorded to ensure repairs or renovation objectives and standards have been achieved according to the landscape maintenance program.
 - 3.6 Ensure surroundings are tidied and materials and equipment cleared from the landscape area on completion of maintenance works.
-

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 is likely to be the format for a landscape maintenance program ?	Landscape maintenance programs, particularly those associated with recent landscape construction projects, may appear as detailed drawings with technical specifications. Others may be in a report or chart format, or in a summary note or attachment forming part of a contractual agreement with a client.
What is likely to be included in the scope of maintenance works ?	Landscape maintenance work may include care of trees, shrubs and groundcovers, weed and pest control, turf cultivation, maintenance of irrigation systems, upkeep of landscape structures, features and site furniture, miscellaneous tasks such as mowing, rubbish removal, and reinstatement of lost or damaged plants.
What does frequency of maintenance works mean in relation to a maintenance program?	Frequency of maintenance works may include the frequency of routine works such as mowing, pruning and summer watering, and non-routine works known as contingencies that may be required only for specific and unpredictable reasons, such as vandalism, drought, and major weed or pest infestations.
What is likely to be planned and prepared for landscape maintenance works?	Planning and preparation may include the correct materials, tools and equipment required, the assessment of labour needs to complete the work, and the timing and order of work to be undertaken.

What OHS hazards may apply to landscape maintenance?	Hazards may include chemicals and hazardous substances, manual handling, operating machinery, sharp tools, uneven surfaces, and solar radiation.
What environmental impacts might landscape maintenance activities have?	Landscape maintenance programs may have beneficial environmental impacts where drainage and irrigation reduce excess water, nutrient and chemical flow into natural waterways. Detrimental environmental impacts may arise where the drainage and irrigation systems do not optimise water use because of incorrect installation or design faults, such as irrigation overspray or inefficient drainage. Cultivation may also damage the soil structure.
What stresses are plants likely to suffer?	Stresses may include physical damage from people, vehicles or animals, weather factors such as extreme wind, heat or cold, and compacted soils which do not allow roots to access adequate water or soil.
What after care is required to re-establish replaced plants?	After care may include pruning, irrigation, mowing and turf care, fertilising, rubbish removal, fungicides, weed, pest and disease treatment, and control of vertebrate pests.
How are landscape areas defined according to this standard?	Landscape areas may include gardens, commercial sites, industrial sites, city parks, institutions (e.g. schools and hospitals), local government parks, and reserves and bushland areas.
What plant protection devices are likely to be used?	Plant protective devices may include stakes and ties, temporary fencing, plastic sleeves, decorative wooden or steel tree guards, root and soil protectors such as grates, grilles, and paving that allow water and air to enter the soil.
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 landscape maintenance program requires evidence that plant protection devices can be maintained, diseased or damaged plants can be recognised, removed or replaced, and that the landscape area can be maintained to the standards outlined in the landscape maintenance program.

The skills and knowledge required to implement a landscape maintenance program must be **transferable** to a different work environment. For example, this could include different programs, landscape settings 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:

- a detailed knowledge of what is included (and what is excluded) from the landscape maintenance program or contract
- actions permitted in the event of variations to maintenance programs/contracts
- appropriate horticultural practices for heritage and cultural areas
- principles and applications of an integrated pest management program
- characteristics of a range of plants
- optimal growing conditions for a range of plants
- common problems occurring in a range of plants.

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:

- observe and determine maintenance requirements for a site
 - co-ordinate maintenance operations to minimise cost and time factors
 - observe environmental protocols in maintaining a landscape area including the safe disposal of all debris from the site
 - read, interpret and implement a landscape maintenance program including communication and calculation skills.
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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 and oral information relating to landscape maintenance activities may be shared with contractors, other members of the work team and/or clients.
2. How can information be collected, analysed and organised (1) ?	A landscape maintenance program may involve the establishment of a checklist to prioritise activities.
3. How are activities planned and organised (1) ?	Landscape maintenance activities may need to be planned and organised according to particular site and weather conditions.
4. How can team work (1) be applied?	To minimise cost and time factors in landscape maintenance work, labour needs may be increased to include contractors and/or consultants.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical techniques may be needed to calculate and cost maintenance requirements. For example, the cost of replacing damaged plants and/or landscape structures.
6. How can problem-solving skills (1) be applied?	Problems may arise regarding non-routine works in landscape maintenance. Contingencies may be required for vandalism, drought or pest infestations.
7. How can the use of technology (1) be applied?	Technology may be used to plan a landscape maintenance program.

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**.

RTF3208A**Install metal structures and features**

This competency standard covers the process of installing metal structures and features as a component of landscape project works. These structures and features may include fences, pergolas, trellises, handrails, screens, seats, bollards, playground equipment, rubbish bins, plant surrounds, garden lights, sculptures and other ornamental features.

The installing of metal structures and features is likely to be under limited supervision from others, with checking only related to overall progress and is usually done within established routines, methods and procedures. Some discretion and judgement may be required in the assembly and securing of the metal components used in the structure or feature.

Element	Performance Criteria
1 Plan and prepare work	1.1 Plans and specifications are interpreted and clarified with the supervisor.
	1.2 The quantity and quality of materials are checked to ensure they conform to design drawings and specifications.
	1.3 Tools and equipment are selected and checked for serviceability according to enterprise guidelines.
	1.4 OHS hazards are identified, risks assessed and controls implemented.
	1.5 Environmental implications of installing timber structures are identified and reported to the supervisor.
2 Set out the site for the structure	2.1 Services are determined and located from site plans.
	2.2 The position of the structure or feature is marked out according to design drawings and specifications.
	2.3 Profiles are established to conform to the tolerances nominated within the design drawings and specifications.
	2.4 Footings are excavated and prepared according to the type of structure or feature to be installed.
3 Prepare and cut metal components	3.1 Components are laid out ready for assembly to the requirements contained in the design drawings and specifications.

		3.2	The length of components and the positions of joins are marked out according to designated specifications in design drawings.
		3.3	Cutting tools are selected, used and maintained according to manufacturers recommendations and OHS specifications .
		3.4	Components are cut and joined in preparation for assembly.
4	Assemble and erect structure	4.1	Metal components are assembled into position and fixed into place according to design drawings and specifications.
		4.2	Remaining components are installed and fixed into position according to design drawings and specifications.
		4.3	Structure is finished off to ensure all components are secure and complete.
		4.4	Coatings are applied according to specifications, manufacturers recommendations and OHS guidelines .
5	Check quality of work and clean up site	5.1	Quality of finished work is inspected to ensure the standard of the finished structure or feature is in accordance with design drawings and specifications.
		5.2	Debris is cleaned from structure and site according to enterprise guidelines.
		5.3	Waste material is disposed of in an environmentally aware and sensitive manner.
		5.4	Unused metal components are stored for future re-use according to enterprise guidelines.
		5.5	Tools and equipment are cleaned and stored according to enterprise guidelines.

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 tools and equipment are likely to be used when installing metal structures and features?	Tools and equipment may include levelling equipment, string lines, tape measures, marking gauges, spades, shovels, crow bars, hammers, spanners, metal files, hacksaws, angle grinders and electric saws with metal blades.
What OHS hazards may apply to this standard?	OHS hazards may include manual lifting, use of power tools, use of sharp hand tools, dust, and sun exposure.

What OHS controls may be relevant to this standard?	OHS controls may include safe lifting and transporting techniques, the appropriate use of personal protective clothing and equipment such as overalls, boots, face shield, hat, installation of safety signs and barriers, the disabling and disconnecting of soldering, thermal cutting equipment and other powered tools when not in use, the identification of site access points, the safe storage of materials on site, the drinking of fluids, and basic first aid.
What environmental implications are likely to be considered?	Consideration may be given to the impact of soil disturbance and the alteration to water flow during construction and after the structure or feature has been installed.
What services are likely to be located on site?	Services may include power, gas, water, stormwater, sewerage or septic connections, phone and optical cables.
What type of footings are likely to be prepared for metal structures and features?	Footings may be concrete or in some case rammed earth. The depth of footings and timing of footing installation may vary according to the type of structure or feature to be installed. Some structures (e.g. fences) need the post and footing installed at the beginning. Others may be supported by temporary bracing, and when complete, the footings are filled.
What metal components are likely to be included in a timber structure or feature?	Metal components may include panels, sheets, posts, bars, rails, wire, wire mesh and metal lattice.
What cutting tools are likely to be used?	Cutting tools may include hacksaws, angle grinders, electric saws with metal blades, and thermal cutting equipment (oxy acetylene set).
What OHS specifications may be included for the use of metal cutting equipment?	OHS specifications may include pre start checks of blades, torches, irons, nuts, bolts and switches, operating the equipment according to manufacturers recommendations including correct handling, the wearing of protective clothing and eye protection, and regular servicing and safe storage when not in use.
What methods are likely to be used for joining metal to metal?	Joining methods may include brackets, nuts and bolts, hinges, and other metal screws and fasteners.
How can metal components be fixed into place?	Metal fixing methods may include brackets, galvanised plates, saddles, nails, cuphead bolts, coach screws, and masonry bolts.

How can a structure or feature be finished off to ensure completeness and security of components?	Finishing off may include the cutting off of overhangs, burring of angles and edges, and any other cosmetic work that may be required.
What coatings are likely to be applied to metal structures and features?	Coatings may include primers and paint with rust inhibitors.
What OHS guidelines are likely to be followed when applying coatings to metal?	Guidelines may include appropriate personal protective clothing and equipment, protective ground cloths, preparing and applying the coating according to manufacturers recommendations, correct care and cleaning of application tools, the installation of “wet surface” signs and barriers, and the disposal of empty containers in an environmentally safe and sensitive manner.

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 installing metal structures and features requires evidence that the work can be planned and prepared for, that the structure site can be marked out according to design drawings and specifications, and that the structure or feature can then be assembled, installed and finished off according to the required standards.

The skills and knowledge required to install metal structures and features must be **transferable** to a different work environment. For example, this could include different metals, structures, locations 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: • surveying principles and techniques • the correct use of hand and power tools and other OHS requirements associated with installing structures and features • comparative environmental implications associated with excavation and construction activity.

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 design drawings and specifications
 - measure and mark lengths of metal components accurately
 - join and cut metal components using different techniques and methods
 - use some surveyors instruments.
-

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 regarding the design of the structure to be installed may need to be discussed with suppliers, the client and other members of the work team.
2. How can information be collected, analysed and organised (2) ?	The information on design drawings, specifications and site plans may need to be collected, analysed and then transposed to site.
3. How are activities planned and organised (2) ?	Activities on the work site may need to be planned and organised to ensure efficient use of time and resources.
4. How can team work (2) be applied?	Team work may be required when assembling and installing metal structures and features.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical techniques may be applied when marking out the structure site and establishing profiles.
6. How can problem-solving skills (2) be applied?	Problems may arise if calculations of metal component lengths are inaccurate.
7. How can the use of technology (2) be applied?	The use of technology may be applied when using levelling equipment to mark out the structure site.

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**.

RTF3215A

Install hydroponic systems

This competency standard covers the process of installing hydroponic systems. Hydroponic systems may be recirculating or non-recirculating, and may or may not use a growing medium. The installation of a hydroponic system is likely to be under limited supervision from others, with checking only related to overall progress and is usually done within established routines, methods and procedures. Equipment and materials are installed according to prepared design, layout plans and manufacturers specifications.

Element	Performance Criteria
1 Prepare for installation	1.1 Site plans and design specifications are interpreted and clarified with the supervisor. 1.2 Underground services are identified according to site plans. 1.3 Site is assessed to identify any potential problems. 1.4 OHS hazards are identified, risks assessed and suitable controls implemented. 1.5 Environmental implications of installing the hydroponic system are identified. 1.6 The site is cleared for installation according to enterprise guidelines. 1.7 Equipment and materials required for installation are determined and arranged according to design and layout plans.
2 Install a hydroponic system	2.1 Site is prepared for the installation of drainage channels and water collection, and storage facilities according to design specifications. 2.2 Install drainage components and water collection, and storage facilities according to design specifications. 2.3 Hydroponic system infrastructure is assembled according to design specification. 2.4 Hydroponic system components are installed according to design and layout plans and manufacturers specifications. 2.5 Any problems associated with installation are communicated to the client and/or manager.

3	Test and calibrate the system	3.1	Hydroponic infrastructure and systems are checked to ensure they are in good working order and meet required specifications.
		3.2	Hydroponic equipment is calibrated to ensure readings are accurate.
		3.3	Media is installed according to enterprise guidelines.
		3.4	The hydroponic system is test run ready for the planting of the crop.
		3.5	Check list of all testing results is completed and approved by client/management.
4	Complete installation operations	4.1	All tools and equipment are cleaned and stored according to enterprise guidelines.
		4.2	Site is tidied and waste is removed and disposed of in a manner that minimises risk of damage to the environment.

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 services on the site may need to be located?	Services associated with the site may include water supply, stormwater, drainage, gas, power (electricity), and telecommunications.
What potential problems may be relevant to the installation of a Hydroponic system	Potential problems may include legal requirements, access, soil condition, topography, and climate.
What OHS hazards are likely to be associated with the installation of hydroponic systems?	OHS hazards may include manual handling, uneven or slippery surfaces, electricity cables, machinery and equipment operation used to clear or prepare the site, use of chemicals, and sharp hand tools.
What controls may be introduced to minimise the risk of OHS hazards?	Controls used should be in accordance with industry codes of practice and enterprise OHS policies and procedures, and may include cleaning and storing of equipment, appropriate use of personal protective equipment, safe operation of machinery and equipment, correct manual handling, and appropriate use of safety equipment such as signage and protective barriers. Basic first aid services should be available on site.
How might a site be cleared for the installation of hydroponic systems?	Clearing a site may include removing unwanted buildings, structures or vegetation.

What equipment and materials are likely to be used in hydroponic systems?	Equipment and materials may include injection pumps, polythene pipes, dripper systems, solenoid valves, salinity (EC) controllers, pH controllers, computer controls, sumps and storage tanks, growing beds (trays, vertical bags, etc.), greenhouse components, hotbeds/cold frames, heaters/coolers, misting systems, exhaust fans, shading materials and lighting.
How might a site be prepared for the installation of hydroponic systems?	Preparing a site may include levelling areas to be used for greenhouses, access roads, infrastructure, power or water supplies.
What infrastructure may be involved in installing a hydroponic system?	Infrastructure may include glasshouses, shade houses, stands, benches, flooring, and cladding.
What is likely to be checked after installation?	Checks may include pump flow rate, pipe work and seals, dripper flows, electronic controllers, drainage outlets, heaters/coolers and lighting, drainage flow rate, leaks, and regulators for pipe flow rates.
What hydroponic equipment will require calibration?	Hydroponic equipment may include EC or TDS meters and pH meters.
What media is likely to be installed?	Some hydroponic systems only use water culture growing methods, but if a growing media is used it may be aggregates such as sand, gravel, scoria, perlite, sawdust and peat or rockwool which is a fibrous material available as flock or in slabs.
What are the likely reasons for a test run of hydroponic equipment?	Reasons may be to ensure that plants receive sufficient moisture at a constant rate, that plant roots are well aerated, that plants receive nutrients at the correct rates, and that the pH of the nutrient solution remains within the desired range.
What waste materials may be generated from the installation of the hydroponic system?	Waste may include left over building materials, media, soil, plant debris, and equipment components.
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 installing hydroponic systems requires evidence that the work can be prepared, that the system can be installed according to design and layout plans, and that hydroponic equipment can be tested and calibrated once the installation is complete.

The skills and knowledge required to install hydroponic systems must be **transferable** to a different work environment. For example, this could include different hydroponic systems, locations 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:

- recirculated and non-recirculated systems
- media choices and their properties
- legislation regarding the installation of hydroponic systems
- head pressure and flow rates
- environmental implications of the drainage of high nutrient effluents.

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 design and layout plans
 - test and calibrate hydroponic equipment
 - remove any waste material 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?	Problems arising during installation of hydroponic systems may need to be communicated to the client and/or manager.
2. How can information be collected, analysed and organised (2) ?	Information from design and layout plans may need to be collected, analysed and organised.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised in a logical sequence and a written schedule prepared.
4. How can team work (2) be applied?	Team work may need to be applied when preparing and clearing a site for installation.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may need to be applied when calibrating hydroponic equipment.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may need to be applied if equipment is not working properly during a test run.
7. How can the use of technology (2) be applied?	Technology may be applied when using hydroponic monitoring equipment such as EC and pH metres.

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**.

RTF3216A

Install water features

This competency standard covers the process of installing water features. These features may include waterfalls, ponds, waterways and fountains. They may be prefabricated water features as supplied by irrigation suppliers and garden centres, or they may be formed 'in situ' with the appropriate waterproof membrane and medium.

The installation of water features is likely to be under limited supervision from others, with checking only related to overall progress and is usually done within established routines, methods and procedures. Some discretion and judgement may be required when it is determined what type of water feature is to be installed.

Element		Performance Criteria	
1	Plan and prepare work	1.1	Plans and specifications are interpreted and clarified with the supervisor.
		1.2	The quantity and quality of materials are checked to ensure they conform to design drawings and specifications.
		1.3	Tools and equipment are selected and checked for serviceability according to enterprise guidelines.
		1.4	OHS hazards are identified, risks assessed and controls implemented.
		1.5	Environmental implications of constructing concrete structures are identified and reported to the supervisor.
2	Set out and prepare the site	2.1	Services are determined and located from site plans.
		2.2	The exact location and depth of excavations is determined from design drawings and specifications, and marked out accordingly.
		2.3	Site is excavated to the shape, depth and dimensions as marked out.
		2.4	Drainage systems are constructed according to design drawings and specifications.
		2.5	Bedding material is placed and compacted to the required finished levels.
		2.6	Soil and waste material is sorted and stockpiled ready for removal, reuse or recycling.

3	Install water feature and accessories	3.1	A waterproof membrane, prefabricated shell or formed 'in situ' feature are installed according to design drawings, specifications and/or manufacturers instructions.
		3.2	All accessories to the feature are installed according to design drawings, specifications and/or manufacturers instructions, and with due consideration to safety issues .
		3.3	The feature is filled with water, tested for leaks and repaired accordingly.
		3.4	Water is treated to remove or neutralise contaminants resulting from excavation and installation work.
4	Check quality of work and clean up site	4.1	Any mechanical features are checked and adjusted to ensure they operate according to manufacturers specifications.
		4.2	Quality of finished works is inspected to ensure the standard of the finished feature is in accordance with design drawings and specifications.
		4.3	Debris is cleaned from feature and site according to enterprise guidelines.
		4.4	Soil and waste material is disposed of in an environmentally aware and sensitive manner.
		4.5	All tools and equipment are cleaned and stored according to enterprise guidelines.

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 tools and equipment are likely to be used when erecting timber structures and features?	Tools and equipment may include levelling equipment, string lines, tape measures, spades and shovels.
What OHS hazards may apply to this standard?	OHS hazards may include manual handling, sun exposure, and wet and slippery surfaces.
What OHS controls may be relevant to this standard?	OHS controls may include safe lifting and transporting techniques, the drinking of fluids, basic first aid, and the appropriate use of personal protective clothing and equipment such as water proof clothing, hat, the erection of safety signs and barriers, and the safe storage of materials on site.

What environmental implications are likely to be considered?	Consideration may be given to the impact of soil disturbance and the alteration to water flow due to the excavation of a site and the installation of drainage systems and water catchment features.
What services are likely to be located on site?	Services may include power, gas, water, stormwater, sewerage or septic connections, phone and optical cables.
What drainage systems are likely to be installed?	Drainage systems may include sumps, agricultural drains, storm water pipes, slotted pipes, open drains and channels.
What accessories are likely to be installed?	Accessories may include electric pumps, pipes, plant materials, safety barriers including fencing, signage or coverings, site furniture, garden ornaments, and other ornamental structures and features.
What safety issues may be considered when installing the water feature and accessories?	Safety issues to consider may include the limiting of access to the water feature by people and animals, the selection of plants to minimise mosquitos and other pests, and the treatment of water to prevent or neutralise contaminants.
How might the water be treated to remove or neutralise contaminants?	Water treatment may include aqua filter pumps to provide more oxygen to the water, plant materials such as lilies, introduction of fish or other water animals, and non-hazardous chemicals or additives.
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 installing water features requires evidence that work can be planned and prepared, that the site can be excavated and made ready according to design drawings and specifications, and that a water feature plus accessories can be installed to the required standards. The skills and knowledge required to install water features must be **transferable** to a different work environment. For example, this could include different types of features, materials and locations.

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:

- regulations regarding water use and safety in public places
- pumping systems and accessories associated with water features
- pipe sizes, types and applications
- plant materials, fish and water animals suitable for various types of water features
- water treatment methods
- comparative environmental implications associated with soil excavation and the establishment of drainage systems and water catchment features
- legislative and regulatory requirements with water feature installation.

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:

- measure and calculate area, depth and volume
- use some surveyors instruments
- install various types of prefabricated water features and/or form them 'in situ'
- interpret design drawings and specifications and transpose information to site.

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 regarding water feature accessories may need to be discussed with the client, suppliers and other members of the work team.

2. How can information be collected, analysed and organised (2) ?	Information may be collected, analysed and organised when following manufacturers instructions for installing water features and accessories.
3. How are activities planned and organised (2) ?	Activities may be planned and organised to ensure efficient use of time and resources.
4. How can team work (2) be applied?	Team work may be applied when handling large and heavy prefabricated water features.
5. How can the use of mathematical ideas and techniques (2) be applied?	The calculation of the depth and dimensions of excavation work may require mathematical skills.
6. How can problem-solving skills (2) be applied?	Problems may arise if leaks appear once the feature has been installed and filled with water.
7. How can the use of technology (2) be applied?	Technology may be applied to the mechanical parts of a water feature.

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**.

RTF3217A**Set out site for construction works**

This competency standard covers the process of setting out a site for construction works in accordance with site plans and specifications. These tasks may be done in advance of proposed works or in conjunction with construction works already being carried out. The work is likely to be under limited supervision from others, with checking only related to overall progress.

The setting out of a site for construction works is normally done within routines, methods and procedures, where some discretion and judgement is required in the interpretation of site plans and specifications, and the equipment to be used to verify existing and proposed site features, dimensions and levels.

Element	Performance Criteria
1 Interpret site plans and specifications	1.1 The various components of the site plan and specifications are identified.
	1.2 Site plan and specifications are compared with other available plans to ensure accuracy of information.
	1.3 Equipment required for the setting out of construction works is determined from the site plan and specifications.
	1.4 Environmental impact of proposed construction works is considered in the interpretation of site plans.
	1.5 OHS hazards associated with the setting out of construction works are assessed for potential risks, and controls implemented accordingly.
2 Locate and mark out position of construction works	2.1 Existing site features are located from the site plan.
	2.2 Position of proposed construction works is located from the site plan.
	2.3 Scale measurements of lines, shapes, angles and dimensions are transferred from the site plan to site.
	2.4 The shape of proposed construction works is marked out on site according to the site plan and specifications.

3	Establish datum point and survey benchmarks on site	3.1	Datum point is established to ensure all existing and proposed construction works can be linked by survey equipment.
		3.2	Survey benchmarks are selected and established on positions/structures on site according to site plan and specifications.
4	Take and verify site levels	4.1	Levelling equipment is set up and checked for accuracy of readings.
		4.2	Instruments, which are out of specification, are adjusted accordingly.
		4.3	Levels are taken, verified and recorded in accordance with established datum point and survey benchmarks.
		4.4	Levelling equipment is cleaned, maintained and stored according to manufacturers instructions.

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 components are likely to be included in site plans and specifications?	Components may include site location, scale of plan, north symbol, name of project, legend, associated plan references, plant lists, details of special features, existing vegetation and structures, and services above and below ground.
What other available plans may be referred to?	Other plans may include surveyors plans which may provide information on utility services, site levels, boundary lines, easements and rights of way, or engineers and architect plans that may show other proposed works.
What equipment is likely to be used when setting out a site for construction works?	Equipment may include tapes, a compass, pegs, string lines, line marking equipment, a lump or mash hammer, ranging rods, arrows, plumb bobs, levelling equipment, and personal safety equipment such as a coloured vest, safety boots, sun hat and sun screen lotion.
What could be considered an environmental impact in relation to proposed construction works?	Any construction works may impact on the environment in either a positive or negative manner. If it is drainage and irrigation, this may reduce excess water, nutrient and chemical flow into natural waterways. If the works involve excavation, then this may damage the soil structure and stability of the site.

What OHS hazards may apply to setting out a site for construction works?	Hazards may include solar radiation, uneven surfaces, strings, tapes and measures that may be tripped over, sharp equipment and surrounding obstacles.
How would existing site features be located from a site plan?	The location of features may include the use of baselines, offset measurements, angles and grids.
What scale measurements are likely to be used on site plans?	Metric scales may include: 1 metre to 10 metres = 1:10, 1 metre to 20 metres = 1:20, 1 metre to 50 metres = 1:50, 1 metre to 100 metres = 1:100 and 1 metre to 200 metres = 1:200.
What shape are proposed construction works likely to be on a site plan?	Proposed construction works are likely to be basic geometric shapes including straight lines, curved lines, circles, squares, triangles, rectangles and ellipses.
How could the shape of the proposed construction works be marked out on site?	The shapes may be marked out or set out on the site by using paint from a spray can, lime, stringlines, pegs, stakes, rods and arrows.
What are the likely reasons for taking levels when setting out a site for construction works?	The reasons for taking levels may be to determine height above sea level or a datum of drainage outlets, areas and volumes in cut and fill operations, any changes in slope or gradient of the land, contours of the land, to provide the means for safe and efficient construction of structures, to achieve falls for drainage of stormwater from pavements, falls in pipe work or for installing sumps and drains, and to help set out of step risers, treads, goings, nosings, landings and hand-rails to Australian Building Regulations.
What levelling equipment is likely to be used to verify site levels?	Levelling equipment may include spirit levels, line bubbles, water levels, boning rods, dumpy levels, pegs, tilting levels, automatic levels, laser levels, plumb bobs, staves and tripods.
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 setting out a site for construction works requires evidence that site plans and specifications can be interpreted correctly, and that information can be transferred from a site plan onto a site. This transfer of information involves the locating and marking out of the position of proposed construction works, then the checking of horizontal and vertical levels prior to any works being undertaken.

The skills and knowledge required to set out a site for construction works must be **transferable** to a different work environment. For example, a person who can set out a site for the construction of drainage or irrigation systems, should be able to set out a site for the construction of retaining walls, garden beds or pergolas. This could include different landscape features, work site environment 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: • interpretation of symbols and use of a legend on site plans and specifications, particularly in relation to benchmarks and the location of existing features • understanding of compass directions, the difference between true North and magnetic North and how to locate North from a site plan • an awareness of other plans that may be referred to when setting out a site for construction works • an awareness of common levelling and surveying terms • environmental awareness associated with the preparation for construction works to ensure that the impact on the environment is minimal when works are implemented • OHS hazards associated with setting out a site for construction works.
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: • implement mathematical and geometrical principles when locating and marking out a site for construction works • use a range of surveyors instruments • analyse and interpret detailed site plans and specifications.

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?	The taking of site levels and recording of readings using surveyors instruments may need to be communicated to a fellow worker.
2. How can information be collected, analysed and organised (1) ?	Site plans and specifications outline information that should be analysed and then transferred on to a site.
3. How are activities planned and organised (1) ?	The setting out of a site for construction works may require a number of activities to be planned and organised.
4. How can team work (1) be applied?	Team work may be required to mark out the shape of proposed construction works.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical ideas and techniques, such as the reading of levelling equipment and the use of geometrical shapes, may be required.
6. How can problem-solving skills (1) be applied?	Problems may arise when surveying instruments are out of specification and require adjustment.
7. How can the use of technology (1) be applied?	Technology may be applied with the use of levelling equipment.

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**.

RTF3219A**Construct stone structures
and features**

This competency standard covers the process of constructing stone structures and features as a component of landscape project works. These structures and features may include edgings, steps, walls, retaining walls, fences, barriers, BBQ and entertaining areas, and ornamental garden elements.

The construction of stone structures and features is likely to be under limited supervision from others, with checking only related to overall progress. Work is usually done within established guidelines, although some discretion and judgement may be required depending on the type of structure or feature to be constructed.

Element		Performance Criteria	
1	Plan and prepare work	1.1	Plans and specifications are interpreted and clarified with the supervisor.
		1.2	The quantity and quality of materials are checked to ensure they conform to design drawings and specifications.
		1.3	Tools and equipment are selected and checked for serviceability according to enterprise guidelines.
		1.4	OHS hazards are identified, risks assessed and controls implemented.
		1.5	Environmental implications of erecting stone structures are identified and reported to the supervisor.
2	Set out and prepare the site	2.1	Services are determined and located from site plans.
		2.2	The position of the structure or feature is marked out according to design drawings and specifications.
		2.3	Profiles are established to conform to the tolerances nominated within the design drawings and specifications.
		2.4	Subsoil is prepared by removing all debris, vegetable matter and topsoil to provide a solid foundation for construction.
		2.5	Drainage systems are installed according to design drawings and specifications.
		2.6	Sub-base material is placed and compacted to the required finished levels.

3	Construct structure or feature	3.1	Mortar is mixed to determined ratio and appropriate admixes including bonding and colouring agents are added as required, and in accordance with specifications.
		3.2	Damp proofing and base course of stone work is laid according to design drawings and specifications.
		3.3	Courses of stone work are laid using designated bond/s in a manner that will ensure the viability and stability of the structure, and according to design drawings and specifications.
4	Install stone paving	4.1	Set out and prepare area to be paved according to the site plan.
		4.2	The area is excavated to shape, depth and dimensions to sub base level according to industry standards.
		4.3	The sub base is trimmed to the designated level and falls, and base material is placed and compacted to the required finished level.
		4.4	Bedding material is spread over the area and levelled to the designated level and falls.
		4.5	Stone is placed and fitted to accurately fill gaps in the pattern within tolerances nominated within the site plan.
		4.6	Edge constraints are installed as required by the site plan.
5	Check quality of work and clean up site	5.1	Quality of finished works is inspected to ensure the standard of the finished structure or feature is in accordance with design drawings and specifications.
		5.2	Stone work surfaces are cleaned down in an environmentally safe and sensitive manner.
		5.3	Tools and equipment are cleaned and stored according to enterprise guidelines.

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 tools and equipment are likely to be used when constructing concrete structures and features?	Tools and equipment may include levelling equipment, string lines, tape measures, spades, shovels, trowels, wheelbarrow and concrete mixer.
What OHS hazards apply to this standard?	OHS hazards may include manual lifting, use of power tools, use of sharp hand tools, dust, and sun exposure.

What OHS controls may be relevant to this standard?	OHS controls may include safe lifting and transporting techniques, the drinking of fluids, basic first aid, and the appropriate use of personal protective clothing and equipment such as overalls, boots, hat, gloves, the erection of safety signs and barriers, the identification of site access points, and the safe storage of materials on site.
What environmental implications are likely to be considered?	Consideration may be given to the impact of soil disturbance and the alteration to water flow during construction and after the structure or feature has been constructed.
What services are likely to be located on site?	Services may include power, gas, water, stormwater, sewerage or septic connections, phone and optical cables.
What drainage systems are likely to be installed?	Drainage systems may include sumps, agricultural drains, storm water pipes, slotted pipes, open drains and channels.
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 constructing stone structures and features requires evidence that work can be planned and prepared, that the construction site can be set out and prepared according to design drawings and specifications, and that the structure or feature can be constructed according to the required standards.

The skills and knowledge required to construct stone structures and features must be **transferable** to a different work environment. For example, a person should be able to apply the same principles of stone work construction whether they are laying a path, building a barbeque, or installing a retaining wall.

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: • comparative environmental implications associated with soil disturbance and the establishment of drainage systems • components of mortar including admixes such as bonding and colouring agents used in the construction of stone structures and features.

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 design drawings and specifications and transpose the information to site
 - measure and construct profiles using mathematical techniques
 - use levelling equipment.
-

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 regarding the type of bonding agent to be used may need to be communicated to other members of the work team.
2. How can information be collected, analysed and organised (2) ?	Information from design drawings and specifications may need to be collected, analysed and then organised to transpose it on to site.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised to meet timelines, and to finish the project according to budget.
4. How can team work (2) be applied?	Team work may need to be applied when setting out and preparing a site for construction.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may be applied when calculating quantities of materials required.
6. How can problem-solving skills (2) be applied?	Problem-solving skills may be applied if the mortar is mixed to the incorrect consistency.
7. How can the use of technology (2) be applied?	The use of technology may be applied when marking out the site for construction.

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**.

RTF3220A**Implement a paving project**

This competency standard covers the process of implementing a paving project.

The work is likely to be under limited supervision, with checking only related to overall progress. It requires the application of knowledge of landscape materials and dry/unit paving construction techniques. 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 paving project	1.1	Requirements of the paving project are clarified with client/supervisor and enterprise guidelines.
		1.2	Equipment and material resource requirements are identified according to the scope of the construction work and supervisors instructions.
		1.3	The environmental implications of the proposed work are identified.
		1.4	OHS hazards are identified, risks assessed and reported to the supervisor.
		1.5	Personal protective equipment (PPE) is selected, used, maintained and stored.
		1.6	Delivery of materials to site is organised according to workplace priorities.
2	Set out and prepare the site	2.1	Site bunting is erected, pedestrian access is controlled, and safety signage is placed where appropriate.
		2.2	Services are determined and located from site plans and provision for irrigation lines to cross paved areas is made where applicable.
		2.3	The paving pattern is marked out according to plans and specifications.
		2.4	Sub-base material is placed and compacted to the required finished levels.
		2.5	Surface drainage is incorporated according to design drawings and specifications.
3	Co-ordinate paving project installation	3.1	Paving project is constructed according to plan.
		3.2	Appropriate drainage is installed according to plan.
		3.3	Tools, equipment and machinery are used safely in accordance with enterprise safe operating procedures and OHS requirements.

4	Check quality of work and clean up site	4.1	Quality of finished works is inspected to ensure the standard of the finished project is in accordance with design drawings and specifications.
		4.2	Paved surfaces are cleaned down in an environmentally safe and sensitive manner.
		4.3	Tools and equipment are cleaned and stored 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 paving projects are covered by this unit?	Paving projects include all types of dry unit paving including patterns, working with more than one colour or size paver, cutting, edges and steps.
What resource requirements are likely to be identified?	Resource requirements may include base materials, sub-surface drainage materials, unit pavers, sweeping sand, levelling equipment, brick cutting equipment, and settling machinery.
What might be the environmental implications of proposed work site activities?	Environmental implications may include risk of contamination of soils, water, or adjoining property through fuels flowing into drains and water sources, or changes to drainage patterns. Compliance with local, State/Territory, and Commonwealth environmental legislation is required.
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, moving machinery and machinery parts, powered equipment and hand tools, 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, sunscreen lotion, and hearing or eye protection.
What services are likely to be located on site?	Services may include power, gas, water, stormwater, sewerage or septic connections, phone and optical cables.
What drainage systems are likely to be installed?	Drainage systems may include sumps, agricultural drains, storm water pipes, slotted pipes and surface drainage

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 paving project requires evidence that a person can prepare a project site, set out a paving project, and construct and complete a paving project according to design parameters.

The skills and knowledge required to implement a paving project must be **transferable** to a different work environment. For example, this could include different paving situations, different paving materials, and different job complexities.

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:

- landscape paving materials
- landscape paving techniques
- set out techniques
- work schedule programming
- possible causes of disruption to work activities and their effect on quality and time schedules
- methods and practices for maintaining and repairing paved areas
- 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 paving projects
 - calculate material and resource requirements
 - co-ordinate a team to achieve optimum performance
 - communicate with personnel at all levels
 - document results clearly and concisely
 - perform an OHS risk assessment.
-

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?	Ideas and information may need to be communicated with the client/supervisor, such as regular reporting.
2. How can information be collected, analysed and organised (2) ?	Information on paving project may need to be collected, analysed and organised according to the scope of work required.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised to ensure that the project meets timelines.
4. How can team work (2) be applied?	Team work may be applied to ensure that paving project is undertaken according to schedule.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may be applied when organising, calculating materials, determining falls and setting out site.
6. How can problem-solving skills (2) be applied?	Site contingencies, personnel difficulties, timeline failures, 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 set out and level site.

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**.

RTF3221A**Implement a retaining wall project**

This competency standard covers the process of implementing a retaining wall project.

The work is likely to be under limited supervision, with checking only related to overall progress. It requires the application of knowledge of landscape materials and retaining wall construction techniques. 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 retaining wall project	1.1 Requirements of the retaining wall project are clarified with client/supervisor and enterprise guidelines.
	1.2 Equipment and material resource requirements are identified according to the scope of the construction work and supervisors instructions.
	1.3 The environmental implications of the proposed work are identified.
	1.4 OHS hazards are identified, risks assessed and reported to the supervisor.
	1.5 Personal protective equipment (PPE) is selected, used, maintained and stored.
	1.6 Delivery of materials to site is organised according to workplace priorities.
2 Mark out site for retaining wall	2.1 Site bunting is erected and safety signage is placed where appropriate.
	2.2 Services are determined and located from site plans.
	2.3 The position of the retaining wall is marked out according to site and construction plans.
	2.4 The location and depth of excavations are determined from site and construction plans.
	2.5 Profiles are established to conform to the tolerances designated by the construction plans.
	2.6 Survey benchmarks are established.
3 Co-ordinate retaining wall construction	3.1 Retaining wall components are assembled/installed according to plan.
	3.2 Appropriate drainage is installed according to plan.

		3.3	Tools, equipment and machinery are used safely in accordance with enterprise safe operating procedures and OHS requirements.
4	Check quality of work and clean up site	4.1	Quality of finished works is inspected to ensure the standard of the finished project is in accordance with design drawings and specifications.
		4.2	The work site is cleaned down in an environmentally safe and sensitive manner.
		4.3	Tools and equipment are cleaned and stored 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 retaining wall projects are covered by this unit?	Retaining wall projects include all modular concrete, timber, brick, dry stone and mortared block.
What resource requirements are likely to be identified?	Resource requirements may include base materials, sub-surface drainage materials, retaining wall components, levelling equipment and powered tools, and other equipment associated with construction.
What might be the environmental implications of proposed work site activities?	Environmental implications may include risk of contamination of soils, water, or adjoining property through fuels flowing into drains and water sources, or changes to drainage patterns. Compliance with local, State/Territory, and Commonwealth environmental legislation is required.
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, moving machinery and machinery parts, powered equipment and hand tools, 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, sunscreen lotion, and hearing or eye protection.
What services are likely to be located on site?	Services may include power, gas, water, stormwater, sewerage or septic connections, phone and optical cables.
What drainage systems are likely to be installed?	Drainage systems may include sumps, agricultural drains, storm water pipes and slotted pipes.

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 retaining wall project requires evidence that a person can prepare a project site, set out a retaining wall project, build a retaining wall, and complete a project according to design parameters.

The skills and knowledge required to implement a retaining wall project must be **transferable** to a different work environment. For example, this could include different retaining situations, different retaining wall materials, and different job complexities.

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:

- landscape retaining wall materials
- landscape retaining wall construction techniques
- set out techniques
- work schedule programming
- possible causes of disruption to work activities and their effect on quality and time schedules
- methods and practices for maintaining and repairing retaining walls
- 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 retaining wall projects
- calculate material and resource requirements
- co-ordinate a team to achieve optimum performance
- communicate with personnel at all levels
- document results clearly and concisely
- perform an OHS risk assessment.

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?	Ideas and information may need to be communicated with the client/supervisor, such as regular reporting.
2. How can information be collected, analysed and organised (2) ?	Information on retaining wall project may need to be collected, analysed and organised according to the scope of work required.
3. How are activities planned and organised (2) ?	Activities may need to be planned and organised to ensure that the project meets timelines.
4. How can team work (2) be applied?	Team work may be applied to ensure that retaining wall project is undertaken according to schedule.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques may be applied when organising, calculating materials, determining falls and setting out site.
6. How can problem-solving skills (2) be applied?	Site contingencies, personnel difficulties, timeline failures, 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 set out and level site.

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**.

RTF3503A**Sample soils and analyse results**

This competency standard covers the process of carrying out soil sampling and interpreting the results as a foundation for further horticultural operations such as nutrition programs and irrigation scheduling.

Carrying out soil sampling is likely to be under limited supervision from others and with checking only related to overall progress. Soil sampling at this level requires the application of horticultural knowledge and a range of horticultural skills. The work is usually done within routines, methods and procedures where some discretion and judgement is required in the selection of sites, equipment and materials, organisation of work, services, actions and the achievement of outcomes within time and budgetary constraints.

Element	Performance Criteria
1 Prepare for soil sampling	1.1 The soils to be surveyed, surveying activity and contractors are identified according to site plans and enterprise work procedures
	1.2 Tools, equipment and machinery are selected according to site conditions, testing agency requirements and enterprise work procedures
	1.3 If required, pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures
	1.4 Areas of homogeneous soil types are identified for sampling
	1.5 Services are located using site plans and in consultation with the supervisor
	1.6 OHS hazards are identified, risks assessed, controls implemented and reported to the supervisor
	1.7 Suitable safety equipment and personal protective equipment (PPE) are selected, used and maintained
	1.8 A clean and safe work area is maintained throughout and on completion of work
2 Determine soil characteristics by performing soil sampling	2.1 The density and depth for a representative sampling of the area are determined according to enterprise work procedures

		2.2	Holes are excavated at identified sampling sites according to enterprise work procedures, OHS requirements and with due consideration of the environmental implications
		2.3	Samples for off-site testing are collected and prepared, packaged, accurately labelled and dispatched according to testing agency requirements and enterprise work procedures
		2.4	The physical and chemical characteristics of the soil are determined according to investigative requirements and best practice guidelines
		2.5	Sampling and testing tools and equipment are cleaned of all residues and returned to storage according to manufacturers specifications and enterprise work procedures
		2.6	Results are recorded in an established format according to enterprise work procedures
3	Interpret results of soil analysis	3.1	The soil types of the sample area are classified according to standards for soil classification
		3.2	The acceptable soil physical and chemical parameters for a specified plant are determined from published data and historical records
		3.3	Collected analytical results are compared with acceptable physical and chemical parameters for a specified plant
		3.4	Soil characteristics are evaluated to determine whether they can be altered to meet plant needs
		3.5	The Readily Available Water (RAW) values for irrigation sites are determined according to industry standards and 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 soils may be surveyed?	Soils may include field soil sites and specialist growing media.
What surveying activity may be involved?	Surveying activities may include collecting, preparing, packaging and labelling soil samples for off-site testing and/or on-site testing and analysis.

What contractors may be identified?	Contractors may include off-site testing agencies such as government, commercial or private consultants, and contractors engaged for the mechanical extraction of soil samples by the use of machinery such as an auger or backhoe.
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, soil surveying program, enterprise standard operating procedures (SOP), 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.
What tools, equipment and machinery may be required to perform a soil survey?	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, aerial photographs, charts and tables of soil characteristics and plant soil parameters.
What services may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What OHS hazards may be associated with performing a soil survey?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving machinery and machinery parts, falling objects and uneven surfaces.
What safety equipment may be required?	Safety equipment may include signage and barriers.
What PPE may be required to perform a soil survey?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.
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 surveying activities; safely storing materials on site; using signage and safety barriers during and removing after surveying activities are completed; backfilling soil survey holes and pits; and swiftly and efficiently removing and processing debris and waste from the work area.

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 surveying soil characteristics?	Soil surveying activities may have beneficial environmental impacts where the analysis is applied to improve the soil structure and reduce excess water, nutrient and chemical flow into the external environment, including natural waterways, through better targetting of plants water needs and reduction of water applied, thus minimising the draw on water resources. Beneficial impacts may also result from the construction of a soil profile with more efficient water and nutrient utilisation than the original soil profile of the site. Detrimental environmental impacts may arise where mechanised sampling activities produce excess noise, dust or water run-off.
What physical characteristics of soil may be determined?	Physical characteristics may include colour, texture, structure, depth of root zone and depth of water table.
What chemical characteristics of soil may be determined?	Chemical characteristics may include pH, salinity, nutrient content such as N, K, P and carbonate content.
What residues may affect sampling and analytical accuracy?	Plant and soil-based residues, and any detergents or other cleaning chemicals may pollute the soil samples taken for analysis.
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 surveying soil characteristics requires evidence that a person is able to prepare for surveying activities, coordinate work activities with others, survey, test and report in the required format on the soil characteristics identified.

The skills and knowledge required to survey soil characteristics must be **transferable** to a different work environment. For example, this could include different soil types, environments, testing 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:

- Practical understanding of the range of sample collection, testing and analytical methods that may be used to perform soil surveys, and the association of surveying methods with site conditions, environmental implications and intended horticultural use of the surveyed site.
- The physical and chemical properties of soils in relation to their ability to support specified horticultural production.
- The capacity of soils to provide water to plants.
- The importance of organic matter in soil in relation to the intended horticultural use.
- Awareness of ameliorants and soil improvement techniques for addressing site limitations identified through surveying.
- Awareness of the comparative environmental implications associated with soil surveying activities and the application of analytical results.

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 with work team members, supervisors and contractors, interpret and apply soil surveying specifications, utilise proforma reporting, analysis and work procedure documents, and understand soil surveying data.
 - Measure distance, depth and spacing, calculate area, volume and Readily Available Water values, calibrate tools and equipment, and interpret analytical results.
 - Coordinate own activities with the requirements and schedules of contractors and other work teams to sequentially and effectively complete surveying 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 soil surveying activities and problems encountered will be required with the work group, supervisor and contractors.
2. How can information be collected, analysed and organised (2) ?	Enterprise work procedures, testing agency specifications and site plans should be consulted, interpreted and applied to coordinate surveying activities with further clarification sought from the supervisor when necessary.
3. How are activities planned and organised (2) ?	Work activities for the work group, contractors and self will be planned prior to and adjusted during the soil surveying program.
4. How can team work (2) be applied?	The soil surveying program may involve facilitating and leading members of a team to complete the soil survey 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 soil surveying program.
6. How can problem solving skills (2) be applied?	Site contingencies, 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 survey specifications, undertake surveying activities, communicate, report 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**.

RTF3510A**Design and prepare growing media**

This competency standard covers the process of determining the requirements of a growing media for various plants, and preparing and storing the media in accordance with the production specifications.

This competency standard is likely to be undertaken without supervision. General guidance may be sought. Responsibility for and limited organisation of the work of others in media preparation and storage may be involved.

Designing, preparing and storing growing media requires a broad range of skills, and involves the application of extensive knowledge in some areas including nutrition requirements and growing media properties.

Element	Performance Criteria
1 Research specifications of growing media	1.1 Various media components are investigated for specific plant requirements. 1.2 Components of a growing media are determined by plant requirements and accepted industry practice. 1.3 Nutrient requirements are determined for growing period. 1.4 Different sources of nutrients are investigated for their suitability. 1.5 Growing media analysed for chemical, physical and biological characteristics to determine suitability for plants. 1.6 Sterilization methods of the growing media are determined. 1.7 Growing media composition established.
2 Prepare and store growing media	2.1 Work is undertaken according to OHS legislation and codes of practice requirements. 2.2 Required equipment is maintained in a safe, clean and effective condition. 2.3 Components are stored in a safe and hygienic manner and in a non-contaminated environment. 2.4 Components are identified and weighed, mixed and incorporated into the growing media in accordance with production requirements .

- 2.5 Waste is handled and disposed of safely in accordance with relevant legislation and OHS requirements.
 - 2.6 Work is undertaken according to OHS legislation and codes of practice requirements.
 - 2.7 Media is stored in safe and hygienic manner in accordance with **enterprise standards**.
 - 2.8 Records are kept 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 contexts.

What constitutes media components ?	Organic or inorganic materials that provide an anchor for the root system of the plant, and make available nutrients either directly or indirectly to the root zone. These materials would be compatible to plant health.
What is the purpose of the growing media ?	A growing media provides water, air and nutrients through the root system to the plants depending on the physical, chemical and biological properties of the media. Each plant may require different components, and there may be a variation in those requirements according to the growth cycle of the plant.
What are the nutrient requirements for plants?	Plants require different nutrient levels at different stages of growth. These nutrients include air, water, macro-nutrients (Nitrogen, Phosphorous and Potassium), and micro-nutrients and trace elements. Nutrient requirements might be determined by plant analysis, by experience and experimenting, or by accessing information from research papers.
What are the physical, chemical and biological characteristics being referred to in a growing media?	Physical characteristics may include colour, texture, structure, and any impermeable layer that may exist. Chemical characteristics may include pH, salinity, free lime and nutrient content. Biological characteristics may include decaying plant material, humus and microbiotic content.
Under what circumstances would sterilization be used?	Sterilization may be used to destroy soil or media borne pathogens known to be harmful to plants or seedlings. The acceptable techniques may include high temperature or chemicals.

What sort of equipment may be required for the preparation of the growing media?	This will vary in size depending on the extent of the operation. The equipment will range from wheelbarrows and shovels to bobcats and front end loaders. Weighing and volume measuring apparatus will also be necessary.
What is the production requirement of the growing media?	The production requirement is the recipe of component materials that provides the media with the physical, chemical and biological characteristics required for the particular plant to grow.
What are enterprise standards ?	Enterprise standards constitute the normal practice for storage of materials. In this instance, it would include direction on OHS, equipment use, hygiene and maintenance of product, and recordkeeping guidelines.

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 unit requires evidence that a person can research and identify the requirements of a growing media to satisfy the physical, chemical and biological needs of particular plants. This results in the development and description of a recipe of component materials for the growing media.

Competence must also be shown in mixing the growing media from its constituent components in a safe and accurate manner, and to a level of hygiene required by the particular plants.

The skills and knowledge required to must be **transferable** to different work environments and workplace contexts, including waste organic recycling manufacturers, and can be extended to other plant species.

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: • requirements of a growing media • ingredients used in the preparation of growing media • properties of the various ingredients used in the preparation of the growing media • physical, chemical and biological characteristics required of the media

- plant nutrition
- hygiene in the preparation and storage of the media
- alternative methods of incorporating ingredients into a growing media
- volume and weight determination
- OHS requirements in relation to chemical use.

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:

- collect and analyse data
- interpret published research and historical records to identify acceptable media parameters
- interpret chemical labels
- record and store information
- weigh and measure volumes
- operate machinery
- co-ordinate own activities
- determine requirements and schedules of contractors and other work colleagues.

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.

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1. How can **communication of ideas and information (2)** be applied?

Written, oral and telecommunication of ideas and information relating to design, preparation and storage of growing media activities, and problems encountered will be required with the work group, supervisor and contractors.

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2. How can **information be collected, analysed and organised (3)**?

Research will be required to ascertain the composition of the growing media. This will require interpretation and analysis of research documents from websites, professional journals or company records. Information collected may be included in company or personal records.

3. How are activities planned and organised (2) ?	Work activities for co-workers, contractors and self will be planned prior to and adjusted during preparation and storage activities.
4. How can team work (2) be applied?	In the preparation and storage of the growing media, contractors and co-workers will participate in the process.
5. How can the use of mathematical ideas and techniques (3) be applied?	In the design of the recipe for the growing media, the amounts and volumes required for the component parts will be determined, and any adjustments will be calculated according to amount to be manufactured. In preparation, correct amounts (by volume or weight) of the components need to be determined for mixing.
6. How can problem-solving skills (3) be applied?	The calculation of new recipes for different plant species, and in the event certain components are unavailable, may require different solutions for the growing media. Site contingencies, personnel difficulties and timeline failures may require problem-solving techniques.
7. How can the use of technology (2) be applied?	Technological understanding and skills will be required to access and apply specifications for the growing media, communicate, report 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**.

RTF3702A**Undertake aerial rescue**

This competency standard covers the process of aerial rescue where an injured or unconscious worker is safely brought to the ground from a tree or aerial lift. Aerial rescue work requires hazard identification, basic first aid and emergency procedures, and tree climbing techniques.

Aerial rescue is likely to be undertaken in emergency situations with little or no supervision. Discretion and judgement is required in the selection of equipment, organisation of rescue, and associated actions. Competency is demonstrated by the application of knowledge and skills to a range of rescue tasks and roles usually within established enterprise guidelines.

Element	Performance Criteria
1 Plan for aerial rescue	1.1 Rescue equipment and first aid kit are checked to ensure they are complete and placed within easy access.
	1.2 Suitable safety equipment and personal protective equipment (PPE) is selected, checked, used and maintained.
	1.3 Emergency communication system used to summon emergency services is checked according to manufacturers specifications and enterprise work procedures.
	1.4 Emergency plan is confirmed and clarified with work team prior to work being undertaken.
2 Assess an emergency situation	2.1 Casualty response is determined.
	2.2 Emergency plan is activated and assistance requested from work team and/or public according to enterprise procedure.
	2.3 Hazards associated with the rescue are identified, risks assessed and suitable controls implemented according to industry standards.
	2.4 Appropriate access equipment to effect rescue is identified according to enterprise standards.
3 Assess nature of injury	3.1 Casualty and rescuer are safely secured according to enterprise standards.
	3.2 Injuries are assessed to determine whether or not to move casualty based on standard first aid procedures and risk assessment.
	3.3 Casualty with possible neck or spinal injuries is supported (but not moved) to await expert medical treatment.

		3.4	First aid able to be performed above ground is applied, as required, in line with standard procedures.
		3.5	Instructions to ground staff and climbers are communicated clearly and concisely.
4	Lower casualty to ground	4.1	Casualty is prepared for descent according to first aid and risk assessments.
		4.2	Casualty is lowered safely to the ground with support of rescuer.
5	Complete rescue operations	5.1	First aid is applied on the ground according to need and industry standard procedures.
		5.2	Emergency assistance is obtained as per emergency plan.
		5.3	Records of aerial rescue are maintained in the appropriate format.

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 rescue equipment might be relevant to this standard?	Rescue equipment will include first aid kit, emergency contact numbers, harness, lifeline, prussik loop, karabiners, climbing spurs, flipline/polestrap, pulleys, and tube tape.
What safety equipment may be required?	Safety equipment may include pedestrian barriers, traffic barriers, warning signs, road signs, danger signs, flashing lights, traffic bollards, safety mesh, and witches hats.
What PPE may be required to undertake arboriculture operations?	Personal protective equipment may include steel cap boots, six point safety helmet, ear protection, eye protection, cut resistant trousers or chaps, reflective vest, close fitting work clothes, gloves and sunscreen lotion.
What emergency communication systems may be used to summon emergency services?	Emergency communication systems may include mobile phone, landline or two-way radio, which will need to be checked to assure they are in good working order, have adequate battery power, and are within range.
What may be included in an emergency plan ?	An emergency plan may include emergency contact numbers for ambulance, medical centre police, fire brigade or electrical company, site location details such as grid reference, first aiders, and procedures.

How might casualty response be determined?	Casualty response may be determined by verbal/nonverbal communication and observation. For example, are they conscious, what is the extent of their injury, and can they assist in their rescue?
What hazards associated with rescue may need to be assessed?	Hazards may include electrical wires, energised trees and equipment, unstable branches or structures, insect swarm, climbing, fatigue, moving vehicles and equipment, heat and cold, manual handling, or the presence of blood and other bodily fluids.
What controls may be implemented to minimise the risk of OHS hazards?	Controls implemented must be in accordance with enterprise OHS policies and procedures and may include; securing of the site, appropriate use of PPE, appropriate use of safety equipment such as signage and protective barriers; safe operation of tools, equipment and machinery; correct manual handling; basic first aid available on site; reporting problems to supervisors/emergency services, drinking liquids, and warm clothing.
What access equipment may be required to effect rescue?	Access equipment may include climbing spikes, ropes, climbing saddle, safety lines, aerial lifts, cherry picker, fire ladder, crane, or elevating work platform (EWP).
How may the casualty be prepared for descent ?	Preparing the casualty for descent may include immobilising the head and neck, setting life lines, use of slings, harnesses and pulleys, releasing the flip line, and use of rescue stretcher.
What records may need to be completed in relation to aerial rescue operations?	Records may include Accident/Incident reports, Workcover forms, risk assessment details, PPE issue and replacement dates, equipment maintenance checklists, and safety audits.
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 undertaking an aerial rescue requires evidence that a person can plan and co-ordinate rescue operations with due regard for safety and first aid requirements.

The skills and knowledge required to undertake an aerial rescue must be **transferable** to a different work environment. For example, this could include different situations, types of accidents, and rescue 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:

- senior First Aid Certificate or equivalent
- safety ropes and equipment
- dealing with electrical emergencies
- operational hazards of tree work
- relevant industry codes of practice
- principles of hazard and risk analysis
- statutory requirements relating to OHS records (Incident Notification) required for rescue operations
- selected Australian 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:

- communicate with casualty, ground support, climbing team members, members of the public and emergency services
 - interpret emergency plans, work procedure documents and Workcover forms
 - co-ordinate work group, equipment and own activities to sequentially and effectively complete rescue operations safely
 - estimate height, length, distance, weight, load and angles
 - apply rigging and rope handling techniques in aerial rescue operations
 - apply tree climbing techniques necessary for aerial rescue operations
 - administer first aid to injured climbers.
-

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?	Ideas and information will be communicated both in writing and verbally. Data will need to be recorded as part of the workers contribution towards hazard and risk analysis, and again to record details of the rescue operation. Some enterprises may request this in the form of a verbal report. Emergency procedures should be discussed and confirmed with others in the work team.
2. How can information be collected, analysed and organised (2) ?	Information on emergency procedures and rescue technique should be collected, researched and documented as a plan, and discussed with other members of the work team in order to clarify roles.
3. How are activities planned and organised (2) ?	Emergency activities carried out by ground crew and climbers, emergency plan and procedures, and rescue equipment should be arranged before commencing tree works.
4. How can team work (2) be applied?	Aerial rescue involves working closely with other members of a team to ensure the safety of all personnel and the public during the rescue operation.
5. How can the use of mathematical ideas and techniques (1) be applied?	Mathematical ideas and techniques may be applied when calculating rope lengths and loads, heights, or to monitor casualty vital signs.
6. How can problem-solving skills (3) be applied?	Problems relating to casualty or rescuer safety, access equipment, hazards, first aid application, team members and difficult or remote locations may require problem-solving.

7. How can the **use of technology (2)** be applied?

Technology may be applied in the use and maintenance of rescue equipment including communication systems, the Internet may be used for research into legislation and rescue techniques, data relating to accident/incident and a database or spreadsheet may be used to record information about the rescue operation.

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**.

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RTF4001A

Design plant displays

This competency standard covers the process of the design and preparation of plant displays for special occasions. This work requires the selection of plants and garden features, design of the display, and implementation of works.

The design and installation of the display is likely to be undertaken without supervision. Responsibility for the work of others installing and maintaining the displays may be required.

Designing plant displays requires detailed knowledge of plant recognition and selection and garden design principles.

Element	Performance Criteria
1 Carry out preliminary planning activities	1.1 Concepts for the display are discussed and clarified with client/management.
	1.2 Site/location is analysed for aesthetic, environmental and physical attributes .
	1.3 Time-lines for display are determined and incorporated into the plan.
	1.4 Budget parameters are clarified with client/manager.
	1.5 Concept plan is documented using common horticultural conventions .
	1.6 Concept plan is presented to client and agreement reached on design.
	1.7 OHS hazards are identified, risks assessed, and implementation of controls costed.
2 Determine requirements for the display	2.1 Plants suitable for display are selected, costed, and availability confirmed with suppliers and appropriate personnel.
	2.2 Accessories for the display are determined, costed, and availability confirmed with suppliers and appropriate personnel.
	2.3 Labour, equipment and machinery required to install display are determined, costed and arranged.
	2.4 Scaled plan and quotation is prepared and presented to appropriate personnel for approval where required.

3	Supervise installation of display	3.1	Plan is communicated clearly to those who will prepare the display.
		3.2	Plants and display materials are inspected prior to installation to ensure they meet required quality standards .
		3.3	Preparation of the display and its maintenance are monitored to ensure they comply with design plan.
		3.4	Display preparation and maintenance work is organised to ensure that OHS requirements are met.

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 concepts may be required by customers?	Concepts may include purpose of display, location, size, cost, length of time the display is required, and restrictions on display.

What types of plant displays may be relevant to this standard?	Plant displays may include functions, events, internal or external displays, exhibitions, competitions, and plantscapes.

What aesthetic attributes may impact on the display plan?	Aesthetic attributes may include sculptures, surrounding internal and/or external buildings, views and vistas.

What environmental attributes may impact on the display plan?	Environmental attributes may include existing vegetation, trees, aspect, and light.

What physical attributes may impact on the display plan?	Physical attributes may include existing vegetation, garden structures, pavements, watercourses, water bodies, public access areas including those required for delivery and storage of materials, and access for construction.

What time-lines need to be considered when planning a display?	Time lines may include duration of display required and when display needs to be completed.

What common horticultural conventions should be incorporated in the display plan?	Common horticultural conventions may include hard landscape features, soft landscape features; scaled drawings; construction details which may include sketches of accessory assembly such as paving, edging, planting; written information on implementation of construction and maintenance such as watering, fertilising, pruning; botanic names and plant positions; plantings showing height, spread, pot sizes, and quantity of species.
What plant characteristics may need to be considered when selecting plants for the display?	Plant characteristics may include colour of flowers and foliage, texture, size of plant, longevity, portability, seasonality, heritage, indigenous, exotic, hardiness, shape of plant, and foliage.
What accessories might be relevant for display purposes?	Accessories may include garden furniture, rocks, water, landscape structures and features, artificial lighting, surface and edge treatments.
What quality standards may apply to the selection of plants and materials?	Quality standards may include size, shape, colour of leaves and flowers, absence of pests and diseases, number of flowers, and density of foliage.
What might be involved in the maintenance of the display?	Maintenance of the display may include control of internal environmental parameters such as temperature, humidity and light; irrigation, nutrition, pest and disease management, removing unsightly plants or plant material, and removing rubbish from display area.
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 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.

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 plant displays requires evidence that a person can plan and document a display to incorporate the aesthetic, environmental and physical attributes of the site, determine appropriate time-lines for the process, choose appropriate plants and materials, and supervise the installation and maintenance.

The skills and knowledge required to design the display must be **transferable** to a different work environment. For example, it must be evident that a display could be set up in a garden, office, shopping complex or other site with varying aesthetic, environmental and physical attributes.

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
- principles of garden design
- characteristics of a range of plants used in plant displays
- growth and maintenance requirements of plants in natural and artificial environments
- botanical names and classification of a range of plants commonly used in plant displays
- processes and techniques for preparing, costing and documenting plans for plant displays
- industry codes of practice
- horticultural conventions for design plans.

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 in writing and document plans to supervisors and clients
- calculate cost of materials and installation of display
- estimate quantities of materials required
- communicate orally for presenting information to, and negotiating with, management/clients

- research and analyse information about plant and materials specifications, cultural requirements and environmental requirements
- evaluate sites/locations to determine the effect of aesthetic, environmental and physical attributes on nature of display
- use computer assisted design packages.

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 site evaluation, design options, plantings and construction details should be communicated with management/client in both written and oral presentation. There is likely to be negotiation between the designer and management/client to achieve objectives.
2. How can information be collected, analysed and organised (3) ?	Some information may need to be researched or obtained from suppliers or clients. Information addressing the specific requirements of the design should be analysed, and outcomes discussed with management/client and other members of the work team. Information documenting details of the design should be organised and presented as a scaled site/location plan, with written planting schedule and construction details.
3. How are activities planned and organised (3) ?	The planning and design process should proceed in an orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. The design plan should reflect the activities required to implement the display.
4. How can team work (3) be applied?	Designing plant displays may involve working with other members of a team to complete and achieve the program outcomes.

5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical concepts may be used to calculate areas, project resources and program costs, and measure distances.
6. How can problem-solving skills (3) be applied?	Problems relating to client preferences and requirements, site limitations, availability of materials, workplace safety, team members, inclement weather, or services may arise during the design, installation and maintenance of the display.
7. How can the use of technology (3) be applied?	Technology may be required to record, store and communicate information. It may also be used to research relevant information and obtain and analyse data from site/location evaluation.

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**.

RTF4003A**Plan a plant establishment program**

This competency standard covers the process of developing a plant establishment program and a relevant site plan and specifications. Developing a plant establishment program will require consideration of client needs, site factors, growing requirements of plant species and cultivars, resources and equipment for planting and maintenance, and may also include preparation of plans, specifications, quotations and associated documents.

Planning 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 plant establishment program may be required. Developing a plant establishment program requires a broad range of horticultural skills, and involves the application of underpinning knowledge with depth in some areas such as plant selection and planting techniques.

Element**Performance Criteria**

1	Carry out preliminary planning activities for the plant establishment program	1.1	Client preferences and requirements for the plant establishment program are understood and confirmed.
		1.2	The plant establishment site is assessed for legal attributes, biophysical factors, services and historical modifications .
		1.3	Research is conducted into plant species and cultivars , and local by-laws and restrictions that may affect the plant establishment program.
		1.4	Environmental implications of the planned programs are identified and if necessary, reported to relevant personnel for further research.
		1.5	A concept plan that reflects client preferences and requirements, takes into account site factors and any identified environmental requirements, is developed and presented to the client for discussion and approval.
2	Determine requirements of the plant establishment program	2.1	Plant species and cultivars that are appropriate to the site and consistent with the agreed concept plan are identified, and the required quantity calculated, costed, and availability confirmed with suppliers.

		2.2	Plant establishment procedures are selected consistent with the agreed concept plan, and according to the characteristics of available plant materials, the resources and equipment available, and the environmental factors affecting the success of the plant establishment program.
		2.3	Post-planting care is provided for according to client requirements, enterprise standards and site capabilities.
		2.4	Resources, tools, equipment and machinery required for planting and post-planting care are identified, costed, and availability confirmed with suppliers, contractors and appropriate personnel.
		2.5	OHS hazards associated with the plant establishment program are identified, risks assessed and controls developed according to enterprise guidelines, costed and documented in the plan.
		2.6	Staged implementation and development are outlined, where appropriate, with access for future works provided for according to client, enterprise and site requirements.
		2.7	Timelines for preparations, planting and post-planting care 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 plant establishment program and specifications	3.1	Detailed plan, specifications and quotation are prepared based on the requirements of the plant establishment program, and presented to appropriate personnel and the client 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 planting of the site and post-planting care of plants are developed and documented.

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.

Who may be referred to as a **client**?

Clients may include enterprise management or a private individual, company, community group, government agency, or a combination of these entities.

What preferences and requirements may clients have?	These may include the purpose or intended use of the planting, plant species and cultivars, plant characteristics, growth habits and cultural requirements, maintenance services for post-planting care, budget limitations, timelines for plant establishment activities, and a production plan.
What plant establishment sites may be relevant to this standard?	Sites may include large-scale or broadacre woodlots, revegetation areas, parks and gardens, landscaped areas, recreational reserves, sports turf or recreational turf surfaces, and commercial nursery, floriculture and production horticulture sites.
What biophysical factors may affect the site to be planted?	Biophysical factors may include the aspect of the site, rainfall, humidity, wind and sunlight intensity, soil types, nutrients and deficiencies, slope, natural and artificial watercourses, outcrops and the presence of indigenous or otherwise native vegetation, exotic plant (weeds) and animal (feral) species.
What services on the site may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What historical modifications may influence the program for plant establishment?	Historical modifications may include human intervention such as clearance, earthworks, commercial grazing and cultivation practices, fire management, buildings and structures, natural events such as wildfire, flooding and drought, and the effects of modifications at environmentally linked sites.
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 plant species and cultivars may be relevant to this standard?	Plant species and cultivars may include exotic, native, endemic, evergreen, deciduous, conifer and palm trees and shrubs, turf, grasses, ground cover plants, bedding displays and aquatic plants.
What local by-laws and restrictions may affect the plant establishment program?	These may include prohibited plant species, restricted plant species, land use restrictions, processes and requirements for site development and work activities.

What environmental implications may be associated with the establishment of planted areas?	The establishment of planted areas may have beneficial environmental impacts where actively growing young trees and shrubs help to fix carbon dioxide from the atmosphere, lower the watertable and associated likelihood of seepage and salinisation in linked catchment areas, and reduce water, nutrient and chemical flow into the external environment including natural waterways. Detrimental environmental impacts may arise where establishment activities produce excess noise, dust or water run-off, or the implementation of post-planting care activities such as fertilisation, irrigation and pest control apply inappropriate levels of chemical, nutrients and water, resulting in escape to the external environment. Where new sites are cultivated for the establishment of planted areas, the interruption of native corridors and degradation of the ecosystem edge may compromise existing native ecosystems.
What plant establishment procedures may apply to this standard?	Plant establishment procedures may include soil testing and treatments; preparation of soil surfaces for planting; installation of irrigation and/or drainage systems; planting methods such as hand or machine-assisted sowing, direct seeding, tube planting, hand or machine assisted planting of seedlings, planting of divisions, transplanting, laying, rolling, chaffing and sprigging; fencing of stock and pest animals; the chemical, cultural or biological control of weeds and feral animals; protection of plants by staking, tying and guarding; the trellising or training of plants; and the retention of site debris.
What aspects of post-planting care are required when establishing a planted area?	Post-planting care may include watering, fertilisation, controlling pests and diseases, weeding, rolling, mowing, renovating, mulching, pruning, protecting, staking, trellising, and monitoring plant health.
What resources may be required to implement a plant establishment program?	Materials may include growth media testing consumables, growth media ameliorants, fertilisers, materials for trellising, training and protecting plants, and weed, pest and disease control chemicals and materials. Human resources may include paid and volunteer labour, contractors, suppliers and consultants.

What tools, equipment and machinery may be required?	Tools, equipment and machinery may include growth media testing equipment; hand tools; trailed, 3-point linkage and motorised machinery for excavation, growth media treatment, planting and post-planting care operations; and irrigation and drainage systems and components.
What OHS hazards may be associated with the establishment of planted areas?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil-, water- and air-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, 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 specifications for staged implementation may apply to this standard?	These may include gradual establishment of planted areas, planting during different times, and provision of access for future works.

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 establishment program requires evidence that a person can assess site factors, select suitable plant species and cultivars, determine resources and equipment for planting and post-planting care, and prepare plant establishment plans, specifications and associated documents.

The skills and knowledge required to develop a plant establishment program must be **transferable** to a different work environment. For example, this could include different plant species and types, programs, environments, planting techniques and clients.

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

- identification, propagation and establishment techniques of specific plant species and cultivars
- the advantages and disadvantages of a range of plant establishment procedures
- maintenance requirements and practices for specific plant species and cultivars, prior to and after initial establishment
- processes and techniques for preparing, costing and documenting plans for and scheduling plant establishment 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 staff, clients, 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, clients and contractors
- calculate the cost and spatial and logistical requirements of components of the plant establishment 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 analysis of the site, environmental requirements, and plant species and cultivar selection should be communicated with the client orally and in writing. There is likely to be negotiation between the developer of the plant establishment program and the client to achieve objectives.
2. How can information be collected, analysed and organised (3) ?	Some information will need to be researched and/or obtained from test results. Information addressing the specific requirements of the plant establishment program should be analysed and outcomes discussed with the client and other members of the work team. Information about the plant establishment program should be organised and presented as a site plan, documented plans, written work procedures, and timeline chart and schedules for plant establishment 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 plan for the plant establishment program should reflect the activities required to implement the program.
4. How can team work (3) be applied?	Planning plant establishment activities may involve working with other members of a team to achieve the desired outcomes.
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, planting and application rates.
6. How can problem-solving skills (3) be applied?	Problems relating to the requirements of the client, vagaries of the planting site, availability of resources and equipment, costs and environmental issues may arise during planning of the plant establishment program.
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 establishment program.

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**.

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 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 and other growing media properties.

Element**Performance Criteria**

1	Determine additives required by performing soil and plant testing	1.1	Appropriate soil 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 and plant testing program is developed which defines field 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 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 soils 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, nutrient and carbonate content, and testing the nutrient status of plants through plant tissue testing.
What growth media may be appropriate to this standard?	Growth media may include soil sites of existing planted areas, new areas to be planted, water (hydroponics), and other soil-less growing mixes.
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 management practices.
What resources may be required for soil and plant treatments?	Physical resources may include materials to modify soil pH, soil ameliorants to improve soil 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, aerial photographs, charts and tables of soil characteristics and plant soil 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.
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- and water-borne micro-organisms, 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 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 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
- 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 soils 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 and other growth media types, uses and additives to enhance the available nutrition for specific crops
- soil ameliorants commonly required to treat the soil 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 soils and other growth media.

- 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 soils 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 ideas and information (3) be applied?	Results of the analysis of plants and growth media, 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 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**.

RTF4005A**Develop a sports turf maintenance program**

This competency standard covers the process of developing a maintenance program for sports turf playing surfaces. Development of a maintenance program will require consideration of soil and plant testing, site factors, plant requirements, nutrient application procedures, preparation standards, watering, rolling, mowing, monitoring plant health, OHS hazards, and environmental impacts.

Developing a sports turf maintenance 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 sports turf maintenance program requires a broad range of horticultural skills, and involves the application of underpinning knowledge with depth in some areas such as characteristics and cultural requirements, turf plant species and cultivars, and standards for sports turf presentation.

Element**Performance Criteria**

1	Determine additives required by performing soil and plant testing	1.1	Soil and plant tests are determined according to the requirements of the turf plant species and cultivars, climatic conditions, prevailing soil and plant conditions, enterprise guidelines and industry best practice.
		1.2	A soil and plant testing program is developed which defines field 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 turf plant species and cultivars, historical records, own experience, and enterprise guidelines.
		1.6	Nutritional status of the turf plant species and cultivars is determined by analysing collected data and comparing to accepted standards.

2	Identify the requirements of a sports turf maintenance program	2.1	The standards for turf presentation are clearly defined according to client requirements, enterprise guidelines and industry best practice.
		2.2	The different maintenance requirements during a range of conditions over the growing cycle of the turf plant are identified according to published data on the species and cultivar, historical records, own experience, and enterprise guidelines.
		2.3	Sports turf maintenance procedures are selected to achieve the appropriate plant condition according to the standards for turf presentation.
		2.4	Resources, tools, equipment and machinery required for the sports turf maintenance program are identified, costed, and availability confirmed with suppliers, contractors and appropriate personnel.
		2.5	The most cost-effective approach to maintaining the sports turf playing surface is determined.
		2.6	OHS hazards associated with the implementation of the sports turf maintenance program are identified, risks assessed and controls developed according to enterprise guidelines, costed and documented in the program.
		2.7	Environmental implications of sports turf maintenance activities are identified and documented in the program.
3	Prepare and document the sports turf maintenance program	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 sports turf maintenance program are developed and documented.
4	Monitor the sports turf maintenance program	4.1	Implementation of the maintenance program is monitored to ensure enterprise standards for presentation of sports turf playing surfaces are achieved.
		4.2	The sports turf maintenance 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 and plant tests may be conducted as part of a sports turf maintenance program?	These may include on-site and off-site testing of the soil to determine physical characteristics such as colour, texture, structure, depth of rootzone and depth of watertable, and chemical characteristics such as pH, salinity, nutrient and carbonate content, and testing the nutrient status of plants through plant tissue testing.
Who may be referred to as a client ?	Clients may include the enterprises management or a private individual, company, community group, management committee, sporting association, government agency, or a combination of these entities.
What range of conditions may affect plant nutrition?	Conditions may include weather, seasonal influences, soil characteristics, nature and frequency of use, fertiliser history, irrigation methods and scheduling, spraying program and soil management practices.
What sports turf maintenance procedures may apply to this standard?	Maintenance procedures may include soil and turf plant tissue testing, applying nutrients, watering, rolling, mowing, monitoring turf plant health, renovating where necessary, and preparing the sports turf playing surface to presentation standards.
What resources may be required for maintaining sports turf playing surfaces?	Physical resources may include soil and plant testing consumables, materials to modify soil pH, soil ameliorants to improve soil fertility, fertilisers to meet the nutritional requirements of turf species and cultivars, 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 for the implementation of the sports turf maintenance program?	Tools, equipment and machinery may include soil and plant tissue testing equipment; turf maintenance hand tools; 3-point linkage, trailed or motorised turf maintenance machinery; and irrigation and drainage systems and components.
What OHS hazards may be identified as part of the sports turf maintenance 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, 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 sports turf maintenance 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 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 turf plants. Responsible fertilisation and watering practices may help to reverse previous environmental degradation by allowing natural recovery and regeneration of native ecosystems.

What **specifications** may be included in the sports turf maintenance program?

Specifications may include types and frequency of soil and turf plant tissue testing, a turf plant nutrition program, irrigation scheduling, mowing frequency, height of cut, pattern, mowing directions and specified equipment, rolling instructions, observable turf quality parameters for monitoring turf health, and preparation procedures for achieving presentation standards.

What **remedial action** may be undertaken to improve plant nutrition?

Remedial action may include adjustments to irrigation scheduling and nutrient application rates and methods, and changes to soil 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 sports turf maintenance program requires evidence that a person can analyse site factors, select suitable nutritional materials, determine techniques, resources and equipment for the maintenance of the turf to presentation standards, and prepare implementation plans, specifications and associated documents.

The skills and knowledge required to develop a sports turf maintenance program must be **transferable** to a different work environment. For example, this could include different grass species, sports turf surfaces, and workplace 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:

- the principles and practices of maintaining a range of sports turf playing surfaces in relation to client needs, and the standards required for the intended use of the surface
- growth habits and cultural requirements of specific turf plant species and cultivars under a range of soil and environmental conditions
- maintenance requirements and practices for specific turf plant species and cultivars after initial establishment
- site evaluation techniques including analysis of the condition of soils, plants, and the site for turf maintenance activities

- nutrients required by specific turf plant species and cultivars and the affects of nutrient deficiency and toxicity on individual plant species and cultivars, including visual symptoms
- plant diseases of specific turf plant species and cultivars
- the characteristics of soil and other growth media types, uses and additives to enhance the available nutrition for specific turf plant species and cultivars
- soil ameliorants commonly required to treat the soil problems experienced by the enterprise
- the main simple and compound fertiliser products available to the enterprise
- legislation and regulations relating to sports turf sites and turf maintenance 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 staff, managers, contractors and consultants
- research and evaluate information
- assess site factors and evaluate their impact on the development of the sports turf maintenance program
- 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 sports turf maintenance 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?	Analytical results, the growing requirements of turf plants, and the selection of resources and equipment should be communicated with the manager. There is likely to be negotiation between the developer of the maintenance 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. Information obtained about the specific cultural requirements of turf plants should be analysed and outcomes discussed with appropriate personnel. Information about the maintenance program should be presented as a site plan, documented plans, written work procedures, a timeline chart, and schedules for maintenance activities.
3. How are activities planned and organised (3) ?	The development process should proceed in an orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. The sports turf maintenance program should reflect the activities required to implement the program.
4. How can team work (3) be applied?	Developing a sports turf maintenance 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 growing requirements of turf plants, nature of the site, availability of resources and equipment, costs and monitoring of the program may arise during development of the maintenance 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 sports turf maintenance program.

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**.

RTF4006A

Plan a tree pruning program

This competency standard covers the process of planning a tree pruning program. Planning includes planning the program, communicating its intent to other personnel, and monitoring the implementation of the program.

The planning of a tree pruning program is likely to be undertaken without supervision, with only general guidance on progress sought by management and/or the client. Responsibility for and limited organisation of the work of others engaged in the pruning program may be necessary.

The planning of a tree pruning program requires a broad range of horticultural skills and the application of extensive knowledge in tree identification, tree physiology, CODIT principles and tree pruning techniques.

Element	Performance Criteria
1 Undertake site assessment	1.1 Specific species are identified and their fruiting, flowering and foliage characteristics recorded according to enterprise guidelines. 1.2 Trees are assessed to determine suitability for pruning based upon the overall health and vigour of specimens. 1.3 Branches are examined and their vitality and integrity of attachment ascertained to ensure the program can be safely implemented. 1.4 Site conditions are assessed for equipment, personnel and access requirements. 1.5 Site environmental concerns are assessed in relation to relevant legislation and/or regulations that may impact on a tree pruning program. 1.6 Existing and/or potential OHS hazards are identified, risks assessed and suitable controls recommended.
2 Plan a pruning program	2.1 Pruning requirements including appropriate pruning techniques are determined according to management and/or client needs and the site assessment. 2.2 Appropriate pruning tools, equipment and machinery are determined according to the pruning requirements and site assessment.

		2.3	Pruning strategies are planned with regard to mass energy ratios and compartmentalisation of decay in trees (CODIT) principles to ensure pruning is undertaken with minimum stress to trees, and without damage to property or personnel.
		2.4	Pruning program is documented and communicated to relevant personnel in accordance with enterprise guidelines.
3	Monitor a pruning program	3.1	Completed program is assessed to ensure pruning has been undertaken according to the identified program.
		3.2	Pruned trees are monitored over time to ensure they are able to sustain growth and are restored to their natural habit and form.
		3.3	Any pruning that causes stress is rectified.
		3.4	Treatments undertaken during monitoring are recorded for later reference.

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

Where may trees requiring pruning be located?	Trees might be located in domestic gardens, streets and roadways, commercial and industrial sites, city parks, institutions (e.g. schools and hospitals), local government parks and reserves, or bushland areas. Tree pruning may also occur near overhead electrical cabling.
How might the overall health and vigour of trees be determined?	General health may be determined by leaf drop, leaf discolouration, leaf size (compared to a healthy specimen), die back, dead wood, cavities, decay, structure, condition of ground around the tree, impact of recent work around tree and previous pruning work.

What questions may need to be considered when site conditions are assessed for a pruning program?	Questions to consider may include: Is the tree(s) close to buildings or other structures? Will the sections that need to be removed be likely to cause damage when falling? How will the work be staged? What signs and safety barriers need to be erected? Are there above and below ground services? What tools, equipment and machinery will be needed? What safety equipment will you need? How long will the job take? Are there special conditions such as weather, relevant legislation, timing or related work activities that need to be included in the planning of a pruning program?
What legislation and/or regulations may need to be considered when planning a pruning program?	Legislation and/or regulations may include National, State and local government legislation and regulations such as the Environmental Protection Act, and Australian Standards for Pruning of Amenity Trees AS4373: 1996, or area specific tree preservation orders and significant tree registers and/or legislation.
What OHS hazards are likely to be identified during a site assessment for a pruning program?	Hazards may include solar radiation, dust, noise, damp conditions, nearby buildings or structures, slopes, water, rocks, undergrowth, depressions/holes, fire hazards, dead or unstable branches, insect infestation, unstable or protruding root systems, power lines and other above or below ground services.
What suitable controls are likely to be recommended to minimise OHS hazards ?	Suitable controls recommended may include the use of personal protective clothing and equipment such as rubber soled/leather boots, cut resistant trousers, gloves, helmets, goggles, safety harnesses, sun hats, hearing protection, face shields and sunscreen lotion; placement of warning signs, barriers, hazard indicators and a safe drop zone, use of approved ladders and ropes, safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, correct manual handling techniques, placement of rescue equipment on site, and basic first aid training.
What pruning requirements may influence the planning program?	Requirements may include size, light, aesthetics, competition, structure, shape, density, growth re-direction, modification of flowering/fruiting behaviour, damage, general clearances, signage and sight lines.

What pruning techniques are likely to be utilised in a pruning program?	Pruning techniques may include cleaning out, crown lifting, crown reduction, structural integrity, crown renewal, crown thinning, dead wooding, hedging, branch, epicormic and green shoot removal.
What tools, equipment and machinery are likely to be used?	Pruning tools and equipment may include pruners, jacksaws, handsaws, chainsaws, pole saws pouches, steps, epicormic removers, secateurs, chippers and mulchers. Climbing equipment and machinery may include ladders, climbing gear such as ropes and harnesses, elevated platforms and cherry pickers.
What pruning strategies are likely to be considered in the planning of a pruning program?	Pruning strategies to take into consideration may include the different response times to pruning of different species (e.g. some trees will recover quickly from severe pruning while others can be killed or suffer a major setback in growth), the varying reasons for pruning (e.g. crown lifting may be needed for street trees while crown reduction may be used in a garden setting, and some trees require annual pruning for flowering or fruiting while others need pruning as a maintenance measure to reduce potential hazards), and the influence that seasons and weather conditions has on the success of pruning programs (incorrect timing of pruning may lead to new growth being damaged by extremes in temperature or insects and diseases).
What information may be documented in a pruning program ?	A pruning program may include site and location plans, site assessment details, special instructions and/or conditions, OHS requirements and controls, environmental considerations, pruning requirements and techniques, tools, equipment and machinery requirements, access and removal details, personnel requirements, waste, organic waste and debris disposal, recycling and re-use guidelines.
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 a tree pruning program requires evidence that a person can plan the program, document and communicate its intent to other personnel, and monitor the implementation of the program over a period of time.

The skills and knowledge required to plan a tree pruning program must be **transferable** to a different work environment. For example, this could include different tree species, pruning equipment and locations.

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:

- tree pruning techniques appropriate to the pruning requirements of the species
- principles and applications of risk assessment in tree structure
- CODIT principles
- implications of pruning cuts and the way trees respond
- tree morphological and physiological processes
- OHS risks of working in hazardous situations and handling of debris
- the effect of adverse outdoor climatic conditions (e.g. rain, hail, or very high ultraviolet radiation), which may prevent or impede the pruning program
- relevant legislation and/or regulations that may impact on a tree pruning 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:

- plan operations in such a way that no damage occurs to equipment, property, environment, trees or personnel
- calculate pruning program resources and relevant costs
- document a program in a clear and concise manner for ease of interpretation
- communicate with personnel to ensure understanding of requirements of the program
- use of tree management databases.

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?	Communication of ideas and information may be applied when undertaking a site assessment in response to management and/or client requests.
2. How can information be collected, analysed and organised (3) ?	Information may need to be collected, analysed and organised when assessing pruning strategies for a large pruning program.
3. How are activities planned and organised (3) ?	Activities may need to be planned and organised according to seasonal and prevailing weather conditions.
4. How can team work (3) be applied?	Planning a tree pruning program may involve working with other members of a team to complete and achieve the program outcomes.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical concepts may be used to calculate pruning program resources and associated program costs.
6. How can problem-solving skills (3) be applied?	Problem solving skills may need to be applied if the pruning program, planned and implemented, causes undue stress to trees.
7. How can the use of technology (3) be applied?	The use of technology may be applied in the documenting of the program.

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**.

RTF4007A

Prepare a garden design

This competency standard covers the process of preparing garden designs. It requires the ability to negotiate with clients to develop a garden design brief, provide design solutions, select plants, determine irrigation requirements and oversee garden construction. It requires knowledge of plants, landscape drafting, lawns and soil preparation.

The preparation of a landscape design is likely to be undertaken without supervision. Responsibility for the work of others may be involved. It requires a broad range of horticultural skills and involves the application of underpinning knowledge with depth in some areas such as plant selection, soils, landscape design principles, drafting techniques, and communication skills.

Element	Performance Criteria
1 Develop a design brief	1.1 Client is consulted to establish purpose and requirements of design. 1.2 Design brief is developed and agreed in consultation with the client. 1.3 Cost structures and timelines are negotiated with the client.
2 Undertake a site analysis	2.1 Base plan of site is prepared or obtained from the client or other sources. 2.2 Physical elements and features of the site are recorded on the base plan. 2.3 Assessment of soil, topography, aspect, existing vegetation and climatic factors are recorded on the site plan. 2.4 Functional analysis of the site is completed and recorded on the base plan. 2.5 Other relevant data, including scale and north point is determined and recorded on the base plan.
3 Develop a concept design	3.1 Concept plan is prepared to illustrate the location and layout of proposed site works according to the design brief. 3.2 Plant list is compiled of species and varieties suitable for the site according to design brief. 3.3 Consultation with the client is undertaken to agree on options and approaches for development. 3.4 Consistent graphic style is used to present the concept plan.

4	Produce a final plan	4.1	Detailed garden design is produced according to the design brief.
		4.2	Design solutions and graphic representations are applied to a range of garden development situations.
		4.3	Garden plan is drafted according to enterprise standards.
		4.4	Information on the plan is relevant and precise, and clearly communicates development works to be undertaken.
		4.5	Notes and specifications are included on the plan to assist in plan interpretation.

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 type of clients may be covered by this unit?	Clients may include private individuals, organisations, public bodies and community groups.
What physical elements and features may be included on a base plan?	Physical elements and features included in a design include proposed or existing structures, buildings, watercourses, irrigation and/or drainage systems, roads and paths, existing plants, topographic features, views and outlooks, climate and weather conditions, soils characteristics, access to site and existing site use details.
What may be covered by a functional analysis of the site?	A functional analysis of the site might include the existing or proposed use of site, pedestrian movement, microclimatic notes and client requirements.
What methods may be included in drafting the plan	Drafting may be done by hand or with proprietary software.

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 unit requires evidence that garden designs have been successfully developed according to client and industry requirements and standards. The skills and knowledge required to prepare garden designs must be **transferable** to a range of work environments and contexts. For example, this could include different design solutions for a range of commercial or private sites.

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: • elements and principles of design • garden design process • plan interpretation • conventional symbols • plant selection • drafting techniques.

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 clients • undertake a site analysis • provide garden design solutions • select plants • develop concept and/or construction plans • develop planting schedules and bills of quantity.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life that 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?	Communication of ideas and information can be applied through the development of concept and final garden design plans
2. How can information be collected, analysed and organised (2) ?	Information can be collected, analysed and organised at site inspection in field notes.
3. How are activities planned and organised (2) ?	Activities are planned and organised with other members of the team, including clients.

4. How can team work (2) be applied?	Through site surveying and measuring in preparing a base plan.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques can be applied in drafting concept and final garden design plans
6. How can problem-solving skills (3) be applied?	Problem-solving skills can be applied when providing design solutions
7. How can the use of technology (3) be applied?	The use of technology can be applied when measuring, drafting, printing and recording design plans.

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**.

RTF4014A**Plan a growing-on program**

This competency standard covers the process of developing a growing-on plan in production nurseries. The development of the growing-on plan is likely to be undertaken without supervision, with only general guidance on progress sought by senior management.

The work requires detailed knowledge about quality assessment, production scheduling and crop requirements such as growing media, environmental parameters and plant treatments.

Element	Performance Criteria
1 Identify issues affecting the growing-on program	1.1 Production requirements are determined in consultation with management.
	1.2 Factors, which could limit the production of nursery plants, are identified.
	1.3 OHS hazards are identified, risks assessed and controls implemented.
	1.4 The environmental implications in relation to a growing-on program are considered.
2 Develop the growing-on plan	2.1 Activities involved in the growing-on program are identified.
	2.2 Labour, materials, tools and equipment needs are identified.
	2.3 Environmental parameters are selected and altered to meet plant needs and production plans.
	2.4 Growing media requirements are determined according to the needs of the plant and production plans.
	2.5 Planting dimensions and layout are determined according to production plans.
	2.6 Treatments required for the growing-on program are identified.
	2.7 Hygiene requirements for the growing-on program are identified according to industry best practice.
3 Document the growing-on plan	3.1 The growing-on plan is documented according to enterprise policy and includes all the information identified in the development stage.
	3.2 A budget supporting the plan is documented and approval sought by management.
	3.3 A schedule of activities is organised according to production plans.

		3.4	The growing-on plan and schedule of activities are communicated clearly to staff.
4	Oversee and monitor the growing-on program	4.1	The health of the plants are monitored to ensure they are at optimum growth.
		4.2	Treatments are modified as required to maintain optimum growth.
		4.3	Plants ready for dispatch are checked to ensure they meet customer 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 production requirements may impact on the growing-on program?	Production requirements may include budget, plant species, plant characteristics, growth habits and cultural requirements, growing environment, the purpose or intended use of the plants, materials, after-care, and timelines for the growing-on program.
What factors may limit the growing-on program?	Limiting factors may include market fluctuation, budget, and availability of stock or materials, service or equipment failure, infection and personnel problems.
What nursery plants may apply to growing-on operations?	Nursery plants may include seedlings, bulbs, divisions, containerised plants, field-grown plants, flowering plants, foliage plants, grafted plants, tissue culture plants and stock plants.
What OHS hazards may be identified in the work area?	Hazards may include hazardous chemicals; potentially hazardous pot media, composts and organic products; water, dust and splashed or windborne inoculum; manual handling, moving equipment and vehicles, sharp hand tools, noise, pests, and slippery or uneven surfaces.
What environmental implications are likely to be considered when planning a growing-on program?	Environmental considerations may include drainage and the effective management of high nutrient effluent situations, the safe disposal of unused growing media and treatment materials, chemicals and chemical containers, and the control of contaminants from soil, water or vegetable matter.

What materials, tools and equipment may be required for growing-on activities?	Materials, tools and equipment may include pots and containers, plant supports, ties, secateurs, knives and other cutting instruments, shovel, trowel, bins, trailers, wheelbarrow, trolley, mechanical trolley, small tractors, rubbish bins, potting machine, and media mixing equipment.
What environmental parameters may be relevant to this unit?	Environmental parameters may include temperature, humidity, light, moisture, atmospheric gases and airflow.
What growing media requirements may need to be determined in order to meet plant needs?	Growing media requirements may need to be determined using recognised testing procedures for pH, drainage, aeration, salinity, nitrate levels and water repellence to ensure that it meets the needs of the growing-on plan. Media components may include sand, potting mix, gravel, gro-wool, sawdust, pine bark, perlite, vermiculite, foam, peat, amendments, nutrients, ameliorants, ash, rice hulls, sphagnum moss, scoria, commercial mixes, and water (hydroponics). Mixing of growing media components and disinfestation may also be required.
What treatments are likely to be carried out?	Treatments may include environmental intervention in controlled environment structures, chemical intervention such as fertiliser, pest controls, and growth regulators, and mechanical intervention such as root and foliage pruning, formative pruning and staking.
What hygiene requirements may apply to industry best practice?	Hygiene requirements may include removing all dirt and organic matter from production surfaces, tools and equipment, disinfecting production surfaces, tools and equipment, disinfestation and removal of plant and media waste, hand washing, footbaths, access restrictions, and handling practices which minimise cross contamination.
What customer specifications need to be checked before plants are dispatched?	Customer specifications may be verbal or written and include detailed descriptions of required plant attributes such as species, size, shape, colour, shipping quality; delivery details such as labelling, time and place, and any other special conditions.
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 a growing-on program requires evidence that production issues can be identified and addressed, a schedule of growing-on operations can be developed, and the performance of growing-on activities can be overseen and monitored.

The skills and knowledge required to plan a growing-on program must be **transferable** to a different work environment. For example, this could include different plant species, growing-on techniques and enterprise guidelines.

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:

- Worksafe Australia criteria for the labelling and handling of 'Hazardous Substances'
 - enterprise and industry hygiene standards required for growing-on activities, including State Nursery Industry Association (NIAA) Best Practice Guidelines
 - environmental implications of the disposal of chemicals or chemical containers, and the drainage of high nutrient effluent
 - optimal growing requirements of nursery plants
 - enterprise and industry quality standards of nursery plant production
 - common problems that may occur while performing growing-on activities in a controlled environment and preventative/corrective action that may apply
 - processes and techniques for preparing, costing and documenting plans for and scheduling growing-on activities
 - testing methods applied to propagation media
 - preferred types of propagation media for different species
 - chemical, cultural and biological pest, weed and disease control techniques
 - application techniques for chemical and non-chemical intervention or treatments.
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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:

- conduct literature and consultative research to obtain information about production requirements, growth conditions, and marketing implications
- negotiate and document plans
- write reports for the understanding of staff, supervisors, clients and contractors
- calculate the cost, spatial and logistical requirements of all aspects of the growing-on 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?	Production requirements, environmental parameters and controls, growing techniques and budgetary considerations may be communicated with management orally and in writing. There is likely to be negotiation between the planner of the growing-on program and management to achieve objectives.
2. How can information be collected, analysed and organised (3) ?	Some information may need to be researched and/or obtained from test results. Information addressing the specific requirements of the growing-on program may be analysed and outcomes discussed with management and other members of the work team. Information about the growing-on program may be organised and presented as documented plans, written work procedures, timeline chart and schedules for growing-on activities.
3. How are activities planned and organised (3) ?	The planning process may need to proceed in an orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. The growing-on plan may reflect the activities required to implement the program.

4. How can team work (3) be applied?	Planning a growing-on program may involve working with other members of a team to achieve the desired outcomes.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical concepts may be required to measure quantities and calculate production records, resources, costs, ratios, scales, planting, and application rates.
6. How can problem-solving skills (3) be applied?	Problems relating to the supply of materials and stock, growing environment, plant health, workplace safety, tools, equipment and machinery, team members, hazardous situations and environmental issues, may arise during the growing-on works.
7. How can the use of technology (3) be applied?	Technology may be required to record, store and communicate ideas and information. It will also be used to research relevant information, obtain and analyse data from soil tests and production statistics, and to produce the plan.

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**.

RTF4015A**Plan a propagation program**

This competency standard covers the process of planning a propagation program. Planning requires consideration of management and marketing requirements, selection of appropriate propagation techniques and environmental controls, OHS hazards and hygiene standards.

Planning is usually undertaken without supervision, and with only general guidance on progress sought by managers. Responsibility for and limited organisation of the work of others may be necessary. Competency is demonstrated by the application of a broad range of skills and detailed underpinning knowledge to planning and propagation processes, such as propagation techniques, plant varieties and cultivars, weed, pest and disease recognition and control, and plant health requirements.

Element	Performance Criteria
1 Carry out preliminary planning activities for a plant propagation program	1.1 Management and marketing requirements are confirmed and understood. 1.2 Space requirements for propagation program are evaluated. 1.3 Propagation techniques are determined according to species and sound horticultural practice. 1.4 Environmental parameters that impact on propagation are determined. 1.5 Budget for the propagation program is negotiated with management. 1.6 OHS hazards associated with the propagation program are identified, risks assessed and controls implemented.
2 Develop the propagation plan	2.1 Labour, materials, equipment and machinery needs are identified. 2.2 Propagation media requirements are determined according to the propagation method and needs of the plant. 2.3 Strategies to modify environmental conditions are determined according to the type of plant and propagation method used. 2.4 Selection criteria for the propagation material is determined according to the type of plant and propagation method.

		2.5	Hygiene requirements for propagation activities are determined.
		2.6	Propagation plan and schedule of activities are communicated clearly to staff.
3	Monitor success of propagation activities	3.1	Variances from plan and scheduled activities are identified and recorded.
		3.2	Propagated plants are assessed for health, quality and viability according to enterprise quality standards.
		3.3	Remedial procedures are planned to meet marketing objectives and business imperatives.

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 requirements may management or marketing impose on the propagation plan?	Requirements may include budget limitations, propagation technique, controlling the growing environment; plant species, growth habits and cultural requirements; the purpose or intended use of the propagated plants, maintenance services for propagation after-care, quality specifications and timelines for the program.
What propagation techniques might be required?	Propagation techniques may include seed, cuttings, layering, growing on tissue cultured plants, division or splitting, budding, grafting, spores and cloning.
What environmental parameters may need to be considered in order to control the growing environment?	Environmental parameters may apply to a field nursery or environmentally controlled structure, and may include temperature, wind, light, humidity and frost.
What OHS hazards may be identified as part of the plan for implementing propagation works?	Hazards may include air- and soil-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, solar radiation, dust, noise, machinery and machinery parts, slippery and uneven surfaces.

What materials, equipment and machinery may be required for conducting propagation activities?	Materials, equipment and machinery may include shade cloth, plastic fencing, tape, support structures, labels, irrigation equipment, heaters, coolers, fans, vents, fogging/misting systems, screens; secateurs, propagation knives, razor blades and other cutting instruments; sharpening stone, strop, linear measure, grafting machine, plastic containers and trays, vermiculite boxes, wheelbarrow, trolley, mechanical trolley, shovel, water spray container, dibblers and rubbish bins.
What propagation media requirements may need to be determined in order to meet plant needs?	Propagation media requirements will be specific to the species and method of propagation, and may need to be determined using recognised testing procedures for pH, drainage, aeration, salinity, nitrate levels and water repellence to ensure that it meets the needs of the propagation plan. Types of propagation media may include sand, potting mix, gravel, scoria, rock wool, gro-wool, sawdust, pine bark, perlite, vermiculite, water (hydroponics) and conditioners/additives.
What strategies may be employed to modify the growing environment?	Strategies that may be employed to modify the growing environment include cooling by manual or automatic processes such as the use of vents, exhaust fans, evaporative coolers, wetting walls; heating by manual or automatic processes such as the use of wall heaters, ducts, heating lines or under-bed heating systems; controlling air circulation to maintain uniform temperatures and relative humidity, such as ventilation or wind breaks; use of artificial light; carbon dioxide enrichment, and irrigation.
What selection criteria may be applied to propagation material relevant to this unit?	Selection criteria for propagation material may include company specifications and quality standards; the use of certified parent stock; ensuring parent stock is well nourished and healthy, free from disease, pest, frost or mechanical damage; results from recognised testing procedures, such as leaf tissue analysis; and the season.
What hygiene requirements are relevant to propagation activities?	Hygiene requirements may involve hand washing, removing all media and organic matter from production surfaces, tools and equipment; disinfecting production surfaces, tools and equipment; disinfecting/sterilising propagation media; disinfestation and removal of plant and media waste, footbaths; access restrictions and handling practices which minimise cross contamination, including enterprise quarantine policies and legislation.

What processes may be involved when propagated plants are assessed during after care?	Assessment will involve inspection, recognised analytical procedures, recording and interpreting production statistics.
What remedial procedures may be applied to propagated plants?	Remedial procedures may be required in response to damage or loss, pest and disease problems, and marketing requirements, and may include quarantine/isolation procedures, schedule amended, integrated pest management, cultural intervention such as fertilising, misting, tip/root pruning, spraying growth hormones, light manipulation, temperature changes, increased/decreased humidity, tying, staking, taping; removing and disposing of damaged plant material, and irrigation.

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 propagation plan requires evidence that a schedule of propagation activities can be developed, propagation works can be implemented, and the performance and success of propagation activities can be monitored.

The skills and knowledge required to implement a propagation plan must be **transferable** to a different work environment. For example, this could include different plant types, propagation techniques 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: • OHS hazards associated with undertaking propagation activities, and the controls necessary to remove or minimise risks associated with them • practical understanding of the OHS and environmental issues associated with use and disposal of propagation media • enterprise and industry hygiene standards required for propagation activities, including relevant quarantine regulations

- industry and enterprise quality specifications for parent plants and propagation materials
- common problems that may occur while performing propagation activities in a controlled environment, and preventative/corrective action that may apply
- processes and techniques for preparing, costing and documenting plans for and scheduling propagation activities
- identification, propagation and establishment techniques required for a range of plant varieties and cultivars
- monitoring staff performance
- Plant Breeders Rights (PBR) and related legislation
- aftercare requirements for a range of propagated plant varieties and cultivars
- testing methods applied to propagation media
- preferred types of propagation media for different species
- chemical, cultural and biological pest, weed and disease control techniques
- application techniques for chemical and non-chemical intervention or treatments.

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:

- conduct literature and consultative research to obtain information about propagation requirements, growth conditions, and marketing implications
 - negotiate and document plans
 - write reports for the understanding of staff, supervisors, clients and contractors
 - calculate the cost, spatial and logistical requirements of all aspects of the propagation works
 - analyse basic statistical data to monitor performance and success of propagation activities.
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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?	Marketing objectives, site environmental controls, propagation techniques and budgetary considerations should be communicated with management orally and in writing. There is likely to be negotiation between the planner of the propagation program and management to achieve objectives.
2. How can information be collected, analysed and organised (3) ?	Some information will need to be researched and/or obtained from test results. Information addressing the specific requirements of the propagation program should be analysed, and outcomes discussed with management and other members of the work team. Information about the propagation program should be organised and presented as documented plans, written work procedures, timeline chart and schedules for propagation 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 propagation plan should reflect the activities required to implement the program.
4. How can team work (3) be applied?	Planning a propagation program may involve working with other members of a team to achieve the desired outcomes.
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 production records, resources, costs, areas, ratios, scales, planting and application rates.

6. How can problem-solving skills (3) be applied?	Problems relating to vagaries of the growing environment, poor germination or strike rate, plant health, propagation and aftercare techniques, workplace safety, tools, equipment and machinery, team members, inclement weather, hazardous situations and environmental issues, may arise during the revegetation works.
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 soil tests and production statistics, and to produce the propagation plan.
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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**.

RTF4016A**Plan a tree protection program**

This competency standard covers the processes concerned with planning for and monitoring the protection of trees at sites where there may be physical and/or chemical threats to the tree.

Planning is likely to be undertaken without supervision, with only general guidance on progress sought by higher officers. Responsibility for and limited organisation of the work of others in the tree protection program may be involved. Planning tree protection programs requires a broad range of skills, and the application of extensive horticultural knowledge in areas such as specialist tree protection techniques.

Element		Performance Criteria	
1	Undertake a site assessment	1.1	Assessment is undertaken to identify site conditions that may impact upon the protection program.
		1.2	Activities/circumstances with the potential to harm trees are identified, the level of risk is assessed, and appropriate protection methods to minimise or prevent damage are selected.
		1.3	Tree locations are plotted onto working drawings to enable their identification by on-site staff.
		1.4	OHS requirements to ensure safety of operators, the public and property throughout the tree protection program are identified and documented in the plan.
2	Determine the requirements of a protection program	2.1	Protection devices are designed and/or nominated to ensure the trees do not sustain damage for the duration of the threat relative to the species, risk factors and intended use of the area.
		2.2	Installation and construction methods are determined and working drawings produced to ensure on site personnel can interpret and implement the protection program.
		2.3	Protection program is defined, documented and communicated to relevant personnel according to enterprise guidelines.
3	Assess and modify a protection program	3.1	Protection program is monitored to ensure trees are protected according to client's instructions and the protection program.

- 3.2 Alternative strategies are identified and implemented when malfunctions or problems are evident in the protection program.

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 site conditions may require assessing?	Site conditions may include size, position, accessibility and health of tree. Conditions may also include soil types, moisture content, pH levels, salinity, texture, compaction, aspect, pollutants, toxicity, climate, buildings, road works and shade.
What activities/circumstances with the potential to harm trees may be identified?	Activities/circumstances may include engineering operations associated with adjacent constructions, vandalism, the presence of people, animals, pests and disease, pollutants in soil, water or air, mechanical damage and chemical damage, climatic conditions unfavourable to the species, volume and type of traffic, proneness to flooding, and bushfire or ground instability.
What OHS requirements may need to be included in the tree protection program?	These may include procedures for handling, transporting, storing and disposing of chemicals and fertilisers, safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, safe control of traffic, appropriate use of personal protective clothing and equipment, correct manual handling techniques, and basic first aid.
What protection devices may be installed to protect trees?	Protection devices may include tree guards, root barriers, other plantings, soil covering, traffic re-direction, barriers, bunting and flagging, temporary fencing, bollards and vehicle barriers.
What information may be contained in the protection program ?	Program may include location and site plans, drawings, equipment requirements, access details, species requirements, installation and construction plans, maintenance requirements, protection methods, personnel requirements, location of services, work schedules, timeframes, budgets, debris disposal procedures, and OHS issues.

The protection program may be **communicated to relevant personnel?**

These may include people involved in or affected by, the protection operations such as other workers, supervisors, owners, suppliers, clients or the public. Information may be in written or verbal form.

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 a tree protection program requires evidence that a person can undertake a site assessment, determine, document and communicate protection program requirements to relevant personnel, and assess and modify the protection program to ensure the ongoing viability of the tree according to client and protection program specifications.

The skills and knowledge required to plan a tree protection program must be **transferable** to a different context. For example, this could include different trees species, protection techniques, situations 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:

- effects on trees due to permanent and temporary changes in their environment
 - principles and techniques relating to the choice and implementation of protection programs
 - principles of designing customised protection devices
 - effects of pollutants, vandalism, mechanical damage and physiological attacks on trees
 - principles and methods of mechanical and chemical damage control
 - principles and methods relating to protecting trees from human 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:

- accurately document protection plans and communicate these plans and instructions to clients and fellow team members

- calculate project resources and protection program costs
- minimise noise, dust and high activity vehicle traffic to prevent nuisance-level environmental disturbance
- work in chemical, toxic or hazardous areas
- dispose of chemical substances and their containers to minimise environmental impact
- dispose of plant and equipment debris in an environmentally aware and sensitive manner, such as sorting plant and paper-based waste for recycling.

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 specific tasks relating to the job such as protection methods, devices, appropriate tools and equipment, and any hazards encountered should be discussed with other members of the work team. Costs, timeframes, methods and completion of protection program should be communicated with the client.
2. How can information be collected, analysed and organised (3)?	A visual inspection of the site may reveal site characteristics, site access, size of the tree and potential threats, which should be discussed with other members of the work team. Information and ideas on protection techniques, methods and requirements, worker safety systems and work schedules, should also be discussed with the work team.
3. How are activities planned and organised (3)?	Daily work activities carried out by individuals and team members, tools and equipment, project timeframes and work schedules should be arranged before and during work periods.

4. How can team work (3) be applied?	Planning a tree protection program may involve working with other members of a team to complete and achieve the program outcomes.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical concepts may be used to calculate project resources and costs.
6. How can problem-solving skills (3) be applied?	Problems relating to site conditions, site access, protection program and methods, workplace safety, tools and equipment, team members, inclement weather, hazardous situations and environmental issues, may require problem solving.
7. How can the use of technology (3) be applied?	Technology may be used to record, store and communicate information relating to the tree protection program. Site plans may be drawn up on map. Technology, such as satellite imagery may be used in site assessment.

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**.

RTF4017A**Plan a tree transplanting program**

This competency standard covers the processes of planning for the transplanting of trees. This includes a site assessment, determination of removal methods, transportation requirements and documenting the plan for implementation.

Planning is likely to be undertaken without supervision, with only general guidance on progress sought by management and/or the client. Responsibility for and limited organisation of the work of others engaged in the transplanting of trees may be required. Planning a tree transplanting program requires a broad range of arboriculture skills, and involves the application of extensive knowledge including root ball protection methods and aftercare requirements.

Element	Performance Criteria
1 Undertake a site assessment	1.1 Site assessment is undertaken to identify site conditions, which may impact upon transplanting activities. 1.2 Trees are assessed for viability for transplanting to ensure the best time and conditions are chosen according to tree species characteristics 1.3 Liaison with local authorities is undertaken to determine location of services and utilities, and legislation, local by-laws and regulations governing the transplanting/transporting of trees. 1.4 Existing and/or potential OHS hazards are identified, risks assessed and suitable controls recommended.
2 Determine transplanting requirements	2.1 The appropriate tools, equipment and machinery are identified in accordance with the site assessment and tree species to be transplanted. 2.2 Excavation methods and root ball preparation is determined according to the characteristics of the species. 2.3 Crown reduction/protection tasks are determined according to the characteristics of the species. 2.4 Root ball and tree mass is calculated to determine appropriate lifting and transport requirements.

		2.5	Personnel requirements are determined to ensure trees are prepared, lifted, transported and re-installed with minimum stress to the trees, and with regard to safety and environmental factors.
		2.6	A transport route, which is practicable and safe, is identified with regard to the size and shape of the tree.
		2.7	An aftercare plan outlining monitoring frequency and methods to maintain the health and viability of the transplanted tree(s) is determined and included in the program.
3	Document a tree transplanting program	3.1	Transplanting program is documented according to management and/or client needs and enterprise guidelines.
		3.2	Resources and costing details are documented and presented to management and/or the client in accordance with enterprise guidelines.
		3.3	Transplanting program is communicated to the relevant personnel for implementation.
		3.4	Completed tree transplanting program is assessed to ensure that transplantation was undertaken according to the identified program and budget guidelines.

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 site conditions may impact on transplanting activities?	Site conditions may include available work space for machinery and equipment; size and health of tree; tree accessibility, soil condition, ground slope and general topography; existing flora and fauna, public access to the site and proximity to buildings, and utilities such as powerlines.
What tree characteristics may influence the viability and timing of transplantation?	Deciduous trees, which drop their leaves each year, become dormant and this is usually the best time for transplanting. Evergreen native trees, such as gum trees and wattles, continue to grow all year round and are often much more difficult to transplant. Conifers, such as pines, cypresses and junipers, can usually be successfully transplanted all year round.
What services and utilities may need to be located?	Services may include power (electricity), water supply, irrigation, stormwater, drainage, gas, and telecommunications cables.

What **legislation, local by-laws and regulations** may govern tree transplanting/transportation?



Legislation may include local government by-laws and government legislation such as the Environmental Protection Act, Tree preservation orders, Significant tree registers and/or legislation, Notification orders, Australian Standards for plant and equipment and traffic control devices, and regulations governing the proximity of powerlines to trees and the transportation of trees.

What **OHS hazards** may be associated with tree transplanting?

Hazards may include overhead or underground services and utilities, solar radiation, dust, noise, through traffic, holes, moving machinery and machinery parts, blunt/sharp tools, surrounding property, fertilisers, heavy and awkward shaped trees, falling debris, slopes, water, rock, and undergrowth.

What **suitable controls** are likely to be recommended?

Suitable controls may include procedures for handling, transporting and storing fertilisers, safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, appropriate use of personal protective clothing and equipment such as hats, boots, overalls, sunscreen lotion, gloves and goggles, correct manual handling and transportation techniques, safe lifting techniques, and basic first aid training.

What **tools, equipment and machinery** may be used in the transplanting process?

Tools and equipment may include lifting chains, frames and clamps, cranes, trucks, front end loaders, hand tools for digging and/or cutting parts of the tree such as spades and secateurs, watering equipment, wheel barrow or flat topped nursery trolley, hessian or sacking (also known as burlap), ropes, stakes or long pegs.

What **aftercare** activities may be planned to maintain tree health and viability?

Aftercare activities may include weed and disease control, mulching, fertilising, watering, pruning and tree protection/securing.

What information may be contained in the **transplanting program**?

Transplanting program may include location and site plans, site assessment details, location of services, relevant legislation, tree characteristics, OHS risks and controls, tools, equipment and machinery requirements, transplanting methods, transportation details, aftercare requirements, personnel requirements, timeframes, budgets, and environmental considerations, organic waste disposal, and recycling or re-use guidelines.

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 a tree transplanting program requires evidence that a person can plan a site and tree assessment, determine transplanting requirements, and document a transplanting program which incorporates aftercare activities.

The skills and knowledge required to plan a tree transplanting program must be **transferable** to a different work environment. For example, this could include different tree species, transplanting techniques and locations.

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:

- planning considerations concerning environmental impact of soil disturbance and land clearance
- environmental implications of transplanting activities including run off, drainage, salinity and soil erosion
- current practices and techniques in tree preparation, lifting, transportation and replanting
- tree transplanting techniques appropriate to the specific requirements of the species
- causes of stress in trees resulting from transplanting
- requirements for securing and signing trees on road vehicles
- OHS risks associated with transplanting trees
- the effect of adverse outdoor climatic conditions (e.g. rain, hail, or extreme wind), which may prevent or impede the transplanting 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:

- plan the transplanting program in an environmentally sensitive manner
- accurately document a transplanting program and communicate these plans and instructions to clients and other personnel
- calculate project resources and costs and develop a budget

- calculate tree mass/weight
 - contact local authorities to determine location of services and relevant legislation in regard to tree transplantation/transportation.
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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?	The communication of ideas may be applied when instructing personnel in the implementation of the transplanting program.
2. How can information be collected, analysed and organised (3) ?	Information from a site and tree assessment may need to be collected, analysed and organised into a tree transplanting program.
3. How are activities planned and organised (3) ?	Activities may need to be planned and organised according to tree species requirements.
4. How can team work (3) be applied?	Planning a tree transplanting program may involve working with management and/or the client to successfully achieve program outcomes.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical concepts may need to be applied when calculating tree mass/weight for transportation.
6. How can problem-solving skills (3) be applied?	Problem-solving skills may need to be applied if aftercare activities planned do not return the tree to normal health and vigour.
7. How can the use of technology (3) be applied?	Technology may be applied when recording, storing and communicating information in relation to the transplanting program.

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**.

RTF4019A**Prepare and implement plans to minimise tree stress**

This competency standard covers the preparation and implementation of plans to minimise stress in trees. Planning will involve consideration of client needs, site factors, tree species and OHS hazards. Planning is likely to be undertaken without supervision, with only general guidance on progress sought by managers. Responsibility for the organisation of the work of others involved in the installation of cable and bracing may be required.

Preparing and implementing plans to minimise stress in trees requires a broad range of horticultural skills, and requires the application of extensive knowledge in areas such as tree identification, tree physiology, tree stress techniques, and tree maintenance.

Element	Performance Criteria
1 Undertake assessment of tree	1.1 OHS hazards are identified, risks assessed and suitable controls identified. 1.2 Tree is assessed to determine suitability for remedial work based upon the overall health and vigour of the specimen. 1.3 Structural treatments are determined and recorded according to enterprise guidelines. 1.4 Site conditions are assessed for equipment, personnel and access requirements.
2 Plan for remedial work	2.1 Crown and branches are examined and their vitality and integrity ascertained to ensure works can be safely implemented. 2.2 Pruning strategies are developed with regard to mass energy ratios to ensure pruning is undertaken without damage to the operator, the tree or property. 2.3 Structural work is planned in a manner to cause minimal stress and according to compartmentalisation of decay in trees (CODIT) principles. 2.4 Legislation, regulations and by-laws relating to tree work are addressed in the planning phase. 2.5 A written plan is prepared which incorporates all of the above information.

3	Supervise structural work on trees	3.1	The work plan is communicated to the work team in a clear and concise manner.
		3.2	Materials, tools and equipment required to undertake work are checked for serviceability, and to ensure they meet the requirements of the plan.
		3.3	Work is implemented according to the plan and enterprise guidelines.
		3.4	The completed program is assessed to ensure work has been undertaken according to the plan and client needs.

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 OHS hazards may apply to this standard?	OHS hazards may include unstable tree, falling limbs, working at heights, extreme climatic conditions such as heat, cold, wind, fatigue, insects, and operating equipment.
What OHS controls may need to be considered when planning to install cable and bracing?	OHS controls may include the provision of personal protective equipment such as rubber soled boots, helmets, tear resistant overalls and safety glasses, maintenance and safe use of safety harnesses, approved ladders and ropes, the erection of signage and barriers, a first aid kit on site, and taking regular rests and drinking fluids to prevent dehydration.
What structural treatments may apply to this standard?	Structural treatments may include crown lifting, thinning, reduction and shaping, cable and bracing.
What factors should be considered when designing pruning strategies ?	Pruning strategies may be designed for a range of situations influenced by the following factors: size, light, aesthetics, competition, structure, shape, density, growth re-direction, modification of flowering/fruiting behaviour, damage, general clearances, signage, and sight lines.
What legislation, regulations and by-laws are likely to apply to the installation of cable and bracing?	Legislation, regulations and by-laws may include Environment Protection Act, local council regulations, and duty of care, Australian Standards, special licences and permits, and manufacturers specifications.

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 and implementing plans to minimise stress in trees requires evidence that an assessment can be made of the tree concerned, that a written plan can be prepared that provides all the relevant information required to undertake remedial work, and that the work can be supervised to ensure the plan was implemented to the required standard.

The skills and knowledge required to minimise stress in trees must be **transferable** to a different work environment. For example, this could include different trees species, structural techniques and tree locations.

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 effects of different tree pruning strategies
 - OHS issues in relation to working in hazardous situations with trees
 - identification and evaluation of structural defects in trees
 - the principles of identifying physiological damage to trees
 - an awareness of relevant legislation, regulations and by-laws.
-

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:

- complete documentation accurately
 - present information orally and in writing to individuals and groups
 - determine quantities and costings
 - collate and analyse information and prepare written progress reports
 - supervise operations in such a way that no damage occurs to equipment, property or personnel.
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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?	Communication of ideas and information may be applied when informing the work team of the work plan.
2. How can information be collected, analysed and organised (3) ?	Information may need to be collected, analysed and organised when assessing a tree for structural damage and disease.
3. How are activities planned and organised (3) ?	Activities may be planned and organised to minimise OHS risks to personnel.
4. How can team work (3) be applied?	Team work may need to be applied to undertake structural pruning.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical ideas and techniques may need to be applied when calculating material quantities and costs.
6. How can problem-solving skills (3) be applied?	Problem-solving skills may need to be applied when assessing the tree structure
7. How can the use of technology (3) be applied?	The use of technology may be applied when writing a plan for work required on trees.

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**.

RTF4021A

Plan the removal of trees

This competency standard covers the process of planning for the removal of trees. This includes a site assessment, determination of removal methods, equipment requirements and documenting the plan for implementation.

Planning is likely to be undertaken without supervision, with only general guidance sought by management and/or the client. Responsibility for and limited organisation of the work of others engaged in the removal of trees may be involved. Planning tree removal requires a broad range of arboriculture skills and extensive knowledge in felling and dismantling techniques.

Element	Performance Criteria
1 Undertake a site assessment	1.1 Site assessment is undertaken to determine the most appropriate method of tree removal according to tree characteristics and site factors. 1.2 All relevant tree and site measurements are calculated and documented to ensure tree removal can be undertaken in a safe and efficient manner according to enterprise guidelines. 1.3 Liaison with local authorities is undertaken to determine location of services and utilities, and legislation, local by-laws and regulations governing the removal of trees. 1.4 Existing and/or potential OHS hazards are identified, risks assessed and suitable controls recommended.
2 Evaluate determining factors for tree access and removal	2.1 Branch and structural integrity are checked for their viability to sustain tree climbing. 2.2 Suitable alternatives are recommended when the condition of a tree is determined as hazardous to a climber. 2.3 Timing of tree removal is determined according to relevant safety and environmental factors. 2.4 The appropriate tools, equipment and machinery are identified according to with the site assessment and other determining factors.
3 Document the tree removal plan	3.1 Removal plan is documented according to management and/or client needs and enterprise guidelines.

- 3.2 Resources and costing details are determined and presented to management and/or the client in accordance with enterprise guidelines.
 - 3.3 Removal plan is communicated to the relevant personnel for implementation.
 - 3.4 Completed tree removal project is assessed to ensure that removal was undertaken according to the identified plan and budget guidelines.
-

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 method of tree removal is likely to be employed?	Removal methods may include felling, dismantling, burning or chemical application.
What tree characteristics may need to be considered when undertaking a site assessment?	Tree characteristics may include leaf density of the crown, die back of branches, lean of tree, weight distribution, tree height, structural integrity, hang ups, climbing vines, fungal fruiting bodies, mistletoe infestation, swelling of branches or stem, possible insect infestation, and intergrowth with adjoining trees.
What site factors may need to be considered when planning to remove trees?	Site  rs may include available workspace for machinery and equipment, drop zone, proximity to buildings and to utilities such as powerlines, ground slope and general topography, existing flora and fauna, tree accessibility, soil condition, and public access to the site.
What services and utilities may need to be located?	Services may include power (electricity), water supply, irrigation, stormwater, drainage, gas, and telecommunications cables.
What legislation, local by-laws and regulations may govern tree removal?	 islation may include local government by-laws and government legislation such as the Environmental Protection Act, Tree preservation orders, Significant tree registers and/or legislation, Notification orders, Australian Standards for plant and equipment and traffic control devices, and regulations governing the proximity of powerlines to trees.

What existing and/or potential OHS hazards are likely to be identified?	Hazards may include solar radiation, dust, noise, and damp conditions, sharp/blunt cutting tools and equipment, moving machinery, slopes, water, rock, undergrowth, depressions/holes, falling branches and debris, tangled ropes, power lines, power surges, interruption or disturbance of electricity supply, placement of ladders, climbing ladders, ladder instability, and loss of balance.
What suitable controls are likely to be implemented?	Suitable controls may include procedures for handling, transporting and storing petrol, oils, and chemicals; appropriate personal protective clothing and equipment such as rubber soled/leather boots, high visibility vest, cut proof leg protection, gloves, helmets, goggles, safety harnesses, sun hats, hearing protection, face shields and sunscreen lotion; signage and barriers, approved ladders and ropes, safe operation and maintenance of machinery and equipment, safe procedures for working outdoors, correct manual handling techniques, basic first aid and emergency procedures training, and a two-way radio or mobile phone on site.
What questions may need to be considered when evaluating the viability of a tree for tree climbing ?	Questions to consider may include: Is there any root damage or tension? Is there any movement of the trunk at ground level? Is it single stemmed, co-dominant or multiple? Are fungal fruiting bodies or bracket fungus obvious to the eye? Are there hollows, decay or cracks with fluid exuding? Has the tree previously shed limbs? Are there epicormic shoots along the branches attached to the stem? How long are the branches? What angles do they face? How much terminal weight do they hold? What species is it? Is it prone to splitting? How heavy is the timber? Does the bark tear?
What alternatives may be recommended if the tree is not suitable for climbing?	Alternatives may include the use of climbing machinery such as elevated platforms, cherry pickers, cranes and ladders, and tree burning or chemical destruction.
What safety and environmental factors may be considered when determining the timing of tree removal?	Safety and environmental factors may include the strength and direction of prevailing winds, the extent of the lean of the tree, the slope of the land, targets such as buildings, roadways, powerlines, livestock and pedestrians; starting points when a number of trees are to be removed, intergrowth with other trees, availability of clear work space and escape routes, and felling reactions of different tree species.

What tools, equipment and machinery are likely to be identified for the removal of trees?	Tools and equipment may include axes, wedges and wedging hammers, hand or power winches, pruning tools, chainsaws, elevated platforms, cherry pickers, cranes, ladders, wood chippers, stump grinders, chemicals, skid steer loaders, work ropes, harnesses, lifelines, climbing spurs, prussik loops, karabiners, flip lines/pole straps, “D” shackles, pulleys, hobbs, and trifors.
What information may be contained in a tree removal plan ?	A tree removal plan may include site and location plans, site assessment details, tree characteristics, special instructions and/or conditions, OHS risks and controls, environmental considerations, removal methods and techniques, tools, equipment and machinery requirements, access and exit details, personnel requirements, waste, organic waste and debris disposal, and recycling and re-use guidelines.

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 the removal of trees requires evidence that a person can undertake a site assessment, determine factors in relation to the access to trees and removal methods to be implemented, and document a plan that incorporates information determined.

The skills and knowledge required to plan the removal of trees must be **transferable** to a different work environment. For example, this could include different tree species, removal techniques or tree locations.

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: • planning considerations concerning environmental impact of soil disturbance and land clearance • environmental implications of removal activities including run off, drainage, salinity and soil erosion • methods of felling and dismantling trees using specialised techniques and equipment • removal considerations in relation to type, condition, position and location of tree

- relevant legislation, by-laws and regulations that govern tree removal
- project planning
- OHS risks and controls in relation to removing trees.

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 operations in such a way that no damage occurs to equipment, property, environment, other trees or personnel
- prepare removal plans, specifications and budgets
- document a plan in a clear and concise manner for ease of interpretation
- communicate with personnel to ensure understanding of requirements of the plan
- calculate tree height and weights of branches and trunk sections
- calculate program resources and associated costs.

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?	Costs, timeframes and proposed tree removal methods may be communicated to management and/or the client.
2. How can information be collected, analysed and organised (3) ?	Information from a site assessment may need to be collected, analysed and organised into a tree removal plan.
3. How are activities planned and organised (3) ?	Activities may need to be planned and organised around safety and environmental factors.
4. How can team work (3) be applied?	Team work may need to be applied when communicating the removal plan to other personnel.

5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical ideas and techniques may need to be applied when calculating tree heights and branch weights.
6. How can problem-solving skills (3) be applied?	Problem-solving skills may need to be applied if the trees to be removed are not viable for tree climbing.
7. How can the use of technology (3) be applied?	Technology may be applied when recording, storing and communicating information relating to the removal plan.

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**.

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 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 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, 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, 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, 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 pH, soil ameliorants to improve soil 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 and plant monitoring, weed, pest and disease control, irrigation and scheduling, application of nutrients, soil 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-borne micro-organisms, 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 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 cultivation, nutrition programs, soil ameliorants, and cover crops.
What sustainable horticultural practices may be considered when promoting plant health?	These may include horticultural practices which minimise detrimental environmental impacts and optimise beneficial environmental impacts, such as IPM, targeted, minimal 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 activities 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.
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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.
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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 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 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**.

RTF4514A**Develop soil survey maps**

This competency standard covers the process of surveying soil characteristics and developing maps to identify any areas of concern and to assist in decision-making about plants/crops, irrigation and drainage. This is usually without supervision but with general guidance on progress. It requires knowledge of soil testing, the environmental impact of irrigating and the ability to use soil and water testing techniques.

Element		Performance Criteria	
1	Determine soil characteristics by performing a soil survey	1.1	The density and depth for a representative sampling of the area are determined
		1.2	Holes are excavated as determined at sampling sites according to enterprise policy and OHS requirements
		1.3	Soil samples are collected for off-site assessment using recommended procedures
		1.4	Samples for off-site testing are labeled with relevant information according to enterprise and testing agency guidelines
		1.5	The physical characteristics of the soil are determined in line with investigative requirements
		1.6	The chemical characteristics of the soil are determined as required
		1.7	Results are recorded in an established format according to enterprise guidelines
2	Interpret soil analysis results	2.1	The soil types of the sample area are classified according to standards for soil classification
		2.2	The acceptable soil parameters for specified plants are determined from published data and historical records
		2.3	Collected results are compared with established parameters for actual or proposed land use and production
		2.4	Soil characteristics are evaluated to determine whether they can be altered to meet plant needs
		2.5	The Readily Available Water values for irrigation sites are determined in line with industry standards
		2.6	Interpreted results are mapped in an established format according to enterprise guidelines

3	Plot topography and soil survey data on property map	3.1	Property boundaries and property features are defined
		3.2	Paddocks or irrigation areas are identified
		3.3	Contour or spot level information is plotted
		3.4	Soil sampling sites are plotted on map
		3.5	Soil profile and irrigation characteristics for each sampling site and/or irrigation area are described and indexed to the map
		3.6	The Readily Available Water values for irrigation sites are indexed to the map
		3.7	Areas of specific concern are plotted on the map and descriptions are indexed to the map

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 equipment might be used for a soil survey ?	Equipment may include hand auger, back hoe, equipment for pH testing such as soil test kits or electronic pH testing device, hand held salinity/EC meter, tape measure, sample bags, plastic overlays, aerial photographs, charts and tables of soil characteristics.
What OHS requirements may be relevant to this standard?	OHS requirements may include safe systems and procedures for outdoor work, including protection from solar radiation, dust and noise, the selection, use and maintenance of relevant personal protective clothing and equipment and protection against chemical residues, including that in/on foliage, water, soil and other items.
What soil may be relevant to this standard?	Soils may include field sites and specialist growing media.
What soil testing agencies might be used?	Soil testing agencies may be government, commercial or private consultants.
What physical characteristics of the soil might be identified?	Physical characteristics may include colour, texture, structure, depth of root zone and depth of water table.
What chemical characteristics of the soil might be identified?	Chemical characteristics may include pH, salinity and carbonate content and nutrient (both macro and micro) availability.
What soil survey data might be plotted on the property map?	These may include top soil types, soil profiles and Readily Available Water (RAW).

What maps may be developed?	These may include contour maps and aerial photo maps and may include the use of overlays to indicate various categories of data.
What areas of concern might be plotted on the map?	These may include saline patches, leaking channels, acid soils, weed infestation, lack of shelter from prevailing winds, awkward paddock size or design, high water table, access problems, herbicide resistance, animal/plant disease problems, and water and wind erosion.
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 soil survey maps requires evidence that a person can perform a soil survey, analyse survey results, determine soil characteristics and plot topography and soil survey data on a property map.

The skills and knowledge required to develop soil survey maps must be **transferable** to a different work environment. For example, this could include different soil types, environments, 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: • Methods and techniques of soil sampling • Relevant enterprise OHS and environmental requirements including the use of personal protective equipment • Environmental impacts of irrigation, using water from any ground or underground source • Soil types and profiles • Physical and chemical properties of soils • Soil quality factors • Soil water retention testing techniques • Water table and salinity • Readily available water (RAW).

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:

- Collect and analyse data
 - Read and apply testing agency procedures
 - Label information for off-site testing
 - Identify adverse environmental impacts of irrigation activities and appropriate remedial action
 - Interpret published data and historical records to identify acceptable soil parameters
 - Plot information on a map
 - Use soil and water testing techniques
 - Follow relevant enterprise OHS and environmental 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?	Documenting soil survey data.
2. How can information be collected, analysed and organised (2) ?	Collecting and analysing soil survey data.
3. How are activities planned and organised (2) ?	Developing soil survey maps.
4. How can team work (2) be applied?	Using off-site assessment of samples.
5. How can the use of mathematical ideas and techniques (2) be applied?	Calculating RAW values, topographical data and analysing comparative statistical data.

6. How can problem solving skills (2) be applied?	Identifying and analysing areas of concern on a property.
7. How can the use of technology (2) be applied?	Using electronic testing equipment.

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**.

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RTF5001A**Develop a horticultural production plan**

This competency standard covers the process of developing a production plan for a horticultural enterprise. Planning requires consideration of market requirements and site factors, suitable plant species and cultivars, resources and equipment for establishing production sites, planting and maintenance, and preparation of plans, specifications, quotations and associated documents.

Work is likely to be under limited supervision with checking related to overall progress by senior managers. Responsibility for the work of others and team co-ordination may be required. Planning is usually undertaken within policy guidelines and procedures where discretion and judgement are required in the selection of technology, organisation of work, and the achievement of outcomes within time and budgetary constraints.

Element**Performance Criteria**

1	Carry out preliminary planning activities	1.1	Client preferences and requirements for the horticultural product are understood and confirmed according to the enterprise marketing and business plans.
		1.2	The production site is assessed for growing environment factors, services and site modifications .
		1.3	Research is conducted into the characteristics and growing requirements of plant species and cultivars, legal attributes of the production site, and local by-laws and restrictions that may affect the production plan.
		1.4	Sustainable land use issues that may affect planned production are identified and, if necessary, reported to relevant personnel for further research.
		1.5	Production targets are set that are consistent with the marketing strategy and business plan.
		1.6	Production requirements in terms of quantity, quality and availability of the product are determined.

		1.7	A preliminary plan that reflects client preferences and requirements, and takes into account site factors and any identified sustainable land use requirements is developed and presented to appropriate personnel for discussion and approval.
2	Determine the requirements of horticultural production	2.1	Plant species and cultivars that are appropriate to the site and consistent with the agreed preliminary plan are identified, and the required quantity calculated, costed and availability confirmed with the supplier.
		2.2	Plant establishment procedures consistent with the agreed preliminary plan are selected according to the characteristics and growing requirements of available plant materials, site factors, the resources and equipment available and the sustainable land use factors affecting the success of production.
		2.3	Design of the production site includes irrigation and drainage systems, and takes into account the growing requirements of plants and sustainable land use practices.
		2.4	Cultural management of the growing environment from planting to harvest is provided for according to client requirements, site capabilities and enterprise standards, and encourages optimal growth.
		2.5	Harvesting dates to meet market deadlines are determined according to enterprise policy.
		2.6	Resources, tools, equipment and machinery required for the establishment of the production site, propagation of plants, planting, cultural management of the growing environment, harvesting and postharvest care are identified, costed and availability confirmed with suppliers, contractors and appropriate personnel.
		2.7	OHS hazards associated with production activities are identified, risks assessed and controls developed according to enterprise guidelines, costed and documented in the plan.
		2.8	Policy concerning out-of-standard products is identified according to enterprise customer service, quality assurance policies and marketing strategy.

3	Schedule production activities	3.1	Staged implementation and development of product are outlined, where appropriate, with access for future works provided for according to client, enterprise and site requirements.
		3.2	Timelines for preparations, the establishment of the production site, propagation of plants, planting, cultural management of the growing environment, harvesting and postharvest care are determined taking into account the needs of the plant species and cultivars, the softscape and hardscape components, site conditions and any other planning requirements.
		3.3	Timing within the plan ensures that available enterprise production facilities and space are effectively and efficiently utilised.
		3.4	Marketing is planned and scheduled according to the production schedule and marketing strategy.
4	Plan monitoring of the production plan	4.1	Production activities to be monitored, the format for recording factors, frequency of monitoring and the thresholds for remedial action are determined according to enterprise and industry quality assurance policies.
		4.2	Required remedial action is documented for implementation by staff according to enterprise and industry quality assurance policies.
		4.3	Effectiveness of the monitoring system is reviewed on a regular basis according to enterprise and industry quality assurance policies.
		4.4	The production program is compared with feedback and projections from clients according to sound business practice.
5	Prepare and document the production plan and specifications	5.1	Detailed plan, specifications and quotation are prepared based on horticultural conventions and the requirements of production, and presented to appropriate personnel for acceptance.
		5.2	Scaled production site plan is produced which can be readily interpreted and understood by on-site personnel according to enterprise standards.
		5.3	Detailed on-site procedures and schedules required for production are developed and documented.

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.

Who may be referred to as a client ?	Clients may include retail customers and commercial clients. Clients may include private individuals, companies, community groups, government agencies, or a combination of these entities.
What preferences and requirements may clients have?	These may include the purpose or intended use of the product, preferred plant species and cultivars, plant characteristics, growth habits and cultural requirements, on-going maintenance of the product, quality and grades, quarantine specifications and protocols, presentation, packaging, postharvest care of the product, quantities, availability, returns policy or non-compliance policy, contractual arrangements, pricing structures, budget limitations, payment terms and timelines for distribution and delivery of product.
What horticultural products are relevant to this standard?	Industry sectors involved in production may include nursery, turf, floriculture and production horticulture. Products may include fruit, vegetables, herbs, flowers, foliage, bulbs, tubers, nuts, mushrooms, seeds, wild harvest plants and oils, and trees, shrubs, turf, and containerised and bare-rooted grown plants.
What growing environment factors of the site need to be assessed?	Growing environment factors may include rainfall, humidity, wind, sunlight intensity, mean temperatures, season length, air quality and flow, growth media types, structure and profiles, nutrient toxicities and deficiencies, presence or absence of weeds, pests, diseases and beneficial organisms, the aspect of the site, slope, natural and artificial watercourses, other water supplies and quality, outcrops and existing plant species.
What services on the site may need to be considered?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What site modifications may influence the production plan?	Modifications may include human intervention such as the placement or removal of buildings, structures, features, plants and landscaping attributes, and natural events such as wildfire, flooding and drought.

What growing requirements of plant species and cultivars will need to be researched?	Growing requirements may include the factors that need to be manipulated to meet the requirements of the marketing strategy, the options available to manipulate the growing environment, and the selection of optimal conditions for the growing environment to meet growing parameters and market requirements. Growing requirements of plants may be met in controlled environments such as glasshouses, poly-houses, conservatories, tunnels and hydroponic systems, and in field production sites.
What local by-laws and restrictions may affect the production plan?	These may include prohibited plant species, restricted plant species, land-use restrictions, legal processes and requirements for site development, and work activities.
What sustainable land use issues may arise when developing a production plan?	Sustainable land use issues may include waste minimisation, energy conservation, water resource management, cultural practices, weed, pest and disease control, and conservation of heritage values such as native vegetation.
What plant establishment procedures may apply to this standard?	Softscape features of the production site may include testing of growth media for physical and chemical characteristics; construction of soil profiles; application of soil treatments; preparation of growth media for planting; propagation of planting material, potting and growing-on; planting methods; post-planting care; and the retention of site debris. Hardscape features of the production site may include installation of controlled environment and propagation facilities; installation of irrigation and/or drainage systems; the protection of plants by fencing; the erection of trellising; and controlling pedestrian and vehicular traffic through the erection of signs and barriers.
What is involved in the cultural management of the growing environment ?	Management of the growing environment may be achieved through cultural practices including growth media preparation, watering, fertilising, weed, pest and disease control, integrated pest management, crop regulation such as canopy management, pruning, de-budding and use of growth hormones and retardants, light manipulation, air, temperature and humidity control, trellising, staking, tying and potting-on.

What OHS hazards may be identified as part of the production plan?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil-, air- and water-borne micro-organisms, chemicals and hazardous substances, confined spaces, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, slippery and uneven surfaces, and flying and falling 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 PPE including sun protection; 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; appropriate use of safety equipment such as signage and protective barriers; basic first aid available on site; personal hygiene, and reporting problems to managers.
What specifications for staged implementation may apply to this standard?	These may include gradual establishment of production site, planting during different times, and provision of access for future works.
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 production plan for a horticultural enterprise requires evidence that a person can assess market requirements and site factors, select suitable plant species and cultivars, determine resources and equipment for establishing production sites, planting and maintenance, and prepare plans, specifications, quotations and associated documents.

The skills and knowledge required to develop a production plan must be **transferable** to a different work environment. For example, this could include different flower, vegetable and/or fruit varieties, production processes 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:

- establishment and maintenance of a range of enterprise horticultural products in relation to client needs and the standards required by the marketplace
- establishment procedures, plant selection and cultural practices for a range of enterprise horticultural products
- the advantages and limitations of sustainable horticulture systems
- the role of business and marketing plans and client consultation processes in planning horticultural production
- processes and techniques for preparing, costing and documenting plans for and scheduling horticultural production.

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 client, staff, managers, suppliers, contractors and consultants
 - research and evaluate information
 - record all relevant information
 - comply with legislative requirements
 - document plans, specifications and production work procedures and write reports for the understanding of staff, managers, clients and contractors
 - calculate the cost and spatial and logistical requirements of components of the horticultural production plan.
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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?	Details of the production plan and scheduling should be communicated with senior management orally and in writing. There is likely to be negotiation between the developer of the production plan and the client to achieve objectives.
2. How can information be collected, analysed and organised (3) ?	Some information will need to be researched and/or obtained from test results. Information addressing the specific requirements of the production plan should be analysed and outcomes discussed with the client and other members of the work team. Information about production activities should be organised and presented as a site plan, documented plans, quotation, written work procedures and timeline chart, and schedules for production 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 plan for horticultural production should reflect the activities required to achieve the production targets and business objectives.
4. How can team work (3) be applied?	Planning horticultural production may involve working with other members of a team to achieve the desired outcomes.
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, planting and application rates.
6. How can problem-solving skills (3) be applied?	Problems relating to the requirements of the client, nature of the production site, availability of resources and equipment, costs and environmental issues may arise during planning of horticultural production.

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 and monitor the production plan.
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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**.

RTF5004A**Manage landscape projects**

This competency standard covers the process of the managing landscape projects.

Project management work is likely to be undertaken alone or under broad guidance.

Responsibility for the planning and management of the work of others may be involved.

Landscape project management requires the self-directed application of extensive knowledge including regulations that may affect landscape projects and techniques for preparing project outlines. It may also include technical and other skills such environmental risk management and the contractual requirements of landscape contracts.

Element**Performance Criteria**

1	Identify issues relating to the landscape project	1.1	The goals and objectives of the project are identified and discussed with the client and/or management.
		1.2	Landscape documentation is analysed to determine the nature and scope of the project.
		1.3	Potential constraints to the success of the project are identified.
		1.4	The environmental impact of the proposed landscape project works is considered at this stage.
		1.5	OHS hazards are identified, risks assessed and suitable controls implemented.
2	Maintain effective client liaison	2.1	Responsibilities of all parties involved in the project are clarified according to the contract.
		2.2	Procedures to vary the contract are clarified to the satisfaction of all parties involved in the project.
		2.3	Emergency procedures are identified to the satisfaction of all parties involved in the project according to contract terms and conditions.
		2.4	Communication obligations in respect of the work program are established according to contractual obligations and sound business practice.
3	Develop work schedule	3.1	Work schedules and timelines of operations are identified and documented in a form that is accessible and understandable to all relevant personnel.

		3.2	Resources required for the landscape project are identified according to the contract and landscape design.
		3.3	Quantity, quality and timing of supply of each input and service are identified and documented.
		3.4	Key performance outcomes and indicators are established to measure performance of all operations and personnel.
4	Manage contractors	4.1	Standard contracts are prepared for specific works in line with the landscape design and contract.
		4.2	Progress of works against contract is monitored according to enterprise standards.
		4.3	Variations and non-conforming elements of the contract are identified and recorded.
		4.4	Progress payments and final payments are initiated according to the terms of contract.
5	Submit works for hand over	5.1	Site inspection is undertaken with relevant personnel at completion of works and prior to hand over according to enterprise guidelines.
		5.2	All items below specification are noted, recorded and rectified according to enterprise guidelines and contract terms and conditions.

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 type of landscape project might be managed?	Project types may include domestic and commercial landscaping, garden restoration and maintenance, pruning, draining a water body, turf renovation, revegetation, changing use of site, organising site for a special event, earthworks and earth-forming activities.
What landscape documentation may need to be analysed?	Documentation may include drawings, specifications, plans, computations, quotations, and bills of quantities, legislation, reports, site assessments and contracts.
What potential constraints may affect the outcomes of the project?	Constraints may include finance, OHS risks, legal complications, legislative framework and controls, approval by authorities, personnel, availability of machinery and materials, timelines, adverse weather conditions, or machinery and equipment breakdown.

What environmental impacts may need to be considered?	Any landscape project works may impact on the environment in either a positive or negative manner. If it involves drainage and irrigation this may reduce excess water, nutrient and chemical flow into natural waterways. If the works involve excavation, then this may damage the soil structure and stability of the site, damage remnant vegetation and affect water flow. Off site contamination of water bodies with chemicals and solid matter may also occur.
What OHS hazards may apply to landscape project works?	Hazards may include disturbance of services, solar radiation, dust, noise, uneven surfaces, holes, moving machinery and machinery parts, powered equipment and hand tools, and manual handling.
What suitable controls are likely to be implemented?	Suitable controls should be in line with enterprise guidelines and may include cleaning and storing of materials and equipment, appropriate use of personal protective equipment for sun, noise and dust protection; safe operation of machinery and equipment, correct manual handling, appropriate use of safety equipment such as signage and protective barriers, and basic first aid services on site.
Who would be the parties involved in landscape project works?	Parties involved may include client and specified representatives, subcontractors, staff and third parties.
What might be termed a resource in landscape projects?	Resources may include finances, materials, equipment and labour.
What might be included in standard contracts ?	Standard contracts may include general and technical specifications, special conditions, and schedule of rates, payment details, and timelines.
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 landscape projects requires evidence that a work program can be scheduled, that effective liaison can be maintained between the client, staff and contractors, and that landscape project works can be successfully submitted for hand over.

The skills and knowledge required to manage a landscape project must be **transferable** to a different work environment. For example, this could include different types of projects, landscape sites 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:

- contract preparation and administration
- tender process
- project management principles
- regulations having possible bearing on landscape projects
- public liability and legal responsibilities
- personal and professional liability
- duty of care
- environmental awareness to identify, manage and minimise any environmental risks
- landscape machinery and equipment such as earthmoving and earth forming machinery.

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:

- monitor the immediate and related environments and minimise adverse environmental impacts by contractors
- maintain effective communications with clients, contractors and staff
- report on and document clearly all aspects related to landscape project works
- calculate rates and time allocations.

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?	Oral and written communication with staff, supervisors, managers, suppliers, contractors, external agencies, industry contacts, community organisations and the public will be required.
2. How can information be collected, analysed and organised (3) ?	Information for the development of a work schedule will be collected through interpretation of various documents such as the contract, and landscape design and consultation with senior management and staff, and from own experience. This information will be analysed and organised in relation to the project goals and objectives and available financial, physical and human resources. Reports including statistical and financial data will need to be produced for senior management.
3. How are activities planned and organised (3) ?	The planning and organisation of own work and that of others should proceed in a logical, orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. Landscape operations, purchasing, scheduling, monitoring, performance management and reporting should reflect the activities required to achieve the requirements of the contract.
4. How can team work (3) be applied?	Managing a landscape project will involve participating in, facilitating and leading a team or teams to achieve the outcomes of the contract.
5. How can the use of mathematical ideas and techniques (3) be applied?	Sophisticated mathematical understanding will be required to analyse data regarding maintenance and development budgets, income and expenditure, and physical aspects such as dimensions, application rates, energy conversion rates and quantitative environmental impacts. Statistical data will need to be provided to support monitoring and evaluation of project operations.
6. How can problem-solving skills (3) be applied?	Problems of a complex nature relating to all aspects of management will require problem-solving skills.
7. How can the use of technology (3) be applied?	Technology will be required to record, store and communicate ideas and information related to management of the landscape project. It will also be used to produce reports on performance and recommended improvements.

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**.

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.
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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 plants may be relevant to this competency standard?	Plants may include species and cultivars that are containerised and open-grown; fruit, vegetable and herb crops; flower, foliage and oil crops; turf grasses and broad-leaf species and varieties.
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; safe manual handling systems and procedures; safe systems and procedures for outdoor work, 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, weather and weather forecasts, as well as the local geography and the organisations 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.

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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.
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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 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**.

RTF5008A**Plan the establishment of sports turf playing surfaces**

This competency standard covers the process of planning the establishment of sports turf playing surfaces and the development of a relevant design for the site, specifications and work procedures. Planning will require consideration of client needs, site factors, plant selection and plant requirements, establishment and maintenance procedures, OHS hazards and environmental impacts.

Work is likely to be under limited supervision, with checking related to overall progress by senior managers. Responsibility for the work of others and team co-ordination may be required. Planning is usually performed within policy guidelines and procedures where discretion and judgement are required in the selection of technology, work organisation and the achievement of outcomes within time and budgetary constraints.

Element		Performance Criteria	
1	Carry out preliminary planning activities for turf establishment	1.1	Client preferences and requirements for the sports turf playing surface are understood and confirmed.
		1.2	The site is assessed for biophysical factors, services and site modifications.
		1.3	Research is conducted into turf plant species and cultivars, legal attributes and local by-laws and restrictions that may affect the plan for turf establishment.
		1.4	Environmental implications of the planned turf establishment works are identified and, if necessary, reported to relevant personnel for further research.
		1.5	A concept plan that reflects client preferences and requirements, and takes into account site factors and any identified environmental requirements is developed and presented to the client for discussion and approval.
2	Determine requirements of turf establishment works	2.1	Plants that are appropriate to the site and consistent with the agreed concept plan are identified and the required quantity calculated, costed and availability confirmed with the supplier.

		2.2	Turf establishment procedures consistent with the agreed concept plan are selected according to the characteristics of available plant materials, site factors, the resources and equipment available and the environmental factors affecting the success of the turf establishment works.
		2.3	Design of the soil profile to support the playing surface takes into account the turf use, soil characteristics and other site and local environmental factors, and includes irrigation and drainage systems that accord with enterprise irrigation and drainage plans.
		2.4	Management of juvenile turf is provided for according to client requirements, site capabilities and enterprise standards and encourages optimal growth.
		2.5	Resources, tools, equipment and machinery required for the construction of soil profiles, planting and ongoing maintenance of the sports turf playing surface are identified, costed and availability confirmed with suppliers, contractors and appropriate personnel.
		2.6	OHS hazards associated with the turf establishment works are identified, risks assessed and controls developed according to enterprise guidelines, costed and documented in the plan.
		2.7	Staged implementation and development are outlined where appropriate, with access for future works provided for according to client, enterprise and site requirements.
		2.8	Timelines for preparations, construction of soil profiles, planting and maintenance are determined taking into account the needs of the turf species and cultivars, the softscape and hardscape components, site conditions and any other planning requirements.
3	Prepare and document the turf establishment plan and specifications	3.1	Detailed plan, specifications and quotation are prepared based on horticultural conventions and the requirements of the turf establishment work and presented to the client 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 establishment of the sports turf playing surface and its ongoing maintenance are developed and documented.

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.

Who may be referred to as a client ?	Clients may include the enterprise's management or a private individual, company, community group, government agency, or a combination of these entities.
What preferences and requirements may clients have?	These may include the purpose or intended use of the sports turf playing surface, preferred turf plant species and cultivars, plant characteristics, growth habits and cultural requirements, maintenance services for the turf playing surface, budget limitations, and timelines for implementation of the turf establishment works.
What sports turf playing surfaces may apply to this standard?	Sports turf playing surfaces may include golf course surfaces, bowling greens, cricket pitches, tennis courts, other high performance surfaces and multi-purpose sports grounds.
What biophysical factors of the site may you need to assess?	Biophysical factors may include rainfall, humidity, wind, sunlight intensity, mean temperatures, season length, soil types, structure and profiles, nutrient toxicities and deficiencies, the aspect of the site, slope, natural and artificial watercourses, other water supplies and quality, outcrops and existing plant species.
What services on the site may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What site modifications may influence the turf establishment plan?	Modifications may include human intervention such as the placement or removal of buildings, structures, features, plants and landscaping attributes, and natural events such as wildfire, flooding and drought.
What resources may be used for research ?	Resources may include team members, senior managers, industry consultants, own knowledge, specific industry, technical and research literature, supplier specifications, catalogues, local historical performance data and industry best practice guidelines.
What legal attributes of the site may influence the turf establishment plan?	These may include conservation of the historical, cultural or heritage values of the site and particular features, the nature of ownership, covenants and easements.

What local by-laws and restrictions may affect the turf establishment plan?	These may include prohibited plant species, restricted plant species, land-use restrictions, legal processes, and requirements for site development and work activities.
What environmental implications may be associated with the planned turf establishment works?	Improved weed control, drainage, irrigation and soil structure resulting from turf establishment works may benefit the surrounding environment through minimisation of weed distribution, water logging, water and applied chemical run-off, and more effective water application and use by targeted plant areas. Detrimental impacts may include nuisance level noise and emissions associated with large-scale earthworks, hardscape installation and planting activities that may be required components of the turf establishment works.
What turf establishment procedures may apply to this standard?	Turf establishment procedures involving softscape features of the sports turf playing surface may include construction of soil profiles, soil treatments, preparation of soil surfaces for planting, planting methods, management of juvenile turf and the assessment of readiness of the turf for use. Turf establishment procedures involving hardscape features of the sports turf playing surface may include installation of irrigation and/or drainage systems, the protection of plants by fencing, and controlling pedestrian and vehicular traffic through the erection of signs and barriers.
What resources may be required for the turf establishment works?	Physical resources may include soil and plant testing consumables, rootzone, irrigation and drainage materials, soil additives such as gypsum, lime or zeolite, artificial fibre, organic matter, mineral fertiliser, turf grids, lock sand and fibre turf, fencing materials, weed, pest and disease control materials, irrigation and drainage system components, and excavation and construction materials. Human resources may include paid labour, contractors, suppliers and consultants.
What tools, equipment and machinery may be required for the turf establishment works?	Tools, equipment and machinery may include soil testing equipment, surveying equipment, hand tools, trailed, 3-point linkage and motorised machinery for excavation, soil treatment, planting, and turf maintenance operations.

What OHS hazards may be identified as part of the plan for the establishment of sports turf playing surfaces?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil-, air- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, slippery and uneven surfaces, and flying and falling 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 managers.
What specifications for staged implementation may apply to this standard?	These may include gradual establishment of turf surfaces in a sporting complex, planting during different times, and provision of access for future works.
What may be included in a quotation at this standard?	The quotation when estimating the cost of the turf establishment works may include a bill of quantities, and costs of labour, equipment and machinery, and professional and sub-contracted services. The bill of quantities may include unit costs, sub-contractor estimates, quantity calculations, brief specification of materials, contingency items, prime cost items, and development and/or consolidation works.
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 planning the establishment of sports turf playing surfaces requires evidence that a person can assess site factors, select suitable plant species, determine resources and equipment for constructing soil profiles, planting and maintenance, and prepare plans, specifications, quotations and associated documents.

The skills and knowledge required to plan turf establishment works must be **transferable** to a different work environment. For example, this could include different turf species, playing surfaces 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:

- the principles and practices of establishing and maintaining a range of sports turf playing surfaces in relation to client needs, and the standards required for the intended use of the surface
 - construction procedures, plant selection and cultural practices for sports turf playing surfaces
 - legislation and regulations relating to sports turf sites and turf establishment works
 - site evaluation techniques including analysis of the condition of soils, plants and the site for turf establishment activities
 - growth habits and cultural requirements of specific turf plant species and cultivars under a range of soil and environmental conditions
 - maintenance requirements and practices for specific turf plant species and cultivars prior to and after initial establishment
 - surveying principles and techniques
 - the role of project briefs and client consultation processes in planning turf establishment works.
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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:

- communicate and negotiate orally and in writing with the client, staff, managers, suppliers, contractors and consultants
 - research and evaluate information
 - record all relevant information
 - calculate the cost and spatial and logistical requirements of components of the turf establishment works
 - document plans, specifications and turf establishment work procedures, and write reports for staff, managers, clients and contractors
 - comply with legislative requirements.
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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 analysis of the site and selection of plants and hardscape components should be communicated with the client orally and in writing. There is likely to be negotiation between the developer of the turf establishment plan and the client to achieve objectives.

2. How can **information be collected, analysed and organised (3)**?

Some information will need to be researched and/or obtained from test results. Information addressing the specific requirements of the turf establishment works should be analysed, and outcomes discussed with the client and other members of the work team. Information should be organised and presented as a site plan, documented plans, quotation, written work procedures and timeline chart, and schedules for turf establishment 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 plan for turf establishment works should reflect the activities required to implement the works.
4. How can team work (3) be applied?	Planning the establishment of sports turf playing surfaces may involve working with other members of a team to achieve the desired outcomes.
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, planting and application rates.
6. How can problem-solving skills (3) be applied?	Problems relating to the requirements of the client, nature of the turf establishment site, availability of resources and equipment, costs and environmental issues may arise during planning of the turf establishment works.
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 turf establishment plan.

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**.

RTF5009A**Plan the restoration of
parks and gardens**

This competency standard covers the process of planning the restoration of parks and gardens of historical or cultural significance, and the development of a relevant site plan, specifications and work procedures. Planning requires consideration of client needs, site factors, plant selection and plant requirements, restoration procedures, OHS hazards and environmental impacts. This unit is applicable to a site that incorporates non-indigenous species.

Work is likely to be under limited supervision, with checking related to overall progress by senior managers. Responsibility for the work of others and team co-ordination may be required. Planning is usually performed within policy guidelines and procedures where discretion and judgement are required in the selection of technology, work organisation and the achievement of outcomes within time and budgetary constraints.

Element		Performance Criteria	
1	Carry out preliminary planning activities for restoration works	1.1	Client preferences and requirements for the park or garden are understood and confirmed.
		1.2	The site is assessed for biophysical factors, historical and cultural attributes, services and site modifications .
		1.3	Research is conducted and legal attributes and local by-laws and restrictions are identified that may affect the plan for restoration works.
		1.4	Environmental implications of the planned restoration works are identified and, if necessary, reported to relevant personnel for further research.
		1.5	A concept plan that reflects client preferences and requirements and takes into account heritage issues , site factors and any identified environmental requirements, is developed and presented to the client for discussion and approval.
		1.6	Other professionals are consulted to assist in research and planning of restoration works according to legislative and enterprise requirements.

2	Determine requirements of restoration works	2.1 Plants that are appropriate to the site, consistent with the agreed concept plan and the original design philosophy, and take into consideration historical and cultural values are identified and the required quantity calculated and costed, and availability and genetic integrity confirmed with suppliers. 2.2 Restoration procedures are selected consistent with the agreed concept plan and according to the characteristics of available plant materials, the resources and equipment available, and the environmental factors affecting the success of the restoration works. 2.3 Maintenance of softscape and hardscape components of the park or garden is provided for according to client requirements, enterprise standards and site capabilities. 2.4 Resources, tools, equipment and machinery required for the planting and ongoing maintenance of the restoration works are identified, costed, and availability confirmed with suppliers, contractors and appropriate personnel. 2.5 OHS hazards associated with the restoration works are identified, risks assessed and controls developed according to enterprise guidelines, costed and documented in the plan. 2.6 Staged implementation and development are outlined, where appropriate, with access for future works provided for according to client, enterprise and site requirements. 2.7 Timelines for preparations, planting and maintenance are determined taking into account the needs of the restoration species, the softscape and hardscape components, site conditions, and any other planning requirements.
3	Prepare and document the restoration plan and specifications	3.1 Detailed plan, specifications and quotation are prepared based on horticultural conventions, original design philosophy and the requirements of the restoration works, and are presented to the client 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 restoration of the park or garden and its ongoing maintenance are developed and documented.

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.

Who may be referred to as a client ?	Clients may include enterprise management, private individual, company, community group, government agency, or a combination of these entities.
What preferences and requirements may clients have?	These may include historical era or cultural style, original design philosophy, preferred plant species, plant characteristics, growth habits and cultural requirements, legislative requirements, the purpose or intended use of the restored park or garden, maintenance services for the park or garden, and budget limitations and timelines for implementation of the restoration works.
What biophysical factors may influence the restoration plan?	Biophysical factors may include rainfall, humidity, wind, sunlight intensity, mean temperatures, season length, soil types, structure and profiles, nutrient toxicities and deficiencies, the aspect of the site, slope, natural and artificial watercourses, other water supplies and quality, outcrops and existing plant species.
What historical and cultural attributes may influence the restoration plan?	These may include the historical or cultural importance of the park or garden and particular features, and past or present disturbance or alterations to park or garden use, plants, layout and features.
What services on the site may need to be located?	Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.
What site modifications may influence the restoration plan?	Modifications may include human intervention such as the placement or removal of buildings, structures, features, plants and landscaping attributes, and natural events, such as wildfire, flooding and drought.
What may be included as part of research ?	Research may cover historical, cultural and heritage values, original landscape master plans and/or designs. Research will also involve keeping accurate written and photographic records of unrestored site for later reference.

What resources may be used for research ?	Resources may include oral history, libraries, local archives, biological or structural remains, educational institutions, specific industry, technical and research literature, industry consultants, suppliers and contractors, enterprise managers and team colleague experience, own knowledge, local historical performance data and industry best practice guidelines.
What legal attributes of the site may influence the restoration plan?	These may include conservation of the historical, cultural or heritage values of the park or garden and particular features, the nature of ownership, covenants, charters, protocols and easements.
What local by-laws and restrictions may affect the restoration plan?	These may include prohibited plant species, restricted plant species, land-use restrictions, legal processes and requirements for site development and work activities.
What environmental implications may be associated with the planned restoration works?	Beneficial impacts may include the beautification, improved visitor access and contribution of the restored park or garden to neighbourhood, or municipal aesthetics or historical and cultural themes. Detrimental impacts may include nuisance level noise and emissions associated with large-scale earthworks, hardscape installation and planting activities that may be required components of the restoration works.
What heritage issues may affect the restoration plan?	Heritage issues may include the period of historical or cultural significance to be reinstated, significant designers, significant plants such as original plantings, protection of view lines, and screening of visually obtrusive features.
What professionals may be consulted?	These may be archaeologists, historians, community elders, botanists, landscape architects, engineers and garden specialists.

What restoration procedures may apply to this standard?	Restoration procedures involving softscape features of the park or garden may include soil treatments; preparation of soil surfaces for restoration works; propagation from remnant stock plants where possible; planting; and the retention of site debris. Restoration procedures involving hardscape features of the garden may include installation of irrigation and/or drainage systems; protection of plants by staking, tying and guarding; controlling pedestrian and vehicular traffic through the erection of signs and barriers; and the repair, restoration or replacement of park or garden structures, features and facilities.
What may be involved in the maintenance of softscape and hardscape components of the restored park or garden?	Maintenance of softscape components may involve top dressing, rolling, mowing, watering, fertilisation, pruning, monitoring plant health, the chemical, cultural or biological control of weeds, pests and diseases, and guarding against damage by local fauna and pedestrian and vehicular traffic. Maintenance of hardscape components may involve periodic inspection, cleaning, replacing components, and painting and minor repairs.
What resources may be required for the restoration works?	Physical resources may include soil and plant testing consumables, stabilising materials, weed mats, stakes, tree guards, fencing materials, soil ameliorants, fertilisers, weed, pest and disease control materials, irrigation and drainage system components, traditional appropriate treatments and products and restoration and construction materials. Human resources may include paid and volunteer labour, contractors, suppliers and consultants.
What tools, equipment and machinery may be required for the restoration works?	Tools, equipment and machinery may include soil and plant tissue testing equipment; hand tools; trailed, 3-point linkage and motorised machinery for excavation, soil treatment, planting and maintenance operations; and specialist restoration and construction equipment.
What OHS hazards may be identified as part of the plan for the restoration of a park or garden?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil-, air- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, slippery and uneven surfaces, and falling 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 managers.

What specifications for **staged implementation** may apply to this standard?

These may include gradual replacement of historically or culturally significant plant species, planting during different times and provision of access for future works.

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 planning the restoration of parks and gardens requires evidence that a person can assess site factors, select suitable plant species, determine resources and equipment for planting and maintenance, and prepare plans, specifications and associated documents for the restoration of historically or culturally significant parks and gardens.

The skills and knowledge required to plan restoration works must be **transferable** to a different work environment. For example, this could include different restoration projects, design philosophies, 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:

- historic parks and gardens management principles and guidelines including Florence and Burra Charter principles (International Charter of Monuments and Sites)
- construction procedures, plant selection and cultural practices for historically or culturally significant parks and gardens

- legislation and regulations relating to heritage sites and restoration works
- site evaluation techniques including methods of analysing the condition of soils, plants and waterways for restoration activities
- growth habits and cultural requirements of specific plants under a range of soil and environmental conditions
- maintenance requirements and practices for specific plants prior to and after initial establishment
- the role of project briefs and client consultation processes in planning restoration works.

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 client, staff, managers, suppliers, contractors and consultants
- research and evaluate information
- record all relevant information
- calculate the cost and spatial and logistical requirements of components of the restoration works
- document plans, specifications and restoration work procedures and write reports for staff, managers, clients and contractors
- comply with legislative 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 (3) be applied?	Results of the analysis of the site, client requirements, historical and cultural values, and selection of plants and hardscape components should be communicated with the client orally and in writing. There is likely to be negotiation between the developer of the restoration plan and the client to achieve objectives.
2. How can information be collected, analysed and organised (3) ?	Some information will need to be researched and/or obtained from test results. Information addressing the specific requirements of the restoration works should be analysed and outcomes discussed with the client and other members of the work team. Information about restoration works should be organised and presented as a site plan, documented plans, written work procedures and timeline chart, and schedules for park or garden restoration 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 plan for restoration works should reflect the activities required to implement the works.
4. How can team work (3) be applied?	Planning the restoration of parks and gardens may involve working with other members of a team to achieve the desired outcomes.
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, planting and application rates.
6. How can problem-solving skills (3) be applied?	Problems relating to the requirements of the client, nature of the restoration site, availability of resources, tools, equipment and machinery, costs and environmental issues may arise during planning of the restoration works.
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 park or garden restoration plan.

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**.

RTF5010A**Prepare a landscape project design**

This competency standard covers the process of preparing a landscape design for a large project. This landscape project may be on a private or public site and would include a number of design elements and components.

The preparation of a landscape project design is likely to be undertaken alone or under broad guidance. Landscape project design involves the application of extensive knowledge and skills, landscape design principles, drafting techniques and computer-assisted drawings (CAD).

Element**Performance Criteria**

1	Develop a design brief	1.1	Client is consulted to establish the purpose and requirements of design.
		1.2	Design brief is developed and agreed with the client.
		1.3	Cost structures and timelines are negotiated with the client.
2	Undertake a site analysis	2.1	Site where the landscape project is to be located is inspected.
		2.2	Physical elements and features of the site are recorded on a base plan.
		2.3	Assessment of soil, topography, aspect, existing vegetation and climatic factors is analysed and recorded on a base plan.
		2.4	Other relevant information is assessed and recorded on a base plan.
		2.5	Legal requirements and constraints on development are assessed.
3	Develop a concept design	3.1	Concept design is prepared to illustrate location and layout of proposed landscape project works according to the design brief.
		3.2	Consultation with the client is undertaken to establish agreement on options and approaches for development.
		3.3	Consistent graphic style is used to present the concept design.
4	Produce a final design	4.1	Detailed plan is drafted according to the design brief, concept design and enterprise guidelines.

- 4.2 Information on the design is relevant and precise, and clearly communicates project works to be undertaken.
 - 4.3 **Notes and specifications** are included on the design to assist in interpretation.
 - 4.4 Appropriate construction and engineering principles are applied to landscape design according to industry standards.
 - 4.5 Further **landscape documentation** is organised and/or prepared according to the design brief and enterprise guidelines.
-

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 physical elements and features are likely to be recorded?	Physical elements and features may include roadways, footpaths, buildings and other structures, water features, recreational facilities, public access, overhead/underground services and utilities, and existing trees, shrubs and other vegetation.
What other relevant information may need to be identified and analysed?	Other relevant information may include opportunities and constraints on development, historical and cultural factors, laws and regulations impacting on development, site for material storage and compound area, proximity to services and utilities, OHS issues, and environmental impacts of proposed landscape project works.
What type of landscape project works may need to be designed?	Landscape project works may include parks and garden establishment or restoration, construction of landscape structures and features, establishment or restoration of turf-playing surfaces, irrigation and drainage works, or a combination of all or some of the above.
What notes and specifications might be included on a final design to assist interpretation?	Notes and specifications may include the direction of North, the scale, legend of existing structures and features, technical specifications for structural components, client details, who developed the plan, plant species/varieties, maintenance issues and compliance regulations.

What further **landscape documentation** may need to be prepared?

Further landscape documentation may include contracts, specifications, quotations and bills of quantities such as contracts unit costs, sub-contractor estimates, quantity calculations, brief specification of materials, contingency items, prime cost items, and development and/or consolidation works.

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 a landscape project design requires evidence that a design brief can be developed, a site analysis can be undertaken, and a concept design and final plan can be produced.

The skills and knowledge required to design landscape structures and features must be **transferable** to a different work environment. For example, if a landscape project design can be prepared for a large-scale public park or garden, then the same principles should be applied when preparing a design for the landscape components of a golf course.

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:

- landscape design process
- construction and engineering principles
- drafting techniques
- cost estimating
- calculations of materials, labour, machinery and equipment
- environmental implications of landscape project works
- OHS issues when working at a desk/computer preparing designs and specifications.

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 a range of graphic techniques for illustrating landscape design components

- interpret legislation and regulations in relation to landscape project works
 - prepare a Bill of Quantities
 - cost estimate labour, machinery and equipment
 - operate CAD software.
-

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?	Communication of ideas and information may need to be applied when discussing the design brief with the client.
2. How can information be collected, analysed and organised (3) ?	Information may need to be collected, analysed and organised after a site analysis has taken place.
3. How are activities planned and organised (3) ?	Activities would be planned and organised around the time frame for the production of a landscape project design.
4. How can team work (3) be applied?	Team work may be applied when preparing the final landscape project design.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical ideas and techniques may be applied when using drafting techniques.
6. How can problem-solving skills (3) be applied?	Problem-solving skills may need to be applied if legislation or regulations dictate changes to the landscape project design.
7. How can the use of technology (3) be applied?	The use of technology may be applied in the production of the final design.

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**.

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 environment	3.1	Management objectives for controlled growing environment are determined, consistent with production plan.
		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.

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, media 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 of ambient humidity, light, growing media mean temperature, 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 and windows. Machinery and equipment may include computerised, LED, or mechanically operated pumps, fans, humidifiers, generators, heaters, reticulation units; growth media, 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.
What OHS hazards may be identified in the work area?	Hazards may include hazardous chemicals; potentially hazardous pot media, 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.

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 ideas and techniques (3) be applied?	Mathematical concepts may be required to measure 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 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**.

RTF5013A**Manage plant cultural practices for amenity horticulture**

This competency standard covers the process of managing a plant cultural program for amenity horticulture.

It requires the ability to determine the plant cultural requirements of the site, develop a plant cultural program, oversee its implementation, and monitor and review the program. It requires knowledge of plant recognition, plant cultural practices including turf and tree cultural practices, planning and reporting processes, relevant legislation, and supervision and budgeting.

Element	Performance Criteria
1 Define the plant cultural requirements of the site	1.1 The range of plants and grassed areas is surveyed and recorded.
	1.2 Materials, equipment and labour required for maintaining an amenity area are determined, sought and maintained.
	1.3 Consumables are determined, sought and stored for later use.
	1.4 Staff skills and knowledge are checked for maintenance of planted site.
2 Develop a plant cultural program for the site	2.1 Plant cultural practices are determined over a planning period.
	2.2 Resources are allocated and budgeted for.
	2.3 Specialist cultural practices are identified and specialist services are contracted.
	2.4 Allowance in the program is made for unforeseen circumstances, special events, damage caused by weather or acts of vandalism, and new developments.
3 Oversee implementation of the program	3.1 Routine and specialist practices are implemented.
	3.2 Staff are allocated and supervised.
	3.3 Materials and equipment are used according to OHS requirements and enterprise safe operating procedures .
	3.4 Contracted services are sought and performance monitored.

4	Monitor and review the program	4.1	Daily workplace records and other information relevant to the plant cultural program are gathered and stored.
		4.2	Costs and expenditure are checked against budgets.
		4.3	New works are identified and accounted for.
		4.4	The plant cultural program is checked against previous programs and adjustments are made as necessary.

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 cultural requirements are covered by this unit?	Plant cultural requirements include soil preparation and conditioning, planting, plant maintenance practices, staking, hedging, pruning, and all turf maintenance activities.
What materials and equipment are required for plant cultural practices?	Large and small motorised machinery and equipment such as turf maintenance machinery, pruning machinery and equipment, soil cultivation machinery, and gardening hand tools.
What consumables are required for plant cultural practices?	Consumables may include but are not limited to soils, top dressing sands, fertilisers, soil conditioners, irrigation components, sprays and chemicals, fuels and oils, stakes, labels, tree protection devices, seed, annuals, personal protective equipment, first aid requirements, and office requirements.
What specialist cultural practices might be contracted included in this unit?	Specialist cultural practices include turf maintenance activities such as renovating, top dressing, over-sowing, pest and disease control, specialist tree maintenance practices such as thinning, crown reduction, and tree structural management.
What OHS hazards might relate to the management of plant cultural practices?	Hazards may include disturbance or interruption of services, solar radiation, dust, noise, soil-, air- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, slippery and uneven surfaces, falling and flying objects and working at a height in or around trees.
What safe operating procedures might apply to this unit?	Safe operating procedures developed for machinery and equipment and particular plant cultural practices.

What records might be kept?	Records include daily work sheets and job rosters, incident reports, customer requests and correspondence with management or third parties.
What record keeping techniques might be used?	Records may be recorded manually or with proprietary software.
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 cultural practices for amenity horticulture requires evidence that plant cultural programs have been successfully and appropriately implemented and monitored in an enterprise. The skills and knowledge required to manage plant cultural practices for amenity horticulture must be **transferable** to a range of work environments and contexts. For example, this could include different plant cultural practices in a range of settings or climatic 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: • plant recognition skills • plant cultural practices for a wide range of amenity plants including native and exotic plants • turf maintenance practices • irrigation systems • plant nutrition practices • legislation or local by-laws relevant to trees, safe operating practices, OHS • supervision and team building • budgeting and planning.
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 a wide range of plant cultural requirements • determine and organise work schedules • source information

- gather and record information
 - supervise and lead a work team.
-

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?	Communication of ideas and information can be applied when sourcing information, developing work programs, leading team meetings and reporting to clients and/or management.
2. How can information be collected, analysed and organised (3) ?	Information can be collected, analysed and organised by researching plant cultural practices, developing programs and recording information.
3. How are activities planned and organised (3) ?	Activities are planned as required, or on a continuous basis and organised with others as a part of a team.
4. How can team work (3) be applied?	Teamwork is applied through the development of work schedules and in the execution of plant cultural practices.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical ideas and techniques can be applied when developing budgets and programs, rostering staff, calculating materials and negotiating with sub-contractors.
6. How can problem-solving skills (3) be applied?	Problem-solving skills can be applied when determining a plant cultural program, developing budgets and programs, rostering staff, calculating materials and negotiating with sub-contractors.
7. How can the use of technology (3) be applied?	The use of technology can be applied when implementing all aspects of the plant cultural program and gathering, recording and storing information.

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**.

RTF5018A**Assess trees**

This competency standard covers the process of assessing and making recommendations on tree health and condition. Tree assessment is likely to be undertaken alone or under broad guidance. Responsibility for the planning and management of the work of others may be involved. Tree assessment involves the self-directed application of knowledge with substantial depth in some areas such as tree identification, tree evaluation techniques and reporting methods.

Element		Performance Criteria	
1	Determine tree survey program requirements	1.1	Scope of survey is identified in line with client needs.
		1.2	All current data relevant to survey requirements is identified, sourced and recorded according to enterprise guidelines.
		1.3	Processes for data capture are identified in line with budgetary constraints.
		1.4	Equipment for tree assessment is checked and prepared for use.
2	Inspect and assess trees	2.1	Trees are inspected to determine their location, condition and hazard status according to survey requirements.
		2.2	Tree locations are accurately plotted on a scale drawing according to the size and extent of the project.
		2.3	Individual trees are assessed and their value nominated and recorded according to established industry practice, enterprise guidelines and historical data.
3	Compile a tree inspection report	3.1	The botanical and common name, age, health and condition of each tree is determined and recorded according to enterprise guidelines.
		3.2	All hazardous trees are identified and appropriate remedial action is recommended according to the condition of the survey.
		3.3	Tree inspection report is produced identifying and describing each tree including a recommended course of action to rectify all hazards, and any identified problem according to enterprise guidelines.

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 data capture may be relevant to this competency standard?	Processes include written field notes, photographs, and customised software.
What equipment may be used when assessing trees?	Equipment may include tree climbing apparatus, photographic equipment, potentiometer, tape measures, computers and appropriate software.
What valuation considerations may apply?	Valuation considerations may include size, condition, location, historic significance, rarity, and convertible timber content.
What tree valuation methods should be considered?	A number of tree valuation systems have been developed and recommended by various professional arboricultural bodies.

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 assessing trees requires evidence that trees have been assessed to industry standards, tree reports have been prepared, and that appropriate recommendations have been made to clients for action. The skills and knowledge required to assess trees must be **transferable** to a range of work environments and contexts. For example, this could include different types of trees in different workplace 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 unit are listed below: • principles and methods of identifying tree species and cultivars • indications of instability, decay, damage and stress in trees and their possible causes • principles and methods of determining tree heights • application of current tree valuation formulae

- legal requirements relating to the proximity of trees to buildings, services and access routes
- local tree protection and preservation laws.

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 trees
- identify signs of stress or ill health in trees
- value trees
- measure tree height and condition
- record data and prepare written reports.

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.

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1. How can communication of ideas and information (3) be applied?	Ideas and information can be communicated through written reports.
2. How can information be collected, analysed and organised (3) ?	Information can be collected, analysed and organised by compilation of written reports.
3. How are activities planned and organised (3) ?	Activities are planned and organised through work orders and/or contact with clients or third parties.
4. How can team work (3) be applied?	Team work can be applied in developing and implementing survey requirements and compiling reports.
5. How can the use of mathematical ideas and techniques (2) be applied?	Mathematical ideas and techniques can be used when establishing scope of work, measuring details of trees and producing reports.
6. How can problem-solving skills (2) be applied?	Problem-solving skills can be applied when determining the scope of works, dealing with new situations and calculating tree dimensions.
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7. How can the **use of technology (2)** be applied?

The use of technology can be applied with measuring and recording devices and apparatus.

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**.

RTF5302A**Develop a plan for a hydroponic system**

This competency standard covers the process of designing a hydroponic system. The design includes assessing a site for suitability, selecting the appropriate hydroponic system, and drawing a layout plan.

Designing is likely to be undertaken without supervision, with only general guidance on progress sought by managers and/or the client. The designing of a hydroponic system requires extensive horticultural knowledge of the main types of hydroponic systems, and understanding of nutrient solutions and cost benefit analysis.

Element		Performance Criteria	
1	Carry out preliminary research	1.1	Type of crop to be grown is researched based on sound marketing principles.
		1.2	The growing requirements of the crop are researched based on sound horticultural practices.
		1.3	The associated risks of growing a particular crop are established based on sound horticultural practices.
		1.4	Estimated yield and crop turnover time is calculated from historical data and research statistics.
		1.5	Quantity of the plants to be grown is determined based on a cost benefit analysis.
2	Assess the suitability of a site	2.1	The physical characteristics of the site are assessed.
		2.2	The proximity of the site to markets is ascertained and assessed.
		2.3	Legal requirements in relation to the site and the development of a hydroponic farm are identified.
		2.4	The environmental implications of developing a hydroponic farm on the site are identified and considered.
3	Select the required system	3.1	Main types of hydroponic systems are researched.
		3.2	Analysis is carried out on each type of system for the chosen crops.

		3.3	A cost/benefit analysis is carried out on each system for each type of crop required.
		3.4	The type of hydroponic system to be installed is determined .
4	Design the hydroponic system	4.1	The water collection and storage system is selected and documented on the plan.
		4.2	The irrigation system and components are selected according to the required volume of water and flow rate.
		4.3	The fertigation system is selected and documented.
		4.4	The dimensions of the controlled environment structure are determined following full consideration of the relevant factors .
		4.5	Environmental control system is determined and specifications documented on the plan.
5	Prepare and document the design	5.1	A design plan drawn to scale is developed, which can be readily interpreted and understood.
		5.2	Specifications and detailed costings are determined with the help of experts, if required.
		5.3	Detailed on-site procedures and schedules required for production are developed and documented.
		5.4	Documentation is presented to the client or management for final approval.

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 type of crops may be considered for hydroponic production?	Type of crops may include fruit, vegetables, herbs, flower crops and foliage plants.
What growing requirements may need to be considered in a hydroponic system?	Growing requirements may include nutrients, light, salt tolerance, humidity, carbon dioxide, airflow, temperature and water quality.
What risks may be associated with hydroponic production?	Risks may include pests and diseases, oxygenation levels, imbalance of nutrients, and incorrect environmental parameters.

What physical characteristics are likely to be assessed when selecting a site?	Physical characteristics may include climatic conditions such as potential for frost, hail, wind damage, average rainfall, daily temperatures and available sunlight; topography such as slope, aspect, drainage and windbreaks; and the quality and quantity of water supply.
What legal requirements are likely to be identified?	Legal requirements may include the identification of zoning, local or State government ordinances relating to the site, and waste management regulations under the Environment Protection Act.
What environmental implications are likely to be considered when designing a hydroponic farm?	Environmental implications may include drainage and the effective management of high nutrient effluent situations, the safe disposal of unused materials, chemicals and chemical containers, and the control of contaminants from soil, water or vegetable matter.
What are the main types of hydroponic systems ?	Hydroponic systems may include those that use a growing medium and those that do not. They may be a recirculating system, such as a gravity fed, or non-recirculating system.
What is likely to determine the type of system to be installed?	Determination may involve consideration of the physical characteristics of the site, type of crops to be grown, the set up and operating costs, the operator's/owners skills, and future modification or expansion requirements.
What types of water collection and storage systems may apply to hydroponic systems?	Water collection and storage equipment may include sealed dams and above ground tanks.
What factors will affect the choice of fertigation systems?	Factors may include dosing level required, and frequency of nutrient refill required.
What factors need to be considered when determining the design of the structure?	Factors may include convenient access for delivery vehicles to the site, storage areas and sheds; covered areas and work benches for sorting, packing and storing; cool room facilities, sealed surfaces (concrete or asphalt) for high traffic areas, the office, lunchroom and amenities; the position of greenhouses in relation to water storage and waste disposal facilities, and type of hydroponic systems.
What does the environmental control system involve?	The environmental control system may include humidity and temperature controls, exhaust fans, fans for moving the air, misting system, light, and reflective characteristics of cladding.

What is involved in doing a **detailed costing** of the hydroponic system?

Detailed costing may include a bill of quantities and costs of labour, equipment and machinery, and professional and sub-contracted services.

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 a hydroponic farm requires evidence that a site can be assessed for suitability, the appropriate hydroponic system can be selected, and a detailed design for the layout of the farm, system and equipment can be produced.

The skills and knowledge required to design a hydroponics farm must be **transferable** to a different work environment. For example, a person should be able to produce a design for a range of hydroponic systems and plant types.

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:

- advantages and disadvantages of the different equipment used in hydroponic systems
 - technical requirements and operating parameters of recirculated and non-recirculated systems
 - media choices, their properties and enterprise specifications
 - legislation and regulations relating to the establishment of a hydroponic system
 - an awareness of the environmental implications of the disposal of chemicals or chemical containers, and the drainage of high nutrient effluent.
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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:

- research information using available technology
 - organise information derived from the research process in a written report
 - draw a scaled design by hand and/or on computer
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- use a range of financial analysis tools to determine viability of the system.
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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 may need to be communicated to the client verbally and in writing as progress is made in the design of the farm.
2. How can information be collected, analysed and organised (3) ?	Information for design development can be collected through research, consultation with experts and own experience. This information will be analysed and organised in the form of a design plan, specifications and financial report.
3. How are activities planned and organised (3) ?	Activities of self and other team members may need to be planned around client requirements, and delegation may be used to achieve outcomes.
4. How can team work (3) be applied?	Teamwork with colleagues, staff and experts based on effective, timely communication and consultation will help to achieve projected planning outcomes in an appropriate and timely manner.
5. How can the use of mathematical ideas and techniques (3) be applied?	Mathematical ideas and techniques may be required to analyse data such as costings, and in designing an efficient layout for the farm, areas may need to be measured and drawn to scale.
6. How can problem-solving skills (3) be applied?	Problem-solving skills may need to be applied when the physical characteristics of the site are not suitable for the intended crop.
7. How can the use of technology (3) be applied?	Technology may be applied to gather information, communicate and keep records, and may involve computerised word processing, financial planning, telecommunication, photography, video, email, Internet, and drafting equipment/programs.

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**.

RTF5506A**Develop and implement a streetscape management plan**

This competency standard covers the process of developing and implementing a streetscape management plan. It requires the ability to define the need for a management plan, undertake preliminary planning activities, prepare a site description, analyse site information and description, identify management strategies, and prepare and implement the management plan. Developing and implementing a streetscape management plan requires knowledge of management planning principles and issues, basic civil design, community consultation processes, landscape assessment, and horticultural, landscape and arboricultural practices used in streetscape management.

Element		Performance Criteria	
1	Define the need for a streetscape management plan	1.1	Management plan objectives are identified for the streetscape.
		1.2	Brief is agreed in consultation with client for streetscape.
		1.3	Planning team including specialists and consultants is identified.
2	Undertake preliminary planning activities	2.1	Major stakeholders are identified.
		2.2	Availability of specialists to assist in management planning work is ascertained and contracts are prepared where required.
		2.3	Timelines for development of the management plan and reporting arrangements to client are established.
		2.4	Resources required for the development of management strategies are identified.
3	Prepare a site description	3.1	Landscape values of the area are identified and mapped.
		3.2	Physical features and characteristics of the streetscape are identified and mapped.
		3.3	Land uses including current, cultural and historical modifications are researched, and their effects on the streetscape are determined and recorded.
		3.4	Physical condition of site is assessed and documented.

		3.5	Biological characteristics of the site are documented.
4	Analyse site information and description	4.1	Information is evaluated in terms of core principles and objectives.
		4.2	Documents are produced including plans, technical reports and maps.
		4.3	Priorities and key management issues are determined.
		4.4	Opportunities and constraints to meeting planning objectives and goals are identified and documented.
		4.5	Presentation to clients/residents is undertaken and feedback incorporated into planning documentation.
5	Identify management strategies	5.1	Management strategies are identified that address defined objectives.
		5.2	Management strategies are designed to alleviate existing impacts or to target management action.
		5.3	Management strategies are costed and compared to existing budgets and available resources .
		5.4	Implementation of work is planned to prioritise outcomes and management resource allocation.
		5.5	Consultation with clients/residents is undertaken and feedback incorporated into planning documentation.
6	Prepare the management plan	6.1	Site information and management strategies are documented into a draft management plan for consultation.
		6.2	Consultation with stakeholders and clients is undertaken according to enterprise guidelines.
		6.3	Changes are made to the draft plan and a final plan is prepared and presented to client.
7	Implement the management plan	7.1	Implementation is carried out within predetermined budget, and according to schedule and strategies set out in management plan.
		7.2	Implementation strategy is modified to address on-going feedback from clients/residents according to enterprise guidelines.
		7.3	Reports on progress of implementation works are provided to clients/residents as required by the management plan.

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 comprises a streetscape management plan ?	Streetscape management plans define the core principles, objectives and responsibilities of the managing agent, cover the allocation of enterprise resources, and set parameters for resource access and use for management of streetscape.
What management plan objectives may be identified for the natural resource area?	These may include objectives to enhance the recreational and aesthetic values of the streetscape, reduce safety hazards and risks, moderate local weather conditions, provide habitat for wildlife, manage health and vigour of street plants, upgrade street furniture, and ameliorate traffic congestion and parking.
Who may be the client ?	The client may be a government agency or associated body, private development company, or community group.
What resources may be accessed to develop the streetscape management plan?	This may include topographical, vegetation, and aerial maps, government, university and library based consultation, literature and internet resources, histories of communities in the area, catchment area information, landscape designers/architects and engineers, horticulturists, arborists and landscape contractors.
What landscape values are relevant to this competency standard?	Visual amenity, street trees, recreation, conservation, water and air quality, and cultural values.
What features and characteristics may be included in the site description?	These may include boundaries, fences, gates, slope gradient, contours, water courses, buildings and structures, eroded areas, soil toxicity, waterlogged areas, water-repellent soils, predominant wind directions, annual rainfall, soil types and specific architectural, and historic or cultural features.
What land uses may be relevant to this competency standard?	Agricultural, horticultural, silvicultural, recreational, industrial, commercial, and cultural.
What may be included under the physical condition of a site?	Impacts from weeds, pests, erosion, soil disturbance, run-off, water quality, people, vehicle damage, soil compaction, and adjacent land use.

What biological characteristics are relevant?	Native and introduced plants and animals, habitats, vegetation structure, amenity landscapes, street trees, and rare and endangered species.
What management issues may be identified for action?	Some examples of management issues may include priorities for improvement and development of the streetscape, recreation and leisure opportunities, improved lifestyle for residents, safety hazards and risks, protection, conservation and restoration works for key plant species, disease and pest flora and fauna control, nutritional issues, and erosion, toxicity repair works and habitat rehabilitation.
What presentation techniques may be utilised to effectively present a description of the wetland site?	These may include video and photographic footage, documented historical, biological, physical and cultural descriptions, graphed and charted statistics, references and illustrations.
What available resources may influence the selection and priority of management objectives?	Resource availability issues may include private finance, government funding assistance, relevant regulations and legislation, Australian standards, consideration for neighbouring enterprises, community in-kind support, existing plants, labour and existing administration facilities and infrastructure.

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 implementing a streetscape management plan requires evidence that the person is able to work with a team to develop a management plan for a streetscape that will address management objectives in accordance with the clients/residents requirements for the area. The skills and knowledge required to develop and implement a streetscape management plan must be **transferable** to different work environments. For example, this could include different streetscapes, environments, managing bodies and management objectives.

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:

- management planning principles and issues
- basic civil design
- community consultation processes
- landscape assessment, survey and analysis techniques
- horticultural, landscape and arboricultural practices used in streetscape management
- soil, plant and water testing processes and procedures, interpretation and application of results.

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:

- define the need for a management plan
- undertake preliminary planning activities
- prepare a site description
- analyse site information and description
- identify management strategies
- prepare the management plan
- implement the management plan.

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?

Oral and written communication with implementation team, clients, suppliers, consultants, government agencies, community organisations, industry contacts and senior management is required.

2. How can information be collected, analysed and organised (3) ?	Information on management systems can be collected through site assessment, research, consultation with experts, and own experience. Reports including statistical and financial data will need to be generated.
3. How are activities planned and organised (3) ?	Activities of self and other team leaders and members are planned, and delegation is used to achieve outcomes.
4. How can team work (3) be applied?	Teamwork with colleagues, staff, experts and senior management based on effective, timely communication and consultation will help to achieve management objectives.
5. How can the use of mathematical ideas and techniques (3) be applied?	Sophisticated mathematical understanding will be required to analyse data from external agents regarding project costs, and physical aspects such as dimensions, analysis results, application rates, and quantitative environmental impacts. Statistical data will need to be provided to support monitoring and evaluation of implementation of streetscape management strategies.
6. How can problem-solving skills (3) be applied?	Problems presented by collected data, known threats to the area, availability of information and resources, reconciling environment, financial and enterprise requirements in the development of strategies, will require problem-solving skills.
7. How can the use of technology (3) be applied?	Technology used to gather information, prepare strategies, communicate, make presentations and keep records, may include computerised word processing, financial planning, email, Internet and drafting, photography, video and slide equipment.

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. The relationship table found in the introduction of this training package will provide further guidance.

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**.

RTF5521A**Monitor and manage soils**

This competency standard covers the process of monitoring and managing soils. It requires the ability to research information, prepare plans for crops/plants, collect soil and/or media samples, perform basic soil tests, interpret results from own or laboratory tests, and record and store information. It requires knowledge of soil types, soil physical properties, soil chemical properties, plant nutrition through soil management, soil conservation strategies and sustainable production techniques, basic soil field tests, soil sampling techniques, interpreting laboratory results, techniques to ameliorate soil properties, and record keeping.

Element		Performance Criteria	
1	Research information about soil	1.1	Information about soil is obtained from various sources and filed.
		1.2	Information about soil is analysed for relevance to particular enterprise operation.
		1.3	Particular soil properties, identified as relevant to the enterprise, are researched for further enquiry.
		1.4	Relevant soil properties are identified for testing.
		1.5	Soil tests are conducted or samples are collected and sent for analysis.
2.	Apply information from soil testing to production and/or management plan	2.1	Results from soil testing are interpreted and correlated with soil records and production history.
		2.2	Appropriate adjustments are made to production or management plans.
3	Develop soil amendment strategies	3.1	Soil properties capable of being ameliorated are identified for action.
		3.2	Relevant soil ameliorants or cultural practices are identified, as appropriate, for inclusion in production/management plan.
		3.3	Soil ameliorants are quantified and purchased.
		3.4	Soil ameliorating activities are costed and included in production/management plan.
4	Monitor soil amendment strategies	4.1	Records of soil management activities are made and filed.
		4.2	Tests are undertaken to monitor the performance of soil amelioration activities.
		4.3	The production/management plan is modified accordingly and recorded for later use.

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 tools and equipment may be relevant to this standard?	Tools and equipment include spades, augers, soil/media sample storing and recording materials, field test kits, and interpreting charts.
What tests may be performed?	Soils/media may be tested for depth, colour, texture, structure, compaction, air-filled porosity, readily available water, pH, major nutrient availability, and salinity.
What may be considered a soil ameliorant ?	Soil ameliorants may include pH modifying agents such as lime, structure modifying agents such as gypsum and artificial structure additives, flocculating agents, texture modifications, and wetting and water retention agents.
What may be considered a soil ameliorating practice ?	Soil ameliorating practices may include compaction alleviation and modifications to soil drainage or moisture holding capacity.

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 determining basic properties of soils/media requires evidence that sampling, testing, interpreting and recording techniques have been successfully and appropriately implemented and monitored in an enterprise. The skills and knowledge required to determine the basic properties of soils/media must be **transferable** to a range of work environments and contexts. For example, this could include different soil/media types tested for different properties for a range of crops or plants.

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: • soil types • soil physical properties • soil chemical properties • plant nutrition through soil management

- soil conservation strategies and sustainable production techniques
- basic soil field tests
- soil sampling techniques
- interpreting laboratory results
- techniques to ameliorate soil properties
- record keeping.

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 information
- prepare production/management plans for crops/plants
- collect soil/media samples
- perform basic soil/media tests
- interpret results from own or laboratory tests
- record and store information.

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 researching information and communicating this to staff and others.
2. How can information be collected, analysed and organised (3) ?	Through recording, interpreting and filing soil/media results.
3. How are activities planned and organised (3) ?	According to workplace procedures.
4. How can team work (2) be applied?	Through working with others to achieve an outcome.
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5. How can the use of mathematical ideas and techniques (2) be applied?	Through the use of accepted soil/media tests, calculations and costings for soil amelioration processes.
6. How can problem-solving skills (3) be applied?	Through interpreting own or laboratory results and devising soil amelioration strategies.
7. How can the use of technology (3) be applied?	Through the use of standard soil/media testing equipment.

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**.
