Forest Growing & Management Competency Standards

FPI FGM 001 A Develop a stock production and planting program

Description

This Unit of Competency is concerned with the development of a production plan for a forestry organisation, from propagation by a range of methods to the sale of seedlings and advanced stock. This includes the planning for collection and management of seed, vegetative propagation, planting within the nursery, and growing-on.

This unit has been based on units from the production horticulture standards, but is not equivalent to any one unit from those standards.

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced

1 Determine the production requirements of the marketing program

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Planning for production planning period is undertaken for all seedlings including scheduling of major production activities and methods in accordance with organisation requirements.
4) Scheduling takes organisation production variables into consideration, in accordance with sound business practice.

2 Develop a production program

1) Organisation occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Production plan ensures co-ordination with organisation marketing plan, business plan and production facility.
4) Timing within plan ensures that available seedling space is filled at all times.
5) Policy concerning scheduling and below-quality goods is determined in line with other organisation policies.
6) Where appropriate for the organisation, marketing and advertising is planned and scheduled in line with production schedule and marketing plan.

3 Plan growing-on process

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Requirements of growing-on processes are determined from marketing and production/sales plans and historical and published data, and are clearly indicated in the plan.
4) Environmental conditions, growing media and container sequences for seedlings are stipulated in accordance with organisation guidelines and sound management practices.
5) Growing media is selected in accordance with organisation guidelines and plant needs.
6) Environmental parameters are selected and altered to meet plant needs, the organisation and the production/sales plan.
7) Planting depth and application of water is in accordance with sound horticultural practice and production/sales plan.
8) All growing-on and treatment processes and hygiene practices are carried out according to production/sales plan and organisation policy.
9) Staff are given clear directions concerning growing-on processes and treatments in accordance with organisation policy.

4 Monitor production

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Procedures outline standards of quality in accordance with published data and historical records.
4) Procedures outline scope and frequency of treatment required for optimum growth in accordance with organisation guidelines.
5) Direction provided to ensure light and spacing requirements are in accordance with plant needs and organisation guidelines.
6) Production activities and plan are continuously monitored and modifications made when and where appropriate in line with organisation business and marketing plans.
7) Program is compared with feedback and projections from clients in accordance with sound business practice.

5 Plan dispatching of plants

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Outline organisation guidelines for plants ready for dispatch in line with seedling development and production/sales plan.
4) Establish organisation policy for dealing with poor quality plants.
5) Set standards for packaging and labelling of plants consistent with the production/sales plan.

6 Review production processes

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Production processes are monitored by comparison against the plan.
4) Modifications are made to the process when required in line with organisation production/sales, marketing and business plans based on sound horticultural judgement and are clearly indicated/broadcast.
5) Plant batch requirements for sale are prepared which take historical data, seedling information and current trends into consideration in line with organisation production/sales, marketing and business plans.

Range of Variables

- Major production activities may include propagation, potting, growing-on, intervention, seedling planting
- Production may use automated equipment
- Influences on production scheduling may include date, temperature, season, light, photoperiod, environment, intervention
- Organisation production variables may include flowering calendars, previous sales, previous shrinkage ratios, space available, future expectations, market place, core business
- Environmental conditions may include light, temperature, humidity, airflow
- Plants may include ornamental, nut, foliage, oil crops; forest types
- Historical data may include sales history, production history, previous strike rates, regular buyers
- Seedling information may include shrinkage factors, space required, potting sizes.

Evidence Guide

Critical underpinning knowledge

- Production sequencing
- Records required for production planning
- Marketing: client needs, market place, client communication
- Previous growing-on history for crop, organisation, season and situation
- Relationship between growing-on plan and all other management planning
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Clear communication methods between staff and management.

Critical underpinning skills

- Determine the production requirements of the marketing program
- Recognise common diseases, pests, and nutrition deficiencies
- Develop a production plan
- Monitor the production program
- Plan growing-on process
- Review growing-on process.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information			•
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems			•
Using technology		•	

Description

This unit includes the work undertaken in seed orchards, and seed collection areas in plantations and in native forests. This work is based on a production and planting program (the work involved in developing such a program is described in unit FPI FGM 001 A)

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G29 A	Solve problems in the workplace - basic

1 Plan seed collection

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Production and planting program is considered, analysed and interpreted for required seed characteristics and implementation issues .
4) Opportunities for seed collection are identified from field observation and organisational guidelines and taken advantage of.
5) Suitable area for seed collection is identified and marked on a locality map/plan for later reference.
6) Method of seed collection is selected in accordance with the geography of the local area, size and type of tree(s), available resources and organisation guidelines.
7) Quantity, cost and provenances to be collected are determined and documented in accordance with organisational guidelines.
8) Relevant authorities are liaised with and approvals sought in accordance with organisation policy and guidelines and relevant legislation.
9) The plan and its performance indicators are clearly articulated, documented, and communicated to those who will collect the seed in accordance with organisation guidelines.

2 Implement seed collection

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for seed collection are co-ordinated and scheduled in accordance with organisation guidelines.
4) Any permits and/or approvals required for the seed collection are identified and obtained.
5) Documentation identifying the seed is completed clearly and accurately in accordance with organisational guidelines.

3 Monitor seed collection

1) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Checks are made, in accordance with organisation policy, to ensure that the quantity, cost and provenances collected accord with specifications and amendments to the process or methods are made where necessary.
4) Any required amendments to the process or methods are clearly communicated to the parties involved.
5) Checks are made to ensure that the documentation required by organisation is completed clearly and accurately during the progress of seed collection.

4 Review seed collection

1) Any issues, impediments to seed collection, and cost of program are identified and recorded in accordance with organisational guidelines.
2) A cost/benefit analysis is prepared in accordance with organisational guidelines.
3) Recommendations are prepared based on the analysis and issues raised.
4) Report is prepared, including
- any difficulties or issues faced,
- any recommendations for future work,
- results,
- costs,

in accordance with organisational guidelines.
5) Results of seed collection activity are clearly communicated to those who undertook the work.

Range of Variables

- This unit relates to work undertaken in seed orchards; native forests; soft and hardwoods; rainforest; understorey plants
- Individuals/bodies/groups liaised with may include landholders; federal, state, or local government authorities; private individuals
- Legislation, regulations, standards may include Environmental Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Heritage and other issues may apply to seed collection operations
- Impacts on provenances and species to be collected may include requirement for genetic diversity; frost, heat, salt hardiness; potential growth characteristics
- Seed characteristics may include provenance; potential growth characteristics; forest types; optimum time to collect
- Implementation issues may include scheduling; people and skills involved; materials; hazards
- Environmental considerations may include hygiene of the area; local regulations
- Method of collection may include collecting after falling/felling; ladders; climbing; shaking; high-powered rifles; cherry pickers
- Those who will collect the seed may be organisation employees; contractors; community groups
- Landholders may be federal, state, or local government authorities; private individuals
- Documentation may include provenance; species; identity of collector; weight of seed collected
- Qualities of the seed may be both physical and genetic.

Evidence Guide

Critical underpinning knowledge

- Flowering biology of the target species
- Biological signs which indicate that the seed crop is ready to be collected
- Handling the collected material after collection
- Extraction of the seed from the collected material
- Handling of the seed crop after picking
- Treatment and documentation of the extracted seed
- Collection methods such as climbing/removal of branches with rifle/elevated platform vehicles
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Legal training prerequisites and operational requirements for use of the collection method.

Critical underpinning skills

- Supervise the safe use of the collection method
- Recognise common diseases, pests, and nutrition deficiencies
- Determine the readiness of the seed crop, by inspection
- Manage the extraction of collected material
- Provide for storage of extracted seed.
- Complete quality documentation
- Prepare detailed reports
- Communicate with landholders
- Negotiate and liaise with bodies/groups internal and external to the organisation
- Determine quantities and costings
- Interpret numerical data.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information			•
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams			•
Using mathematical ideas and techniques			•
Solving problems		•	
Using technology		•	

Description

This unit is concerned with extracting and processing seed using an extraction unit.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools

1 Receive seed bearing material into store

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Species of seed bearing material is visually checked to ensure that the container label is correct.
3) All containers received are weighed and an identifier attached in accordance with organisational procedures.
4) All seed information required by organisational guidelines is recorded using the system designated by organisational procedures.
5) Material is placed for storage into a dry, well ventilated area.

2 Extract seed

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Where automated extraction unit is used, seed bearing material is placed in/on extraction unit in accordance with organisational procedures and manufacturer's instructions.
3) Where automated extraction unit is used, it is operated safely in accordance with organisational guidelines.
4) Where automated extraction unit is used, its operation is monitored in accordance with manufacturer's instructions, organisational safety guidelines, and objective of the operation.
5) Agitation is undertaken to maximise yield, where required by the nature of the seed bearing material.
6) Seed capsules are inspected for un-extracted seed and reprocessed where necessary to ensure maximum yield.

3 Clean and store seed

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Seeds are separated from other materials according to organisation requirements using available separation methods.
3) Cleaned seed is weighed using the specified scales and stored in accordance with organisational procedures and requirements of the species.
4) Seeds are treated in accordance with organisation requirements.
5) Seed weight, place of origin, species, and container identifier are recorded in accordance with organisational procedures.
6) Seeds are packaged for storage according to legislative and organisation requirements, codes of practice and client requirements to protect the seeds and to maintain traceability to collection source.

4 Clean and maintain extraction unit

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Residue materials are disposed of in accordance with organisational guidelines and environmental imperatives.
3) Extraction unit and operating area are cleaned to organisational guidelines and standards.
4) Extraction unit is maintained, serviced, and calibrated in accordance with manufacturer's instructions and organisational guidelines.

Range of Variables

- Storage conditions must not allow humidity or wetness to occur, due to the incidence of fungus
- Scales used for weighing are currently under licence from the weights and measures authority
- Instructions and information may include organisation terminology; fault reports; internal memos
- Maintenance of records may include collation (of information or documentation); interpret information in a way relevant to workplace requirements; organise and maintain records accurately
- Systems may be electronic or manual
- Extraction units and equipment may include kilns operated by gas, solar, oil, or electricity; sieves of various sizes; air drying racks and trays
- Lifting devices may include overhead gantry; fork lift; conveyor belts; electronic/manual balance scales
- Recording system for seed information may include electronic data base; card index; data sheets; filing system
- Appropriateness of sieve for processing may depend on size of seed; quantity of seed; seed species
- Seed is weighed on properly calibrated and maintained scale
- Seed container identifiers may be alpha-numeric; bar coded; colour coded; symbols.

Evidence Guide

Critical underpinning knowledge

- Environmental requirements for extraction and storage of seed
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- The need for accurate tracking of the seed's origin
- Hazards involved in seed extraction, processing and storage
- Seed extraction processes for native species
- Differences between extraction and storage requirements for different species
- Organisation specifications for the safe operation of the extraction unit.

Critical underpinning skills

- Understand a variety of information styles
- Interpret information in a way relevant to workplace requirements
- Organise and maintain records accurately
- Identify a range of species from capsules
- Maintaining a clean working environment to prevent contamination of seed
- Adhere to quality control guidelines
- Record and calculate seed weights
- Use, amend and update organisational record keeping and tracking systems
- Work efficiently within the organisation's occupational health and safety procedures and guidelines.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques		•	
Solving problems	•		
Using technology	•		

Description

This unit describes the work involved in the collection, treatment and storage of seed from forest species.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints

1 Prepare to collect seed

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Potential locations for the collection of required seeds are identified from organisation and public information, and site visits.
4) Permits are obtained to collect the seeds, according to legislative and organisation requirements.
5) Suitable seed collection seasons and times are identified to plan seed collection
6) Appropriate seed collection resources are obtained, according to organisation requirements.
7) Information on seed collection locations is kept in commercial confidence where required by the organisation.

2 Collect seed

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Landowners, tenants, and other relevant authorities are approached to negotiate suitable seed collection arrangements.
4) Plant species and condition is identified in accordance with scientific practice to ensure healthy, virile seeds are collected.
5) Seeds are collected from a range of plants and from different areas of plants to maintain genetic diversity.
6) Seeds are collected using selected method in accordance with legislation, codes of practice, organisation requirements, conditions of permit and agreements with landholders, tenants and others.
7) Health of parent plants is protected during seed collection.
8) Seed is placed in clean containers and labelled to codes of practice, organisation requirements and to maintain location and genetic identity.

3 Clean and store seed

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Seeds are separated from other materials according to organisation requirements using available separation methods.
3) Cleaned seed is weighed using the specified scales and stored in accordance with organisational procedures and requirements of the species.
4) Seeds are treated in accordance with organisation requirements.
5) Seed weight, place of origin, species, and container identifier are recorded in accordance with organisational procedures.
6) Seeds are packaged for storage according to legislative and organisation requirements, codes of practice and client requirements to protect the seeds and to maintain traceability to collection source.

Range of Variables

- Potential locations are those places where the required species is growing or likely to grow
- Organisation and public information may include records of locations where seeds have been collected previously; personal knowledge within the organisation; information provided by contacts; vegetation maps and records
- Permits are those required for commercial or non-commercial seed collection, and may include government permits; landholder permits
- Seed collection seasons are those times when the species have fruit at the required condition
- Seed collection resources may include personnel; vehicles; pruning and shaking equipment; sheets/tarpaulins; clean containers for holding seeds; personal protective equipment; vacuum seed collecting machines; ladders/elevating work platforms
- Seed may be treated to remove pests and diseases; facilitate regeneration
- Other relevant authorities may include local governments; parks/reserves managers; forestry managers
- Health of parent plants may require hand picking; careful and selective pruning; information about regrowth habits of particular species
- Occupational health and safety issues may include assessment of hazards and risks in the seed collection and treatment processes; inspection and maintenance of equipment; following occupational health and safety administrative procedures; use of personal protective equipment; training in procedures and use of equipment; handling of minerals/chemicals used in the treatment of seed for storage
- Seed separation methods may include hand selection; wind separation/winnowing; sieving; vibrating; flotation; drying and crumbling of husks
- Seed treatment may include heat; mechanical; chemical protection against pests
- Seed packaging may include vacuum sealing; use of inert atmospheres such as nitrogen and carbon dioxide; control of packing environment (temperature, light, and moisture)
- Monitoring of seed quality may include viability tests under controlled conditions
- Method of collection may include collecting after falling/felling; ladders; climbing; shaking; high-powered rifles; cherry pickers.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Growth patterns of species where seed is being collected
- Diseases and pests likely to infect the species.

Critical underpinning skills

- Plan seed collection processes
- Identify health of individual plants
- Recognise common diseases, pests, and nutrition deficiencies
- Use vehicles and equipment in a range of terrenes
- Use a range of seed collection methods and related equipment
- Use a range of cleaning methods and related equipment
- Organise and maintain information
- Negotiate and liaise with bodies/groups internal and external to the organisation.

Critical aspects of evidence to be considered

- Where regulated work functions are being undertaken, appropriate licences or permits must be obtained.
- Competency is to be assessed in the critical aspects of:
  - ◊ Identification of species, collection seasons and methods and seed quality
  - ◊ Compliance with legislative and organisation requirements, including obtaining permits and permission to collect seeds
  - ◊ Occupational health and safety.

Assessment context

Most components of this unit should be assessed in the workplace or simulated workplace using the appropriate range of equipment to collect a range of seeds and to apply a range of treatments.

Assessment of competency in this unit may be combined with other units at the request of person being assessed and where the assessor is able to plan combined opportunities for evidence gathering.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques	•		
Solving problems		•	
Using technology	•		

FPI FGM 011 A Prepare seed bed

Description

This unit is concerned with determining which seed bed preparation techniques should be used for a forest area, implementing, then assessing them.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity
FPI G26 A	Work effectively in work groups
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Select site preparation technique(s)

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) The range of appropriate seed bed preparation techniques are considered and evaluated against
- the species/range of species to be sown or planted
- the season
- the topography of the area.

4) The preferred technique is selected and a recommendation made.

5) A report is prepared for approval documenting the analysis and recommendations.

6) Approval is sought from appropriate management representative and/or relevant external authorities/agencies.

2 Plan site preparation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Preparation plan is developed in accordance with organisational plans, budget, policies and available timelines.

4) Risk analysis is conducted to identify the possible risks which may impact and identifies potential methods for mitigating the risks.

5) Site plan/map is prepared which identifies the forest area to be prepared and the particular preparation techniques to be used.

3 Prepare site

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Implementation of seed bed preparation techniques ensure the continued compliance with policies and internal and external regulations.
4) Responsibilities for aspects of seed bed preparation are confirmed and clarified.
5) Seed bed preparation techniques are undertaken in line with previously prepared plan.
6) Adjustments to the plan are made to accommodate any arising issues, and are in line with original intent of plan and organisational policies.

4 Survey and review seedbed

1) Seed bed survey is undertaken in accordance with organisational guidelines.
2) Results of survey are collated and reviewed and any required remedial action is undertaken.
3) Site preparation is analysed to determine whether the methodologies and budgets identified by the plan have been realised.
4) Further recommendations for improving the methods/techniques used to prepare seed beds are noted.
5) Report is prepared in accordance with organisational guidelines and documents
- techniques used
- resources used
- timeframes involved
- results and recommendations.

Range of Variables

- Instructions and information may include organisation terminology; guidelines; internal memos
- Information media may include written/printed; oral; electronic; hand goals; visual display units/personal computers
- Maintenance of records may include collation (of information or documentation); interpret information in a way relevant to workplace requirements; organise and maintain records accurately; utilise a full range of information media.
- Range of seed bed preparation techniques may include herbicides; burning; clearing; rough-heaping; cultivation; ripping; post-raking
- Preparation plan includes scheduling; resource requirements
- Recommendations for improving the techniques used may come from staff and/or contractors undertaking the work; external bodies; client/client groups
- Resources used may include people; plant and equipment; consumables
- Relevant legislation, codes, regulations and standards may include State-based code of forest practice (or similar); Australian Standards; organisational standards; environmental protection legislation; fire regulations; heritage legislation; industrial relations agreements including awards and organisation; international standards; local government; Occupational health and safety Act; statutory requirements; Trade Practices Act; traditional land owners
- Relevant authorities may include local, state, and federal agencies; utility providers (gas, water, power, telecommunications); environmental protection; private owners.

Evidence Guide

Critical underpinning knowledge

- Environmental imperatives for forest area
- Relevant acts, regulations, codes and standards
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Techniques available for seed bed preparation
- Environmental and personal hazards associated with site preparation techniques
- Necessity for, and requirements of, site preparation for particular species.

Critical underpinning skills

- Understand a variety of information styles
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Interpret information in a way relevant to workplace requirements
- Organise and maintain records accurately
- Utilise a full range of information media
- Collate and assess information against specified criteria
- Collect and record data according to criteria inferred in plan
- Prepare written reports of analysis and recommendation
- Negotiate and liaise with bodies/groups internal and external to the organisation
- Manage the work of others to achieve goals and results
- Analyse and evaluate a range of seed bed preparation techniques.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology		•	

FPI FGM 016 A Tend forest nursery plants

Description

This unit describes the maintenance that is required for the production of nursery seedlings.

Suggested Pre-Requisites/Co-Requisites

FPI G41 A	Use basic hand tools
FPI G26 A	Work effectively in work groups
RUA AG2009CH A	Apply chemicals and biological agents

1 Monitor environmental parameters

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Environmental parameter levels are checked against those needed by crop and production plan and in accordance with organisational guidelines.
4) Environmental parameters are changed as required to meet the needs of the crop and production plan.

2 Water plants

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Crop water needs are determined in accordance with industry best practice, environmental parameters and organisation guidelines.
4) Any additives to the water are determined from instructions and are added in accordance with supervisor's instructions.
5) Method and quantity of water delivered is in accordance with organisation guidelines and supervisor's instructions.
6) Irrigation/watering system and components are gathered, operated, and stored in accordance with manufacturer's guidelines and organisation procedures.
7) Water is applied by hand to dry or under-watered plants according to the requirements of the crop and in accordance with supervisor's instructions.

3 Clean up a growing site

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Weeds are removed from around cultivated plants in accordance with supervisor's instructions.
4) Rubbish and litter is removed, pots, surroundings and presentation areas are maintained in a clean and tidy fashion in accordance with organisation guidelines.
5) Tools are chosen appropriate to the task being undertaken, used in accordance with guidelines, and safe working practices are employed.

4 Treat plants

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Volume and method of treatment is delivered in accordance with supervisor's instructions.
4) Intervention methods are undertaken to assist plant growth in accordance with supervisor's instructions.
5) Equipment operation and work practices conform to organisation occupational health and safety guidelines.
6) Tool and equipment cleaning and storage procedures are performed and hygiene practices are followed in accordance with organisation guidelines.

5 Select media for growing-on

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Media with drainability and airfill porosity chosen appropriate to the crop and in accordance with organisation guidelines.
4) Treatments and method of growing-on chosen appropriate to the crop and in accordance with organisation guidelines.

Range of Variables

- Components of irrigation system may include pump; sprinkler; sprinkler heads; solenoids; sprayers; drippers
- Additives to the water may include fertilisers; chlorine
- Environmental issues may include the disposal of waste material
- Environmental parameters for media selection may include dry soil; heat; wind strength
- Environmental parameters may include light; temperature; humidity; wind
- Intervention methods include aeration; removing dead material; spacing; tip pruning; staking; tying; manual root pruning; plant dipping
- Irrigation system types may include ebbflow; sprinklers; sprayers; drippers
- Market requirements may include foliage colour; time of sale
- Occupational health and safety issues may include working with hand tools; safe lifting and manual handling techniques and working with due regard to the safety of others
- Plants may be in a controlled environment
- Plants may include plants that are plentiful and hardy; plants that are commonly grown in the organisation.
- Plants may include seedlings; stock plants; bulbs; corms; tubers; woody; perennial; annual
- Tools and equipment include wheelbarrows; trolleys; motorised trolleys; secateurs; media trays; water spray container; dibblers; rubbish bins
- Tools used for tip pruning may include fingernail; secateurs.
- Treatments may include fungicides; fertiliser.

Evidence Guide

Critical underpinning knowledge

- Drainability and airfill porosity characteristics of various media types
- Environmental conditions needed by the crop
- Methods of calculating daily water needs, taking environmental parameters into consideration.
- Nursery industry water management best practice guidelines, 1997
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Plant nutritional and environmental needs during the growing-on process
- Plant presentation preparation and techniques
- Principles and operation of low pressure irrigation systems
- Treatments appropriate to the crop for growing-on
- Use and maintenance of hand tools.

Critical underpinning skills

- Apply daily water requirements
- Clean up a growing site
- Determine daily water requirements
- Evaluate and assess information from a number of sources, and make decisions based on appropriate criteria
- Recognise common diseases, pests, and nutrition deficiencies
- Follow routine written or spoken instructions
- Monitor environmental parameters
- Monitor serviceability of irrigation system
- Promote growth by intervention
- Read materials which include simple diagrams, graphs and charts
- Select media for growing-on
- Transfer potted material
- Treat plants
- Water plants.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology	•		

Description

This unit is concerned with storing seed in, and dispatching seed from, a seed store.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity

1 Store seed for later use

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) All seed information required by organisational procedures is recorded using the organisation's record keeping system.
3) Record the provenance of the seed in accordance with organisational guidelines
4) Seed is treated to prevent deterioration in accordance with seed species and organisational procedures.
5) Seed is packaged, accurately and clearly labelled, and placed in accordance with organisational procedures.

2 Prepare seed sample for viability testing

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Seed sample for testing is identified from written or oral request, or supervisor's instructions.
3) Seed sample is removed from lot in accordance with organisational procedures.
4) Seed sample is prepared for testing in accordance with organisational specifications.
5) Representative seed sample is packaged, accurately and clearly labelled, and dispatched to testing body.
6) Test results are recorded upon completion and any organisational pro-forma(s) are completed in accordance with organisational procedures.

3 Dispatch seed

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Written request for seed is interpreted and, where necessary, verbal or written clarification sought.
3) Store is searched to retrieve the range, and variety, of seed species to match the request.
4) Quantity of each seed species is calculated from the seed mix specified in the request, area to be sown, and organisation's table of specifications, according to the request.
5) Each seed species is weighed according to previously calculated quantities
6) Each seed species is placed into a container appropriate for the client, or in accordance with the request.
7) Where required, multiple seed lots are thoroughly mixed in accordance with organisational procedures.
8) Seed/seed mixture is accurately and clearly labelled in accordance with organisational procedures.
9) Where necessary, appropriate documents are obtained in accordance with regulations and organisation guidelines.
10) Seed dispatch is arranged and undertaken in accordance with the request and organisation guidelines.
11) Records of the transaction are documented and organisational record keeping system updated.

Range of Variables

- Maintenance of records may include collation (of information or documentation); interpret information in a way relevant to workplace requirements; organise and maintain records accurately
- Systems may be electronic and/or manual
- Equipment may include electric scales; manual scales; sleeve type sampling device; various packaging materials and containers; seed cleaning machine
- Seed information to be recorded may include species; time/date of harvest; time/date of receipt into store; origin of seed
- Lifting devices may include overhead gantry; fork lift
- Scales electronic; seed lot mixing devices
- Sampling method may include quartering; seed dividers
- Seed treatment may include fungicides; cleaning
- Testing body may be internal or external to the organisation
- Criteria for the appropriate container for seed dispatch may include length of time the seed will be stored; method which will be used to transport the seed; equipment to be used for sowing seed; quantity of seed; size of individual seeds
- Request may be written; computer-generated; system generated
- Specifications of request may include seed species; percentage of seed mix; pure graded seed; rate of sowing; area to be sown; dispatch container; method of dispatch; sowing equipment to be used
- Additional documents may be required where seed is being sent overseas and may include phyto sanitary certificate; import/export permit.

Evidence Guide

Critical underpinning knowledge

- Concepts of, and reasons for, ongoing seed collection, storage and dispatch
- Seed calculation methods
- Record keeping system for seed storage
- Hazards associated with the storage, treatment and dispatch of seed
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Packaging and storage methods and systems for seed species used by the organisation
- Organisational occupational health and safety procedures, practices, and policies
- Organisation specifications for the safe operation of seed treatment using chemicals.

Critical underpinning skills

- Understand a variety of information styles
- Interpret information in a way relevant to workplace requirements
- Follow instructions for receiving goods/checking documentation
- Locate, interpret and check information
- Record information on a simple form accurately
- Recognise common diseases, pests, and nutrition deficiencies
- Organise and maintain records accurately
- Identify seed species using visual criteria and label information
- Maintain a clean working environment to prevent contamination of seed
- Adhere to quality control guidelines
- Calculation of quantity using:
  - ◊ sowing rate
  - ◊ percentage of components in seed mix
  - ◊ area to be sown
  - ◊ specifications table
- Prepare accurate and clear labels
- Obtain documentation and phyto-sanitary certificates and import/export permits.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology	•		

Description

This unit describes the work involved in locating and marking boundaries for a range of purposes.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G121 A	Collect, analyse and organise information - advanced
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan the instrument survey

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Purpose and requirements of the survey are identified from the needs of the forest area.

4) Any available previous site and boundary surveys, plans and maps are gathered and analysed for impact on the current survey.

5) Any neighbouring landholders and local bodies are liaised with in accordance with organisation policy and guidelines.

6) Survey method(s) is (are) selected in accordance with the site, area to be surveyed, purpose of the survey, accuracy required and organisation guidelines.

7) Specifications and accuracy required of the survey are determined, documented, and clearly articulated to those who will conduct the survey in accordance with organisation guidelines.

2 Implement the instrument survey

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) People, materials and equipment required for the survey are co-ordinated and scheduled in accordance with organisation guidelines.

4) Individuals conducting the survey are communicated with regularly throughout the survey to ensure smooth operation and progress.

5) Any neighbouring landholders and local bodies are liaised with during the survey activity, as required by organisation policy.

3 Monitor the instrument survey

1) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Checks are made, in accordance with organisation policy, to ensure that the specifications are being met and amendments to the process or methods are made where necessary.
4) Checks are made to ensure that field books required by organisation are completed clearly and accurately during the progress of the survey.

4 Review the instrument survey

1) Field book results are compiled with any existing maps and plans to confirm accuracy in accordance with organisation guidelines.
2) Map or plan is prepared in accordance with purpose of the survey and organisational guidelines .
3) Survey report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Individuals/bodies/groups liaised with may include neighbouring landholders; colleagues; local authorities
- Legislation, regulations, standards may include Environment Protection Act; state forest codes of practice
- Purpose of undertaking the survey may be to lay out a road line; to mark establishment boundaries; assessment; to mark forest area boundaries; lay out of planting rows; site design; drainage design
- Accuracy of the survey depends on the purpose of the survey and the tools to be used.

Evidence Guide

Critical underpinning knowledge

- Survey techniques and tools
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Safety issues and hazards associated with undertaking boundary surveys
- Emergency procedures, including first aid
- Isolation procedures
- Field radio communications
- Weather interpretation
- Methods of navigating and geographically orienting in the field.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Geographical orientation in the field
- Map reading and interpretation
- Liaising and communicating with colleagues and people external to the organisation
- Scheduling work for people and equipment
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Completion of field book results
- Preparation of maps and plans
- Preparation of survey reports
- Interpretation of numerical data
- Determination of costs.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems	•		
Using technology	•		

FPI FGM 047 A Prepare sites for forest establishment using tracked or wheeled equipment

Description

This unit applies to all aspects of forestry establishment using various implements or attachments.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G23 A	Plan a complete activity
FPI G26 A	Work effectively in work groups
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Prepare machine for site preparation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Appropriate type of equipment and/or attachments are selected according to job type and specifications to maximise efficiency and effectiveness of work activities.

4) Equipment pre-operational checks are performed according to manufacturers' specifications, site procedures, regulations, occupational health and safety and other relevant legislation

5) Start-up, park and shut-down pro.cedures are carried out in accordance with manufacturers' specifications, site procedures and regulations.

6) Regular checks are made of equipment components in accordance with manufacturer's specifications and work site procedures.

7) Damaged components are identified and reported in accordance with organisational procedures.

8) Attachments are fitted to equipment or existing attachments are inspected to ensure correct attachments, where appropriate.

9) Fluid levels and air pressures are maintained and instruments and gauges are monitored to ensure equipment operation within manufacturer's specifications.

2 Carry out pre-job communications

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Plans and prescriptions are received, interpreted and clarified in accordance with site procedures and regulations.

4) Nearby personnel are advised of impending equipment operation in accordance with organisational procedures.

5) Recognised communication signals to be used are confirmed with any assisting personnel in accordance with occupational health and safety guidelines and procedures.

3 Prepare sites

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Area is visually evaluated to determine the most suitable operational technique and sequence.
4) Site hazards are identified, assessed, and marked where necessary in accordance with regulations and occupational health and safety procedures.
5) Equipment is steered, manoeuvred and positioned to maximise efficiency and ensure safety of other equipment and personnel in accordance with the job prescription.
6) Equipment is operated at a work rate acceptable to forest industry expectation of land preparation work in an operational context.
7) Equipment performance is monitored using appropriate indicators to aid efficient operations.
8) Equipment faults creating hazardous operations are identified, operations suspended and fault reported and/or repaired to work site procedures.
9) Site preparation operation covers required area and meets the agreed work plan and outcomes.
10) Ongoing communications with other personnel are maintained in accordance with agreed signals and work site procedures.

Range of Variables

- Briefing and hand over details; authorisation and clearances may be written or verbal and may include: nature and scope of task; potential hazards; adequacy of lighting machine and site (all plant and work areas); access road plan; survey plan; instructions; geological details; services; resource requirements/allocations; schedule; site characteristics and requirements; materials and equipment to be used; isolation requirements; safety requirements; environmental considerations; site requirements
- Site procedures and regulations may be found in operations manual; induction documentation; training materials; policy and procedures documents; verbal or written instructions; managers rules
- Manufacturers' specifications may be found in printed instruction leaflets; operators manuals; equipment specifications; attached to the equipment
- Potential risks and hazards may include unsafe ground; unstable faces; fences; holes; pot holes; materials; over-hanging rocks; vehicles; abandoned equipment; equipment; personnel; chemicals; contaminants; adverse weather conditions (electrical storms; floods) fires; abandoned mines; slumps
- Personal protective equipment may include safety helmet (hard hat); safety boots; safety harness when working at heights; gloves (plastic; rubber; leather); eye protection; hearing protection; respirator (disposable; cartridge/filter respirators); protection from the elements (calico neck flaps; sun screen lotion 15+; tinted safety glasses; loose fitting light cotton shirt and trousers; wet weather trousers and jackets)
- Protective equipment may include fire extinguishers (water; foam; dry chemical powder; carbon dioxide); barricades; out of service tags; danger tags
- Context for operational safety and public health may include company policy and procedures concerning occupational health and safety; public health; emergency response; training provided for occupational health and safety; company history in occupational health and safety; level of accidents and injuries in the work place; work methods and processes; product and equipment design; product and equipment selection; product and equipment use; work place environment; type and level of risk management in place
- Safe operating procedures may include adhering to all site procedures; observing site speed limits; working safely around other machines and personnel; observing right of way in incline and decline; wearing of seat belts; use of the self-rescue device; respiratory devices; hazard identification and recognition procedures; awareness and access to escape ways; emergency procedures; observation of electrical and mechanical procedures; first aid
- Site environmental and heritage concerns may include dust; noise; water; flora and fauna; heritage legislation; culturally sensitive sights and artefacts

Range of Variables (Continued):

- Machinery may include dozers; skidders; tractors; excavators
- Implements may include ploughs; rakes; chopper rollers; tree pushers; blades; rippers; ridger; mounder
- Pre-operational checks are those checks specified by the manufacturer prior to operating the item of equipment and may include visual and audio warning devices and lights; engine and stop engine lights (orange and red); fluid levels (windscreen washer tank; hydraulic oil; coolant; grease; water; engine oil; fuel); cab (horn; lights; air conditioner); air filter restriction indicator; display instrumentation and gauges (indicators; gauges; laser levels); computer systems
- Materials may include overburden; topsoil; gravel; road base; sand; water; rubbish; rock fill
- Establishment plan may include survey information; dimension of site; recontouring plans; types of reticulation systems; types of vehicles; personnel requirements; flora and/or seeding requirements; fertiliser; company environmental guidelines and processes
- Catchment devices may include diversion channels; holding structures (banks; drains; dams); sediment dams
- Records may include end of shift documentation; work log; supplies log; computer readings
- Relevant legislation codes; regulations and standards include Isolation procedures; occupational health and safety legislation; Site regulations and procedures; Australian Standards; Manufacturers' specifications and recommendations
- Methods may include ploughing; chopper rolling; chaining; tree pushing; blading/raking; mounding/ridging; ripping.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Organisation guidelines in relation to site, occupational health and safety and environmental procedures
- Emergency procedures
- Soil properties
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Ripping and mounding methods and limitations
- Destumping techniques
- Blading techniques.

Critical underpinning skills

- Understand a variety of information styles
- Record and maintain information on a simple form accurately
- Signal using recognised industry and organisation hand signals
- Interpret and follow instructions for site preparation
- Interpret plans, reports, maps, and specifications
- Recognise common diseases, pests, and nutrition deficiencies
- Use communications equipment
- Recover equipment using recognised techniques
- Interpret ground conditions
- Organise work tasks
- Safe ancillary equipment operation, maintenance, cleaning
- Appropriate licences/certificates.

Prepare sites for forest establishment using tracked or wheeled equipment — FPI FGM 047 A

Assessment context

Competency should be demonstrated in an actual workplace or in a situation that reproduces workplace conditions.

Assessments are to be conducted in the work environment wherever possible. Some aspects may be conducted under simulated conditions where issues of safety, environmental damage are limiting factors.

All assessments must be valid, reliable, fair and flexible accumulating sufficient evidence to demonstrate the required competence.

Competency Statement

Evidence of competency is best obtained by observing activities in the field and reviewing the outcomes of several activities over a period of time, under normal industry operating conditions. If this is not practicable, observations in a realistic simulated environment may be substituted and/or written examinations and tests.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology	•		

FPI FGM 048 A Undertake instrument survey activities

Description

This unit includes the description of the work involved in locating and marking boundaries in the field for a range of purposes.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Identify purpose and requirements of the survey

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Purpose and requirements of the survey are identified from written or oral request from supervisor.
4) Specifications of the survey are confirmed and clarified with the supervisor.
5) Tools required for the survey are identified and selected.

2 Undertake the instrument survey

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Location of the survey is identified from written or oral instructions
4) Survey equipment is set up and used in accordance with organisational guidelines.
5) Measurements are taken and recorded in accordance with organisational procedures and supervisor's instructions.
6) Any hazards or impediments to the survey are reported to the supervisor in accordance with organisational guidelines.
7) Any markings required in the field are accurately applied/positioned in accordance with organisational procedures.
8) Supervisor and colleagues are communicated with regularly throughout the survey activity to ensure smooth operation and progress.

3 Complete documentation requirements

1) Data from the survey is recorded in field book or other proforma in accordance with organisational procedures and supervisor's instructions.
2) Results are verified for omissions and errors by re-checking visual clues in measurements or actual data.
3) Any handwritten material is prepared to be legible for those who will analyse or prepare maps and/or plans.
4) Calculations are made in accordance with survey purpose and plotted accurately in accordance with organisational procedures.

Range of Variables

- Tools may include tape; hammer; pegs/pins; chain; measuring wheel; vertex; GPS
- Personal protective equipment and clothing may include glasses; boots; vest; sunscreen; hat; gloves
- Legislation, regulations, standards may include Environment Protection Act; State forest codes of practice; occupational health and safety regulations
- Purpose of undertaking the survey may be to lay out a road line; to mark establishment boundaries; assessment; to mark forest area boundaries; lay out of planting rows; site design; drainage design
- Safety issues/hazards may include sun; natural hazards.

Evidence Guide

Critical underpinning knowledge

- Awareness of occupational health and safety and environmental issues
- Survey techniques and tools
- Emergency procedures, including first aid
- Isolation procedures
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Field radio communications
- Weather interpretation
- Methods of navigating and geographically orienting in the field.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Read measurements accurately
- Work in a team
- Explain and describe site conditions and hazards
- Read, interpret and act on plans, maps and surveys
- Record and maintain information in field books accurately
- Interpret information in a way relevant to workplace requirements
- Follow instructions for receiving goods/checking documentation.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques		•	
Solving problems	•		
Using technology	•		

FPI FGM 049 A Prepare and implement an establishment plan

Description

This unit describes the work required to establish/re-establish a section of native forest or plantation (either in a monoculture or multiple use environment).

Suggested Pre-Requisites/Co-Requisites

FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps
FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace advanced

1 Plan establishment operations

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Strategic, planting, and design plans are reviewed, analysed and considered for impacts on establishment planning.
4) Planning for pre-preparation, establishment, post-establishment, and maintenance is undertaken in accordance with organisational guidelines.
5) Method(s) of establishment is/are identified/selected in accordance with the requirements of the forest type, local environment, and organisation guidelines.
6) The relevant individuals, groups and bodies are liaised with in accordance with organisation policy and guidelines.
7) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.
8) Any approvals required for the plan are sought and obtained.
9) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement establishment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the establishment are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with operational personnel and, where relevant, contractors, in accordance with organisational policy and guidelines.
5) Any permits or licences required are identified and obtained.
6) The relevant individuals, groups and bodies are liaised with during operations in accordance with organisation policy and guidelines.
7) Any documentation required by organisation and/or occupational health and safety guidelines is completed clearly and accurately.
8) Operational staff, clients, and any contractors are communicated with regularly throughout the establishment operations to ensure smooth operation and progress.

3 Monitor establishment

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, specifications, and any quality assurance indicators are being met and amendments to the process or methods are made where necessary.
5) Operational staff, clients, and any contractors are communicated with regularly throughout the establishment activity to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the establishment operations.

4 Review forest establishment

1) Data and documentation from the establishment operations is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the forest establishment.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis
- analysis of efficiency and effectiveness.

Range of Variables

- Other sources of information for planning may include aerial photo interpretation
- Site preparation for forest establishment may include the use of prescribed burns; intensive mechanical site preparation; pre-establishment weed control or soil conditioning
- Individuals/bodies/groups liaised with may include Local, State and Federal Government bodies/agencies; local lobby/interest groups; clients; traditional land owners
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Safety issues/hazards may include steepness of terrain; effects of extreme weather; dust; weed seeds; pollen.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Potential hazards for the area
- Establishment requirements of target species
- Establishment techniques for forest type(s).

Critical underpinning skills

- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Interpret aerial photographs
- Communicate establishment requirements to organisational staff and/or contractors
- Measure and document the performance of the establishment plan
- Communicate and liaise with bodies/groups internal and external to the organisation.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems			•
Using technology	•		

Description

This unit includes both plantation establishment operations and enrichment planting operations in areas being managed as regenerated native forest, as well as 'refilling' in a plantation.

Suggested Pre-Requisites/Co-Requisites

FPIC2029A	Work within environmental constraints
FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G41 A	Use basic hand held tools

1 Prepare for planting operation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Planting site and planting requirements are identified from job prescription or supervisor's instructions.
4) Appropriate planting equipment is selected in accordance with task requirements.
5) Planting equipment is maintained in accordance with organisational requirements.
6) Site conditions and hazards are identified and assessed in accordance with regulations and occupational health and safety procedures.
7) Equipment is carried and stored in a safe manner.
8) Planting stock sampling, examination and assessment criteria are understood and applied in accordance with organisation quality control requirements.
9) Planting stock is stored and prepared for planting to meet operational requirements.

2 Plant forest trees

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Environmental conditions are checked for the appropriate atmosphere moisture content and season.
4) Forest industry job prescription is used to ensure production target, quality, safety and specific job requirements are met.
5) Where required, site for each tree is assessed and selected for spacing, and growth suitability.
6) Tree stocks are selected after plant site preparation to meet job prescription requirements.
7) Unsuitable planting stock is discarded in accordance with organisational environmental guidelines.
8) Tree stock is handled carefully to minimise foliage and root damage.
9) Stocking requirements of job prescription are achieved in conjunction with other workers.
10) Work method and work pattern suits needs of particular operation.
11) Planting is monitored for quality in accordance with established procedures.
12) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation.

Range of Variables

- Items of equipment may include spade; planting frame; harness; box seedlings; auger

- Hole preparation includes depth; width; cultivation; potiputki; planting bag
- General factors identified for planting trees include depth; spacing; root placement; firmed vertical and undamaged
- Stocking requirements achieved individually and in conjunction with other workers.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- All safety, environmental, and planting requirements and techniques for operation in forest settings.

Critical underpinning skills

- Assess and select site for each tree
- Recognise common diseases, pests, and nutrition deficiencies
- Prepare planting hole, select tree stock and plant the tree to the requirements of the job prescription and to meet organisational requirements
- Oral communication with supervisors and others
- Read, interpret and act on job prescriptions.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques			
Solving problems			
Using technology			

Description

This unit includes both plantation operations and enrichment planting operations in areas being managed as regenerated native forest, as well as “refilling” in a plantation.

Suggested Pre-Requisites/Co-Requisites

FPIC2029A	Work within environmental constraints
FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity
FPI G26 A	Work effectively in work groups
FPI G41 A	Use basic hand held tools

1 Prepare for planting operation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Planting site and planting requirements are identified from job prescription or supervisor’s instructions.
4) Complete pre-operational checks are made on planting equipment.
5) Planting equipment is maintained in accordance with organisation requirements.
6) Personal protective equipment is maintained and worn in accordance with job prescription.
7) Site conditions and hazards are identified and assessed in accordance with regulations and occupational health and safety procedures.
8) Planting stock sampling, examination and assessment criteria are understood from instructions and applied in accordance with organisation quality control requirements.
9) Planting stock is stored and prepared for planting by planting machine to meet operational requirements.

2 Operate equipment to plant forest trees

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Forest industry job prescription is used to ensure production target, quality, safety and specific job requirements are met.
4) Tree stocks are selected after plant site preparation to meet job prescription requirements.
5) Unsuitable planting stock is discarded in accordance with organisational environmental guidelines.
6) Tree stock is handled minimally to minimise foliage and root damage.
7) Where appropriate for the equipment, tree stock is fed into the planting machine.
8) Work method and work pattern suits needs of particular operation.
9) Planting is monitored for quality in accordance with established procedures.
10) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation.

Range of Variables

- Items of equipment may include planting machine; tube planter; planting frame; harness; box seedlings; auger
- Hole preparation includes depth; width; cultivation
- General factors identified for planting trees include depth; spacing; root placement; firmed vertical and undamaged; position of seedling in row
- Stocking requirements achieved individually and in conjunction with other workers.

Evidence Guide

Critical underpinning knowledge

- Occupational health and safety guidelines, procedures, and principles, including manual handling
- All safety, environmental, and planting requirements and techniques for operation in forest settings
- Uses of communications systems between planter and driver.

Critical underpinning skills

- Select tree stock and operate the plant machine safely to plant the tree stock to meet the requirements of job prescription and to meet organisation requirements
- Recognise common diseases, pests, and nutrition deficiencies
- Communicate with the driver using the communication system
- Read, interpret and act on job prescriptions
- Complete pre-operational checks.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques			
Solving problems			
Using technology	•		

Description

This unit describes the work undertaken to fertilise trees within a plantation.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G22 A	Plant to undertake a routine task
FPIC2029A	Work within environmental constraints
RUA AG2009CH A	Apply chemicals and biological agents

1 Prepare for fertilisation operation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Fertilising requirements are identified from job prescription or supervisor's instructions.
4) Appropriate fertilising equipment is selected in accordance with task requirements.
5) Fertilising equipment is maintained in accordance with organisational requirements.
6) Personal protective equipment is maintained and worn in accordance with job prescription.
7) Equipment is carried and stored in a safe manner.
8) Site conditions and hazards are identified and assessed in accordance with regulations and occupational health and safety procedures.
9) Fertiliser is removed safely from bulk storage to meet operational requirements.

2 Fertilise plantation plants

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Forest industry job prescription is used to ensure production target, quality, safety and specific job requirements are met.
4) Fertiliser site is prepared and located in accordance with industry recommended techniques and to job prescription requirements.
5) Measured dose of fertiliser is applied to prepared site to meet job prescription and industry requirements.
6) Work method and work pattern suits the needs of the particular operation.
7) Communication with supervisor and other workers is maintained to ensure efficient workflow co-ordination and personnel co-operation.

Range of Variables

- Equipment may include spade and fertiliser applicator; machine applicator; aerial applicator
- Site conditions assessment includes ground conditions; slope; depressions; rock and weather conditions.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Fertilising requirements as stated in job prescription
- The application of chemicals and biological agents, specifically:
  - ◊ personal protective equipment and first aid procedures required for the use of agricultural and/or veterinary chemicals
  - ◊ practices required during farm chemical use to protect the environment, including waterways and irrigation drains
  - ◊ routes of exposure of poisons into the body and methods of limiting exposure and the relevance of poison schedules as they relate to agricultural and veterinary chemicals
  - ◊ the first aid procedure to carry out in the event of human poisoning by agricultural and/or veterinary chemicals
  - ◊ calibration of machine spreaders.

Critical underpinning skills

- Select and maintain fertiliser equipment
- Recognise common diseases, pests, and nutrition deficiencies
- Apply fertiliser in the correct quantities, correct distance and in correct location from the plant
- Operate the range of application equipment on the property safely and competently
- Transport chemicals and biological agents
- Store chemicals and biological agents within the workplace
- Maintain and clean chemical equipment in line with established industry standards
- Read complex information including charts, tables and weather maps
- Read and interpret written material appropriately for local conditions
- Measure liquids and quantities accurately
- Calculate ratios
- Maintain accurate record system
- Report factual information accurately, according to reporting requirements.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams	•		
Using mathematical ideas and techniques			
Solving problems			
Using technology			

Description

This unit describes the work required to release or free trees from competition or noxious weeds using manual tools, machinery, or agrichemicals.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G22 A	Plan to undertake a routine task
FPI G26 A	Work effectively in work groups
FPI G41 A	Use basic hand held tools
FPI FGM 065 A	Select trees (for tending operations)
FPIC2029A	Work within environmental constraints
RUA AG2009CH A	Apply chemicals and biological agents

1 Prepare for releasing/weed control operation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Any licences or permits required for the operation are identified and obtained.
4) Chemical handling legislative requirements are followed at all times.
5) Tree releasing/weed control requirements are identified from the job prescription or supervisor's instructions.
6) Appropriate tools, machinery and/or equipment is selected and checked in accordance with task requirements.
7) Tools, machinery and/or equipment is checked before use and unsafe or faulty items are identified and repaired to organisation standard.
8) Personal protective equipment is worn and occupational health and safety precautions designed to protect self when handling chemicals are complied with at all times.
9) Chemical labels are read, and any instructions with regard to storage, transport, application, hazards and first aid procedures are carried out.
10) Operational maintenance of tools is undertaken to organisation standard and applicable legislative requirements.
11) Cutting edge of hand tool is examined to determine extent of sharpening required.
12) Sharpening, where required is conducted safely and efficiently.
13) Required support equipment, personal protective equipment, spares, are selected, prepared and carried safely at all times to minimise delays.
14) Site hazards are identified and assessed in accordance with regulations and occupational health and safety procedures.

2 Check calibration of a hand operated application equipment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Calibration check is completed by measuring units released and comparing with recommended quantities.
3) Calibration is adjusted and rechecked where required to meet manufacturer's recommendation and job prescription requirements.

3 Release trees from competing vegetation using agrichemicals

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Forest industry job prescription is used to ensure production target, quality, safety and specific job requirements are met.
4) Affected area is located from written or oral instructions or area map or plan.
5) Unwanted plant growth is treated in accordance with job prescription.
6) Agrochemical application achieves coverage in accordance with job prescription.
7) Prevailing weather conditions are assessed and monitored to minimise spray drift.
8) Work pattern is carried out without hazard to persons, the environment or the planted tree.
9) Communication with site personnel is maintained to share relevant workplace information and to ensure efficient work flow co-ordination and personnel co-operation.

4 Release trees from competing vegetation using hand tools or machinery

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Forest industry job prescription is used to ensure production target, quality, safety and specific job requirements are met.
4) Affected area is located from written or oral instructions or area map or plan.
5) Targeted vegetation is removed without causing damage to standing trees.
6) Vegetation cutting method used is safe and conforms to recommended forest industry guidelines and job prescriptions.
7) Communication with site personnel is maintained to share relevant workplace information and to ensure efficient work flow co-ordination and personnel co-operation.

5 Complete clean-up after spraying

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) All equipment is washed, rinsed and disposed of in accordance with organisational and occupational health and safety guidelines.
4) Washing water is disposed of in accordance with organisational occupational health and safety procedures or material safety data sheet directions.
5) Unused chemicals are stored safely in accordance with directions on label.
6) Unused chemicals are transported safely in accordance with directions on label.
7) Any waste materials/containers are disposed of in accordance with organisational occupational health and safety procedures or material safety data sheet directions.

Range of Variables

- Applicators for the use of liquid or solid agrichemicals
- Hand tools may include hooked or straight slasher; mattock; brushcutter; chainsaw; brush hook; axe; hatchet
- Machinery may include machine slasher; jungle buster; inter-row roller
- Occupational health and safety requirements include the use of personal protective equipment; safe chemical handling and storage; use of safety equipment; control of hazards; and maintenance of safe forest practices, including location of other people
- Targeted vegetation may include grasses; woody weeds
- Tree releasing is conducted over a full range of site conditions that the equipment is capable of handling.

Evidence Guide

Critical underpinning knowledge

- Appropriate chemicals for the target species
- Awareness of all safety and environmental requirements for operation in forest settings
- Calibration of equipment
- Chemicals used for tree releasing
- Factors which influence the use of different methods of tree releasing
- Forest and work site hazards
- Handling and storage of chemicals
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- State legislature and relevant codes of practice relating to the use of chemicals and hazardous substances
- Targeted and non-targeted vegetation
- Use and care of machinery
- The application of chemicals and biological agents, specifically:
  - ◊ personal protective equipment and first aid procedures required for the use of agricultural and/or veterinary chemicals
  - ◊ practices required during farm chemical use to protect the environment, including waterways and irrigation drains
  - ◊ routes of exposure of poisons into the body and methods of limiting exposure and the relevance of poison schedules as they relate to agricultural and veterinary chemicals
  - ◊ the first aid procedure to carry out in the event of human poisoning by agricultural and/or veterinary chemicals
  - ◊ material safety data sheets.

Critical underpinning skills

- Apply chemicals in the correct quantities, correct distance and in correct location from the plant
- Calculate ratios and formulations
- Communicate with site personnel
- Conduct operations in such a way that no damage occurs to equipment, property, environment, forest trees or personnel.
- Interpret local weather conditions
- Maintain and clean chemical equipment in line with established industry standards
- Maintain an accurate record system
- Measure liquids and quantities accurately
- Operate the range of application equipment safely and competently
- Operate tools efficiently
- Read and interpret written material appropriately for local conditions
- Read and interpret written plans, policies and prescriptions, including material safety data sheets
- Recognise common diseases, pests, and nutrition deficiencies
- Release trees using methods appropriate for the work site conditions
- Report factual information accurately, according to reporting requirements
- Select and maintain application equipment
- Store chemicals agents within the workplace
- Transport chemical agents safely
- Equipment is calibrated
- Demonstration of equipment operation should cover:
  - ◊ Awareness of all safety and environmental requirements for operation in forest settings
  - ◊ Selection and maintenance of appropriate equipment
  - ◊ Releasing methods appropriate for the work site conditions
  - ◊ Spray drift and wastage minimised
  - ◊ No damage occurs to equipment, environment, property, forest trees or personnel.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems			
Using technology			

FPI FGM 058 A Rehabilitate tracks, quarries and landings

Description

This unit is equivalent to the endorsed unit H*5.11 Renovate tracks and landings* from the Harvesting sector of the Forest and Forest Products Industry.

Suggested Pre-Requisites/Co-Requisites

FPIC2029A	Work within environmental constraints
FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI G29 A	Solve problems in the workplace - advanced
FPI G41 A	Use basic hand held tools

1 Establish rehabilitation requirements and plan operations

1) Restoration and revegetation requirements are identified from harvesting plan, environmental requirements, applicable forest practices code and management instructions.
2) Site is inspected to determine impact of harvesting or other operations and specific rehabilitation requirements.
3) Natural water flow/water courses around tracks, quarries and landings are identified.
4) Removal of all recoverable logs and equipment no longer required is ensured.
5) Specific equipment, attachments and operations required to renovate tracks, quarries and landings are identified.
6) Operational sequence to minimise renovation time and residual equipment damage is determined.
7) Plans meet environmental care principles and statutory body requirements.
8) Plans meet applicable occupational health and safety and fire safety regulations, policies and precautions.
9) Communication with management, crew and external authorities is maintained to ensure effective planning of renovation

2 Rehabilitate tracks, quarries and landings

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Equipment for rehabilitation is selected and suitable attachments are selected and fitted.
4) Construction materials are pulled out and removed from site.
5) Ramps and other constructions are broken up and spread in accordance with rehabilitation plan.
6) Surface is filled or ripped in accordance with rehabilitation plan.
7) Crushed rock, sand, or other stabilising material is broken up and/or buried as required by rehabilitation plan.
8) Top soil is spread and compacted over base material where required by rehabilitation plan.
9) Run-off and drainage channels are established to approximate natural drain lines in accordance with rehabilitation plan.
10) Communication with management, crew and external authorities is maintained to ensure effective planning of renovation.

Range of Variables

- Equipment used may be wheeled or tracked and may be dozer; front end loader; skidder or grader using bucket or blade attachments
- Operations may be conducted at forest harvesting site after logging is completed and include rehabilitation of both landing and tracks over a range of designs and conditions typical of logging requirements in the local area
- Legislation, regulations, standards may include Environmental Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Rehabilitation will be carried out over the full range of operational weather conditions
- Occupational health and safety requirements include the use of personal protective and high visibility clothing, use of safety equipment, control of hazards and maintenance of safe forest practices including location of other people and potential falling objects and required actions relating to forest fire.

Evidence Guide

Critical underpinning knowledge

- Occupational health and safety guidelines, procedures, and principles, including manual handling
- General environmental care and statutory body requirements
- Specific site plans and requirements
- Ground-water behaviour.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Rehabilitate tracks, quarries and landings over the required range of site and weather conditions, terrain and restoration requirements
- Communicate and liaise with bodies/groups internal and external to the organisation
- Read and interpret written material appropriately for local conditions
- Read complex information including charts, tables and weather maps.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

FPI FGM 058 A Rehabilitate tracks, quarries and landings

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology			

Description

This unit describes the work required to ensure the health of a stand of trees. The work involves the assessment of trees and the application of treatments.

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced

1 Plan stand health program

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Organisational strategic and tending plans, and appropriate regulations are reviewed, analysed and considered for impacts on stand health planning.
4) Methods of encouraging stand health are identified/selected in accordance with organisation guidelines.
5) The relevant individuals/bodies/groups are liaised with in accordance with organisation policy and guidelines.
6) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.
7) Any approvals required for the plan are sought and obtained.
8) The plan and its performance indicators are clearly articulated, documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement stand health program

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the stand health program are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with operational staff and/or contractors in accordance with organisational policy guidelines.
5) Any permits or licences required for the stand health are identified and obtained.
6) The relevant individuals/bodies/groups are liaised with during the in accordance with organisation policy and guidelines.
7) Any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
8) Operational staff, clients, and any contractors are communicated with regularly throughout the stand health activity to ensure smooth operation and progress.

3 Monitor stand health

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff, clients, and any contractors are communicated with regularly throughout the stand health activity to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the stand health management activity.

4 Review stand health program

1) Data and documentation from the stand health is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the conduct of stand health operations.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Methods of encouraging stand health may include application of fertilisers; application of pesticides/herbicides; pruning techniques; competition management techniques; browsing control techniques
- Documentation required by the organisation may include maps; plans; reports
- Approvals may be required; where the use of chemicals or biological agents is intended; where browsing control techniques may impact on neighbouring properties
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent
- Measurable performance indicators, specifications and targets
- Health and stress problems are pests and diseases, fungal, structural, storm damage, root damage, gassing, compaction, incineration, nutrient deficiencies, chemical, changes in levels, competition, poor drainage, vandalism, salt, drought
- Pests and diseases may include insects, fungal, bacterial, viral, birds and animals
- Disposal methods may include burning, burying, chemical destruction.

Evidence Guide

Critical underpinning knowledge

- Health requirements of the target species
- Relevant legislation and regulation requirements
- 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
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Statutory requirements relating to the use of pesticides and herbicides
- Recognition and identification of a range of species
- Methods of collecting and storing specimens for identification
- Plant identification sources.

Critical underpinning skills

- Contribute to a tree assessment
- Undertake a treatment program
- Recognise common diseases, pests, and nutrition deficiencies
- Complete routine documentation accurately, in accordance with legislative requirements
- Present information orally and in writing to a wide range of individuals and groups
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Read and act on written information including maps, plans, reports etc
- Assess and extract critical information from sources such as legislation, manufacturer's specifications, standards etc, codes of forest practices, etc
- Complete data, quality control and other documentation clearly and accurately
- Negotiate and liaise with bodies/groups internal and external to the organisation
- Determine quantities and costings
- Interpret numerical data
- Collate and analyse information, and prepare written progress reports.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level		
	1	2	3
Collecting, analysing and organising information			•
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology	•		

FPI FGM 065 A Select trees (for tending operations)

Description

This unit describes the work involved in selecting trees for thinning, retaining, pruning etc.

Suggested Pre-Requisites/Co-Requisites

FPIC2029A	Work within environmental constraints
FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task

1 Identify purpose of selection

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Reason for the selection of trees is identified from written or verbal request or organisational procedures.
3) Verbal confirmation of reason for selection is sought from supervisor, if necessary, in accordance with organisational guidelines.

2 Identify characteristics of trees to be selected

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Characteristics of trees to be selected are identified from written or verbal request or previous experience.
4) Distribution of trees to be selected in the given area is identified from written or verbal request or previous experience.
5) Verbal confirmation of tree characteristics and/or distribution of trees is sought from supervisor, if necessary, in accordance with organisational guidelines.

3 Select and mark trees

1) Occupational health and safety precautions are taken while working within the forest and the appropriate personal protective equipment is used.
2) Area of forest to be worked within is identified from written or verbal request and located on the ground.
3) Equipment to be used is selected and used in accordance with organisational procedures.
4) Trees are marked, or remarked, in accordance with organisational procedures, using the appropriate marking equipment.
5) Recommendations for further trees to be taken are made in accordance with organisational procedures.

Range of Variables

- Trees may be selected for thinning; pruning; disease treatment; harvesting; retaining; seed collection; removal because of damage; species; retention as habitat trees or recruitment habitat trees.
- Worksite hazards may include slope; water; rock; undergrowth; slash; depressions/holes; falling branches
- Tree selection includes stocking; green crowns; spacing and quality requirements as stated in the job prescription; presence of nests or epiphytes according to special environmental management system guidelines
- Method of selecting trees may include counting trees at regular intervals (e.g. every 5^{th} tree etc); selecting trees with particular characteristics (e.g. storm damage, disease); selecting predetermined number of trees in a given area (e.g. 5 best trees in a square of 3 rows by 4 trees); selecting trees for specialised products.
- Marking equipment may include tape; paint; blaze.

Evidence Guide

Critical underpinning knowledge

- Tree selection criteria for suitable crop trees include dominance and vigour; leader defects; straightness; lean; size; angle; and number of branches; spacing; tree health
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Tree selection components of the job prescription.

Critical underpinning skills

- Identify characteristics against which selection is being made
- Interpret verbal or written instructions
- Locate forest area in the field from a map or plan
- Recognise common diseases, pests, and nutrition deficiencies
- Select suitable crop trees that meet the requirements of the job prescription
- Conduct operations in such a way that no damage occurs to equipment, property, environment, forest trees or personnel.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities			
Working with others in teams			
Using mathematical ideas and techniques	•		
Solving problems			
Using technology			

Description

This unit describes the work involved in pruning trees from either on or off the ground.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools
FPI FGM 065 A	Select trees (for tending operations)

1 Prepare for pruning operation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Pruning requirements are identified from job prescription.
4) Appropriate pruning equipment is selected in accordance with task requirements.
5) Pruning equipment is maintained, stored and transported in accordance with work site requirements.
6) Personal protective clothing and equipment is maintained and worn in accordance with job prescription.
7) Site conditions and hazards are identified and assessed in accordance with regulations and occupational health and safety procedures.
8) Equipment is checked before use and unsafe or faulty items identified and repaired at the worksite to organisation standard.
9) Required spare parts and protective equipment are selected, prepared and carried safely at all times to minimise delays and maximise efficiency.

2 Select crop trees

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Trees are selected as crop trees in accordance with job prescription priorities and requirements.

3 Prune plantation tree

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Forest industry job prescription is used to ensure production target, quality and specific job requirements are met.
4) Branches, epicormics and green shoots are removed flush with the branch collar with minimal damage to stems and branch collar.
5) Ladder handling and pruning techniques used conform to forest industry practice.
6) Job prescription requirements are met in terms of stocking, quality and pruned height.
7) Communication with site personnel is maintained to share relevant workplace information and to ensure efficient workflow co-ordination and personnel co-operation.

4 Assess pruning quality

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) That the appropriate tree was selected is visually checked.
4) That the stub length and pruned height meets the requirements of the job prescription is checked.
5) Any incorrect pruning is rectified.
6) Communication with site personnel is maintained to share relevant workplace information and to ensure efficient workflow co-ordination and personnel co-operation.

Range of Variables

- Equipment used may include pruners; jacksaw; pouch; steps; epicormic remover; pole saw
- Equipment used to gain access to the tree may include ladder; climbing gear; elevated platform; cherry picker
- Worksite hazards may include slope; water; rock; undergrowth; slash; depressions/holes; falling branches; placement of ladder; climbing ladders; ladder instability; loss of balance; and damp conditions
- Tree selection includes stocking; green crowns; spacing and quality requirements as stated in the job prescription.

Evidence Guide

Critical underpinning knowledge

- Tree selection criteria for suitable crop trees include dominance and vigour; leader defects; straightness; lean; size; angle; and number of branches; spacing; tree health
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Hazards of pruning from a ladder
- Safety requirements when using a ladder
- Form pruning.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Sharpen and maintain tools required for pruning
- Store and carry tools safely
- Using appropriate pruning techniques to prune trees to the required height, removing all branches, epicormics and green shoots to meet organisation requirements
- Select suitable crop trees that meet the requirements of the job prescription
- Use a ladder to prune trees to the required height, removing all branches, epicormics and green shoots to meet organisation requirements
- Conduct operations in such a way that no damage occurs to equipment, property, environment, forest trees or personnel.
- Communicate orally and using hand signals with other operators to maintain effective and safe felling
- Interpret and use written information contained in the Log Volume Table to calculate volume (metric) from measurements of length and diameter.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities	•		
Working with others in teams			
Using mathematical ideas and techniques			
Solving problems			
Using technology	•		

FPI FGM 069 A Trim and cross-cut felled trees (non-commercial/non-production)

Description

This unit describes the work required to move or remove a fallen tree which may either pose an inconvenience or a hazard. This unit is intended for use in situations where the production of timber is not the primary focus of the activity.

This is adapted from an endorsed unit of competence within the Forest Industry National Competency Standards - Harvesting Sector.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G41 A	Use basic hand held tools
FPI FGM 065 A	Select trees (for tending purposes)
FPIC2029A	Work within environmental constraints

1 Identify cross-cutting requirements

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Describe cutting methods for various log types and situations.
4) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation.

2 Prepare and maintain equipment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Chainsaw and component options suitable for planned cutting are selected and prepared.
4) Chainsaw is checked to relevant safety standards prior to use.
5) Required support tools, protective equipment, first aid gear, spares, maintenance requirements and fuel are selected, prepared, carried and positioned to minimise cutting delays.
6) Characteristics of blunt or damaged chainsaw are recognised.
7) Chainsaw is sharpened and adjusted or components changed to maintain cutting safety and productivity.

3 Assess tree and plan cutting

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Environmental conditions including ground growth, ground slope and ground hazards are identified and used to assess the cutting of each tree.
4) Awareness of environmental conditions and other personnel's activity are maintained and cutting activity modified as a result of significant changes.
5) Tree, location and stability are assessed for conditions likely to affect safety of cross cutting.
6) Tree is moved or stabilised for safe cutting.
7) Sequence of cross cuts is planned to maintain control of cut sections and minimise cutting problems.
8) Debris likely to cause saw damage during trimming or cutting is cleared from tree surface.
9) Trees which cannot be safely cut are identified and referred to others.
10) Communicate with supervisor and other workers is maintained to share relevant workplace information.

4 Trim and cross-cut tree

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Slash is regularly cleared from tree and work site to allow access for cutting and movement.
4) Tree section on each side of planned cut is secured or potential movement recognised and planned for.
5) Area is checked to ensure saw clearance around full log circumference
6) Individual cross cut is planned to optimise time and safety.
7) Saw is operated and tree cut in accordance with safety standards applicable to site conditions.
8) Cutting technique is adjusted in response to movement and condition of tree.
9) Unexpected characteristics of tree are identified and planning reviewed
10) Wedges are used as required to assist cutting.
11) Cross cut is completed once initiated.
12) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation and to meet safety requirements.

FPI FGM 069 A Trim and cross-cut felled trees (non-commercial/non-production)

Range of Variables

- Assessment of tree and location includes stresses, ground conditions, slope, tree support, compression of branches, hazards from other logs or ground obstacles
- Cross-cutting will be undertaken in all conditions for which it is safe including slopes up to the maximum allowed by relevant regulations
- Defects to be found when assessing prior to cutting include splits; falling damage; fire damage; infestation; pipe; shake; twist; and branch/knot locations
- Occupational health and safety regulations include codes of practice and AS 2727 and requirements include availability of correct first aid kit; erection of warning signs; wearing of required personal protection including head; eye; cut proof leg protection; safety footwear and high visibility vest; manual handling requirements; maintenance of safe forest practices including location of other people and potential falling objects; required actions relating to forest fire; working alone requirements; recognition of hazards and required actions in bush and tree falling procedures for cross-cutting on slopes; acceptable cutting positions and use of approved containers for fuel and oil
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Trees may be trimmed and cross-cut on site before extraction
- Trees of any size and condition that can be safely trimmed and cross-cut.

Evidence Guide

Critical underpinning knowledge

- Identification and evaluation of structural defects in trees
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- All safety and environmental requirements for operation in forest settings.

Critical underpinning skills

- Contribute to a tree assessment
- Assess, plan, trim, and cross-cut within the range of variables for trees and conditions
- Recognise common diseases, pests, and nutrition deficiencies
- Identify own limitations
- Select and maintain appropriate equipment
- Prepare and communicate in a way which maintains efficient operation
- Safe operation and maintenance of a chainsaw
- Communicate orally and using hand signals with other operators to maintain effective and safe felling.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Trim and cross-cut felled trees (non-commercial/non-production) FPI FGM 069 A

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities		•	
Working with others in teams			
Using mathematical ideas and techniques			
Solving problems	•		
Using technology		•	

FPI FGM 073 A Develop an inventory program

Description

This unit describes the work required to develop a program for the conduct of forest assessments. It includes pests and diseases, stocking, wood volume/yield and site factor assessments.

Suggested Pre-Requisites/Co-Requisites

FPI G20 A	Collect, analyse and organise information - basic
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan inventory program

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Organisation's strategic and marketing plans are reviewed, analysed and considered for impacts on inventory programming.
4) Frequency of assessment for particular assessment types and sizes of related sample areas are determined from strategic and marketing plans.
5) Any additional available information produced by the organisation is reviewed, analysed and considered for impacts on inventory programming.
6) Methods of measurement for assessment types are determined and documented in accordance with organisation guidelines and policies.
7) Operational personnel and immediate management are liaised with for input to the inventory program in accordance with organisation policy and guidelines.
8) Measurable performance indicators, specifications and targets are determined and documented for assessment types in accordance with organisation guidelines.
9) Any approvals required for the assessment plan types are recognised and documented within the inventory program.
10) The inventory program and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement inventory program

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Scheduling and co-ordination required for the assessment are undertaken in accordance with organisational guidelines.
4) Any permits or licences required for the assessment are identified and obtained.
5) Documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
6) Coordinating personnel, or other relevant personnel, are communicated with regularly throughout the assessment activity to ensure smooth operation and progress.
7) Advice is given to coordinating or other relevant personnel during the assessment, when requested, or the need is observed.

3 Monitor assessment

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are implemented.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, and specifications are being met and amendments to the process or methods are made where necessary.
5) Coordinating personnel, or other relevant personnel, are communicated with regularly throughout the assessment activity to ensure smooth operation and progress.
6) Checks are made to ensure that the documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the assessment activity.

4 Review assessment

1) Data and documentation from the inventory program is analysed against the program in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the conduct of the inventory program.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any relevant maps or plans produced or amended through the process
- the data recorded during the process
- any difficulties or issues faced
- any recommendations for future programming
- cost analysis.

Range of Variables

- Purpose of preparing an inventory program may be to calculate the current and expected wood volume/yield within the forest; set a monitoring process in place to enable reporting against marketing, strategic and business plans.
- Tools may include management information systems; geographic information systems; aerial photography
- Individuals/bodies/groups liaised with may include neighbouring landholders; federal/state/local government bodies/agencies; clients; immediate management
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Documentation required for forest assessment may include creation of, or amendment to map; plan; report; form
- Method of measurement/survey may include the use of geographic information systems; interpretation of aerial photography; a range of sampling techniques
- Safety issues/hazards within the forest may include ground conditions; sun/wind; aerial hazards; dead/burnt trees/limbs; hang-ups; pine cones; insects
- Measurable performance indicators, specifications and targets may include accuracy of maps/plans; completion of data; rechecking/review of data
- Additional information produced by the organisation in relation to the sample area may include previous surveys/assessments; aerial photography; geographic information systems data; previous reports; management information systems data; marketing, strategic and business plans and associated implementation plans.

Evidence Guide

Critical underpinning knowledge

- Marketing requirements for the organisation
- Strategic directions of the organisation
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Data collection and analysis methods
- Map and plan preparation techniques
- Relevant legislation and regulation requirements
- Local, common, vegetation and soil types
- Characteristics and growth habits of local vegetation
- Soil characteristics and topography of local area
- Use and application of appropriate survey/assessment equipment
- Statistical analysis techniques applicable to forest assessments
- Sampling techniques.

Critical underpinning skills

- Collect, organise, analyse and evaluate plans, policies and prescriptions
- Select sampling techniques and create sampling designs
- Interpret information for application to forest assessments
- Interpret organisation guidelines/plans
- Identify species growing in the target area
- Prepare site maps/plans
- Recognise common diseases, pests, and nutrition deficiencies
- Operate equipment safely
- Identify vegetation in reference texts etc
- Prepare and write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by report format
- Use and adapt complex maps and diagrams
- Give formal or informal presentations to individuals/groups, answer questions and provide accurate information
- Collect, organise, analyse and evaluate data given purpose of survey.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems			•
Using technology	•		

FPI FGM 075 A Collect data or a sample from sample area for assessment

Description

This unit describes the work in marking out a sample area/taking a sample, measuring an aspect of the sample area and recording the results ready for further calculation and analysis. These samples could be foliage, wood, temperature, soil, seed, insect, pollen, or weeds.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity
FPIC2029A	Work with environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Identify sample area required for assessment

1) Area required is identified on map or plan from written or verbal instructions.
2) Boundaries of area required are identified on map or plan from written or verbal instructions.

2 Locate/relocate sample area in the field

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Area of, or number of trees within, the sample area is confirmed from map or site plan.
4) Starting point for measurement is identified on the map or site plan from written or verbal instructions.
5) Location, boundaries, and starting point for measurement/sample are confirmed through verbal consultation with supervisor.
6) Relationship of sample area to the whole is identified and understood from map, site plan, or verbal instructions.

3 Collect data/sample in sample area

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Tools/instruments required are identified from instructions and prepared/gathered for the job.
4) Boundaries of the sample area or the sample are located in accordance with site plan or map.
5) Boundaries and corners of the sample area are marked in accordance with site plan or map and organisational procedures or supervisor's instructions.
6) Measurements are taken, and the tools/instruments used in accordance with written or verbal instructions.
7) Samples are collected and labelled in accordance with written or verbal instructions.

4 Re-measure trees in sample area

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Any results of previous measurements are identified from instructions and prepared/gathered for the job.
4) Tools/instruments required are identified from instructions and prepared/gathered for the job.
5) Boundaries and corners of the sample area are located and verified from previously used maps or site plans and existing markings identified and located.
6) Where previous markings are unclear or have been obliterated, they are re-marked in accordance with site plan or map and supervisor's instructions.
7) Measurements are taken, and the tools/instruments used in accordance with written or verbal instructions.

5 Complete records

1) Organisational pro-forma(s) are completed in accordance with supervisor's instructions.
2) Results are verified for omissions and errors by re-checking visual clues in measurements or actual area.
3) Any hand-written material is prepared to be legible for those who will analyse/calculate results.
4) Completed records are submitted for further calculation in accordance with supervisor's written instructions.

Range of Variables

- Purpose of measurement may be to calculate the volume of timber; to calculate residue; for inventory control; for stocking count; to plot on site plan/map; to assist with trials; for damage assessment (e.g. insect, wind); for pests and diseases survey/assessment; to document site factors
- Sample areas may be either permanent or for a single calculation
- Samples may include foliage; wood; temperature; soil; seed; pollen; weeds; insect
- Marking of boundaries and corners may be by pegging; spraying; pruning; placing flags; placing balloons
- Measurement may be by measuring lengths; measuring diameters; counting; estimation of cover/metre; measuring circumference
- Tools/instruments required for measuring may include measuring tape; calliper; measuring pole; labels for samples; chainsaw; rifle
- Tools/instruments required for marking may include pruning shears; paint; purpose-specific balloons; flags; pegs; mallet
- Personal protective equipment may include boots; helmet
- Records may be made manually or with the aid of electronic/computer devices
- Measurements may be of diameter; girth; circumference; numbers
- Relationship of sample area to the whole may be identified as a percentage; a ratio; a fraction.

FPI FGM 075 A Collect data or a sample from sample area for assessment

Evidence Guide

Critical underpinning knowledge

- Metric measurements
- Correct safety equipment
- Use of various tools/instruments
- Purpose of assessment
- Recognition of common trees/plants
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Recognition of common characteristics/symptoms of problems
- Local topography and hazards

Critical underpinning skills

- Read, interpret, and use site plans/maps
- Identify damaged trees
- Count standing trees
- Recognise common diseases, pests, and nutrition deficiencies
- Read measurements from a tape measure
- Record numbers, results and reference details accurately
- Use keyboard/keypad to collect data
- Read and interpret written instructions and material appropriately for local conditions
- Move through the bush safely.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information		•	
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams			
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology	•		

Description

This unit also describes the work involved to load and unload vehicles, transport machinery, and spread water.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G22 A	Plan to undertake a routine task
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints

1 Plan movement

1) Delivery sites are located.
2) Access is confirmed and manoeuvring approach planned for loading and unloading sites.
3) Truck loads and transport routes are planned to meet load restrictions, State/Territory road regulations and road conditions.
4) Transport routes selected minimise driving time and distances within safe operational conditions.
5) Timing of load transport recognises availability of personnel and equipment needs at loading sites.
6) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation.

2 Inspect and start truck

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Check is made of truck and ancillary equipment prior to operation in accordance with manufacturer’s specifications, job instructions and statutory regulations
3) Nearby personnel are advised of impending truck operation as appropriate.
4) Engine is started in accordance with manufacturer’s guidelines and organisation/site start-up procedures.
5) Instruments and gauges are monitored to ensure equipment operation is safe according to manufacturer’s specifications and safety rules.

3 Load on to truck

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Truck is positioned to maintain load safety and security while loading.
3) Position of bolsters, slippers, stanchions and/or chocks is confirmed or reset for planned load.
4) Loading is supervised and directions provided to ensure load meets all requirements.
5) Loads are secured when required with binders/chains in accordance with job and regulatory requirements.
6) Required documentation is completed fully in accordance with job and regulatory requirements.
7) Site supervisor’s instructions are followed and communication maintained with loading personnel to ensure efficient work flow and personnel co-operation.

4 Unload from truck

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Truck is positioned on level ground to maintain load safety and stability while unloading.
3) Safest unloading sequence is assessed.
4) Binders/chains tarps are removed/released in appropriate sequence.
5) Required documentation is completed fully in accordance with job and site requirements.
6) Site supervisor's instructions are followed and communication maintained to ensure efficient workflow co-ordination and personnel co-operation..

5 Transport material

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Load is checked and levelled to ensure safe transport.
3) Overhang warning devices are fitted when required to comply with road regulations.
4) Transport route is modified as necessary in response to unexpected road or environmental conditions.
5) Loads are transported following planned or modified route.
6) Truck is operated to manufacturer's specifications and legislative requirements.
7) Truck is monitored using gauges, warning devices and observation of performance to determine operating faults.
8) Equipment faults creating hazardous operations are identified, operations suspended and the fault reported to job procedures.
9) Primary and subsidiary controls are used in driving as appropriate to conditions.
10) Driving is maintained within limits created by actual and anticipated road conditions.
11) Primary and subsidiary controls are used in driving as appropriate to conditions.
12) Truck is driven to minimise road damage.
13) Truck operations and loads transported are recorded to legislative and job requirements.
14) Communication is maintaining using VHF and/or trunk radio to anticipate and report hazards in accordance with standard job procedures.

6 Park and check truck

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Truck is parked to avoid site and equipment hazards and in accordance with traffic legislation.
3) Truck is locked/secured in accordance with manufacturer's specifications, job procedures and legal requirements.
4) Engine is shut down to manufacturer's requirements and job procedures.
5) Truck maintenance and cleaning requirements are carried out to enable safe operation.

Range of Variables

- Job accessories include tools, records, first aid kit, fire extinguishers and binders/chains.
- Transport routes include the use of roads and tracks on privately-owned or government-owned land and public roads.
- Requirements for securing load include binder/chain position, tension and position of tensioning devices.
- Road conditions recognised are for forest and open roads and include: surface conditions, wet spots, slope, curvature, width, shoulder condition and presence of other equipment.
- Primary controls include power, brakes, steering, speed, position and gear selection.
- Subsidiary controls include differential lock and power dividers.
- Road damage minimised includes corner wear, pot holes, corrugations, ruts, broken edges and culverts.
- Occupational health and safety requirements include: manual handling, protective and high visibility clothing, recognition and avoidance of loading/unloading hazards, forest operations and site specific regulations.

Evidence Guide

Critical underpinning knowledge

- Manufacturer's and work site requirements including forest conditions, forest hazards and open road hazards
- Road traffic laws
- Organisation procedures for use of vehicles and equipment
- Relevant occupational health and safety requirements for storage of materials and equipment
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Plan, load, unload and move a range of loads over full range of road conditions
- Manoeuvre truck in difficult sites and conditions
- Drive truck safely using all available controls
- Conduct pre-start checks
- Clean and store vehicles and equipment
- Identify operational faults
- Complete time sheets and other maintenance records
- Use communication methods to advise and anticipate conditions.

Assessment context

Appropriate licence for vehicle driving must be obtained.
Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level		
	1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems		•	
Using technology		•	

Description

This unit also describes the work involved in safely operating and caring for a brushcutter.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task

1 Identify brushcutting requirements

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Appropriate cutting methods for various types of vegetation and situations are used.
4) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation.

2 Prepare and maintain equipment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Brushcutter and component options suitable for planned cutting are selected in accordance with organisational guidelines.
4) Brushcutter is checked in accordance with relevant safety standards prior to use
5) Required support tools protective equipment, first aid gear, spares, maintenance requirements and fuel are selected, prepared, carried and positioned to minimise delays.
6) The characteristics of blunt or damaged brushcutter blades are recognised and appropriate action taken in accordance with organisational guidelines.
7) Brushcutter blade is sharpened safely when required and components are changed to maintain cutting safety and productivity.

3 Assess vegetation and plan brushcutting

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Environmental conditions including ground growth, ground slope and ground hazards are identified and used to assess brushcutting.
4) Identify hazards likely to cause injury or damage during brushcutting operations.
5) Communication with supervisor and other workers is maintained to ensure efficient work flow, co-ordination and personnel safety.

4 Operate brushcutter

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Brushcutter is operated in accordance with safety standards applicable to site conditions.
4) Brushcutter is refuelled safely when necessary in accordance with manufacturer's instructions.
5) Safety harness and handles are adjusted to suit the individual to provide correct ergonomic position.
6) A safe working distance from other personnel is observed whilst operating brushcutter.
7) Brushcutting is planned to optimise time and safety.

Range of Variables

- Works may include thinning, fuel reduction, vegetation that can be safely cut.
- Brushcutting will be undertaken in all conditions for which it is safe including slopes up to the maximum allowed by relevant regulations
- Occupational health and safety regulations include codes of practice and AS 3576. Requirements include availability of correct first aid kit, wearing of required personal protection including head, eye, cut proof leg protection, safety footwear and high visibility vest, manual handling requirements, maintenance of safe forest practices (including location of other people and potential falling objects), required actions relating to forest fire, working alone requirements, recognition of hazards, and use of approved containers for fuel and oil.

Evidence Guide

Critical underpinning knowledge

- Relevant organisation policy and procedures
- Relevant Australian standards
- Statutory requirements
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Methods of navigating and geographically orienting in the field
- Hazards of operating brushcutter from kickback and flying objects.

Critical underpinning skills

- Awareness of all safety and environmental requirements for operation in forest settings
- Assess, plan, and operation within the range of variables vegetation and conditions
- Select and maintain appropriate equipment
- Prepare and communicate in a manner which maintains efficient operation
- Recognise common diseases, pests, and nutrition deficiencies
- Operate and maintain a brushcutter safely
- Communicate orally and using hand signals with other operators to maintain effective and safe felling
- Maintain accurate record system
- Recognise common diseases, pests, and nutrition deficiencies
- Read and interpret written material appropriately for local conditions
- Calculate slopes and weights in the metric system.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities	•		
Working with others in teams			
Using mathematical ideas and techniques			
Solving problems			
Using technology			

FPI FGM 110 A Fall trees manually - basic (non-commercial/non-production)

Description

This unit is based on the national Industry Competency Standards Harvesting Sector of the Forest Industry. This unit is intended for use in situations where the production of timber is not the primary focus of the activity.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints
FPI FGM 065 A	Select trees (for tending operations)

1 Identify falling requirements

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) General factors affecting falling requirements and specific forest/site hazards are identified and confirmed with supervisor.
4) Working face and general falling direction are identified and confirmed with supervisor.
5) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation.

2 Prepare and maintain falling equipment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Chainsaw and component options suitable for planned falling are selected and prepared.
4) Chainsaw is checked to relevant standards prior to use.
5) Required support tools, protective equipment, first aid gear, spares, maintenance requirements and fuel are selected, prepared, carried and positioned to minimise falling delays.
6) Characteristics of blunt or damaged chainsaw are recognised.
7) Chainsaw is sharpened and adjusted or components changed to maintain falling safety and productivity.

3 Assess conditions and surroundings

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Environmental conditions including ground growth, canopy, general forest lean, ground slope, ground hazards, wind speed and direction.
4) Awareness of environmental conditions and other personnel's activity are maintained and falling activity modified as a result of significant changes.
5) Communication with supervisor and other workers is maintained to share relevant workplace information.

4 Assess tree and plan falling

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Tree is visually assessed for falling characteristics.
4) Direction required for falling and degree of error allowable are identified.
5) Trees which cannot be safely felled with own skills are identified and referred to others.
6) Sequence of cuts to fall tree is planned to meet standard falling procedures.

5 Prepare surroundings

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Most suitable escape route is selected and cleared of growth and other obstacles.
4) Preparation meets environmental care principles and statutory body requirements
5) Location of other personnel is noted and monitored.

6 Fall tree

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Scarf is cut to plan in accordance with standards for accuracy.
4) Unexpected characteristics of tree are identified and planning reviewed.
5) Help is requested if cuts made may lead to loss of control of tree in falling.
6) Backcut is made to provide planned hinge-wood and maintain control of tree.
7) Cutting technique is adjusted in response to movement and condition of tree.
8) Wedges are used to assist in controlling direction of falling
9) Falling is completed once initiated.
10) Planned escape route is used when tree starts to fall.
11) Fall of tree and movement on ground are monitored until tree is stable.
12) Trees which hang up are immediately cleared or assistance requested.
13) Communication with supervisor and other workers is maintained to share relevant workplace information and to ensure personnel co-operation and safety.

Fall trees manually - basic (non-commercial/ non-production) FPI FGM 110 A

Range of Variables

- Trees fallen will have the following characteristics; diameter not more than 50 centimetres at position of cut; height not more than 20 metres; lean and weight distribution consistent with falling direction
- Trees fallen may have the following characteristics; single leader; sound wood condition in barrel; species and growth conditions not prone to twisting or splitting
- Conditions in which falling will be undertaken include minimal canopy affecting free fall; ground slope not excessive; wind not significantly affecting falling characteristics; absence of ground growth or fallen trees preventing free movement around stump
- Conditions under which falling may be undertaken include absence of ground growth or fallen trees preventing complete fall; absence of stags and hazardous ground features in falling radius; clear falling or sparse tree density
- Works in a team environment or works individually under general supervision
- Occupational health and safety regulations include codes of practice and AS 2727 and requirements include carrying of correct first aid kit, wearing of required personal protection including head, eye, cut proof leg protection, safety footwear and high visibility vest, manual handling requirements, maintenance of safe forest practices including location of other people and potential falling objects, recognition of hazards and required actions in bush and tree falling and use of approved containers for fuel and oil.

Evidence Guide

Critical underpinning knowledge

- Identification and evaluation of structural defects in trees
- All safety and environmental requirements for operation in forest settings
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Contribute to a tree assessment
- Understanding of own limitations in conditions and trees for falling
- Assessment, planning and falling within the range of variables for trees and conditions
- Selection and maintenance of appropriate equipment
- Preparation and communication which maintains efficient falling.
- Communicate orally and using hand signals with other operators to maintain effective and safe felling.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities		•	
Working with others in teams			
Using mathematical ideas and techniques			
Solving problems	•		
Using technology		•	

FPI FGM 111 A Fall trees manually - intermediate (non-commercial/ non-production)

Description

This unit is based on the National Industry Competency Standards Harvesting Sector of the Forest Industries. This unit is intended for use in situations where the production of timber is not the primary focus of the industry.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools
FPI FGM 065 A	Select trees (for tending operations)
FPIC2029A	Work within environmental constraints

1 Plan falling sequence

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) General factors affecting falling requirements and specific forest/site hazards are identified.
4) Falling direction is identified.
5) Falling sequence for individual trees is progressively planned.
6) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation.

2 Prepare and maintain falling equipment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Chainsaw and component options suitable for planned falling are selected and prepared.
4) Chainsaw is checked to relevant standards prior to use.
5) Required support tools, protective equipment, first aid gear, spares, maintenance requirements and fuel are selected, prepared, carried and positioned to minimise falling delays.
6) Characteristics of blunt or damaged chainsaw are recognised.
7) Chainsaw is sharpened and adjusted or components changed to maintain falling safety and productivity.

3 Assess conditions and surroundings

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Environmental conditions including ground growth, canopy, general forest lean, ground slope, ground hazards, wind speed and direction.
4) Awareness of environmental conditions and the activity of other personnel are maintained and falling activity modified as a result of significant changes.
5) Communication with supervisor and other workers is maintained to share relevant workplace information.

4 Assess tree and plan falling

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Growth is cleared to enable visual assessment of tree to be felled.
4) Tree is visually assessed for falling characteristics.
5) Direction required for falling and degree of error allowable are identified.
6) Trees which cannot be safely felled with own skills are identified and referred to others.
7) Sequence of cuts to fall tree is planned to control direction of fall.

5 Prepare surroundings

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Most suitable escape route is selected and cleared of growth and other obstacles.
4) Location of other personnel is noted and monitored.

6 Fall tree

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Scarf is cut to plan in accordance with standards for accuracy.
4) Unexpected characteristics of tree are identified and planning reviewed.
5) Help is requested if cuts made may lead to loss of control of tree in falling.
6) Backcut(s) is/are made to provide planned hinge-wood and maintain control of tree.
7) Cutting technique is adjusted in response to movement and condition of tree.
8) Wedges are used to control movement and direction of falling.
9) Falling is completed once initiated.
10) Planned escape route is used when tree starts to fall.
11) Fall of tree and movement on ground are monitored until tree is stable.
12) Trees that hang up are immediately cleared or assistance requested.
13) Communication with supervisor and other workers is maintained to share relevant workplace information and to ensure personnel co-operation and safety.

Fall trees manually - intermediate (non-commercial/ non-production) FPI FGM 111 A

Range of Variables

- Trees will have the following characteristics height not more than 40 metres; lean and weight distribution which can be adapted to falling direction with the use of wedges and/or control with hinge wood
- Trees fallen may have the following characteristics single leader; sound wood condition in barrel
- Falling may require the use of multiple back cuts
- Conditions under which falling may be undertaken include ground slope not more than 15 degrees; moderate wind speed; absence in growth or fallen trees preventing complete fall; works mainly alone with general supervision available to provide assistance related to planning, falling.
- Visual assessment of tree covers size, weight distribution, lean, species, multi leaders, soundness of timber, growth characteristics and stresses.
- Occupational health and safety regulations include codes of practice and AS 2727 and requirements include carrying of correct first aid kit, wearing of required personal protection including head, eye, cut proof leg protection, safety footwear and high visibility vest, manual handling requirements, maintenance of safe forest practices including location of other people and potential falling objects, recognition of hazards and required actions in bush and tree falling and use of approved containers for fuel and oil.

Evidence Guide

Critical underpinning knowledge

- Identification and evaluation of structural defects in trees
- All safety and environmental requirements for operation in forest settings.

Critical underpinning skills

- Contribute to a tree assessment
- Understand own limitations in conditions and trees for falling.
- Assess, plan and fall within the range of variables for trees and conditions
- Select and maintain appropriate equipment
- Prepare and communicate in a manner that maintains efficient falling.
- Communicate orally and using hand signals with other operators to maintain effective and safe felling
- Read and interpret written material appropriately for local conditions
- Calculate slopes and weights in the metric system.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities		•	
Working with others in teams			
Using mathematical ideas and techniques			
Solving problems	•		
Using technology		•	

FPI FGM 112 A Fall trees manually - advanced (non-commercial/non-production)

Description

This unit is based on the National Industry Competency Standards Harvesting Sector of the Forest Industry. This unit is intended for use in situations where the production of timber is not the primary focus of the activity.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced
FPI G41 A	Use basic hand held tools
FPI FGM 065 A	Select trees (for tending operations)
FPIC2029A	Work within environmental constraints

1 Plan falling operation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) General factors affecting falling requirements and specific forest/site hazards are identified.
4) General falling direction and working face are planned to minimise danger and damage.
5) Describe falling sequence for individual trees.
6) Communication with supervisor and other workers is maintained to ensure efficient work flow co-ordination and personnel co-operation.

2 Prepare and maintain falling equipment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Chainsaw and component options suitable for planned falling are selected and prepared.
4) Chainsaw is checked to relevant standards prior to use.
5) Required support tools, protective equipment, first aid gear, spares, maintenance requirements and fuel are selected, prepared, carried and positioned to minimise falling delays.
6) Characteristics of blunt or damaged chainsaw are recognised.
7) Chainsaw is sharpened and adjusted or components changed to maintain and improve falling safety and productivity.

3 Assess condition and surroundings

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Environmental conditions including ground growth, canopy, general forest lean, ground slope, ground hazards, wind speed and direction, are identified and used to assess the falling of each tree.
4) Awareness of environmental conditions and the activity of other personnel are maintained and falling activity modified as a result of significant changes.
5) Communication with supervisor and other workers is maintained to share relevant workplace information.

4 Assess tree and plan falling

1) Occupational health and safety and fire safety regulations, policies and precautions are followed.
2) Growth is cleared to enable visual assessment of tree to be felled.
3) Tree is visually assessed for falling characteristics.
4) Direction required for falling and degree of error allowable are identified.
5) Trees which cannot be safely felled are referred to supervisor/management.
6) Sequence of cuts to fall tree is planned to control direction of fall.

5 Prepare surroundings

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Most suitable escape route is selected and cleared of growth and other obstacles.
4) Location of other personnel is noted and monitored.

6 Fall tree

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Additional leaders are removed and cleared in accordance with plan.
4) Scarf is cut to plan in accordance with standards for accuracy.
5) Unexpected characteristics of tree are identified and planning reviewed.
6) Backcut is made to provide planned hinge wood and maintain control of tree.
7) Cutting technique is adjusted in response to movement and condition of tree.
8) Wedges and/or tree jack are used to control movement and direction of falling.
9) Falling is completed once initiated.
10) Planned escape route is used when tree starts to fall.
11) Fall of tree and movement on ground is monitored until tree is stable.
12) Trees which hang up are cleared as soon as practical.
13) Communication with supervisor and other workers is maintained to share relevant workplace information and to ensure personnel co-operation and safety.

FPI FGM 112 A Fall trees manually - advanced (non-commercial/non-production)

Range of Variables

- Trees of any size and condition that can be safely fallen
- Falling may require the use of multiple back cuts and/or boring techniques
- Falling will be undertaken in all conditions for which it is safe including slopes up to the maximum allowed by relevant regulations
- General factors and site hazards identified and environmental care principles.
- Visual assessment of tree covers size, weight distribution, lean, species, multi leaders, soundness of timber, growth characteristics and stresses
- Clearance for assessment and escape route may require the assistance from a dozer or other machine
- Works without supervision related to falling with general guidance on specific work site
- Occupational health and safety regulations include codes of practice and AS 2727 and requirements include carrying of correct first aid kit, wearing of required personal protection including head, eye, cut proof leg protection, safety footwear and high visibility vest, manual handling requirements, maintenance of safe forest practices including location of other people and potential falling objects, recognition of hazards and required actions in bush and tree falling and use of approved containers for fuel and oil.

Evidence Guide

Critical underpinning knowledge

- Identification and evaluation of structural defects in trees
- All safety and environmental requirements for operation in forest settings.

Critical underpinning skills

- Contribute to a tree assessment
- Understand own limitations in conditions and trees for falling.
- Assess, plan and fall within the range of variables for trees and conditions including techniques for control of falling direction consistent with this range
- Select and maintain appropriate equipment
- Prepare and communicate in a manner that maintains efficient falling.
- Communicate orally and using hand signals with other operators to maintain effective and safe felling
- Read and interpret written material appropriately for local conditions
- Calculate slopes and weights in the metric system.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities		•	
Working with others in teams			
Using mathematical ideas and techniques			
Solving problems	•		
Using technology		•	

Manage propagation operations FPI FGM 113 A

Description

This unit is concerned with the growing of plants from either seed or vegetative materials. Propagation may be for the use of plants in a native forest or plantation and may be used by the same organisation or a client organisation.

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced

1 Plan propagation program

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are considered and adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Seed and/or genetic material appropriate for plants under production is selected from the appropriate source and used in accordance with organisational guidelines.

4) Specifications and delivery time specified in the production and planting program are reviewed and built into the propagation plan.

5) Client requirements are identified from request and/or discussions with client or manager.

6) Quality, quantity, timing, and availability of plants are determined from request, and documented in accordance with organisation guidelines.

7) Method of propagation is selected in accordance with species, season, materials available, and organisation guidelines.

8) Protocols, regulations and guidelines in relation to the use of chemicals, water, and application methods are reviewed and built into the plan.

9) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

10) Any approvals or endorsements required for the plan are sought and obtained.

11) Relevant nursery suppliers, nursery personnel and clients are given information appropriate to their various needs in accordance with organisation policy and guidelines.

2 Implement the propagation program

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns relevant to nurseries are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for propagation are co-ordinated and scheduled in accordance with organisation guidelines.
4) Quarantine and expert requirements are determined and used as appropriate and in accordance with organisational policy.
5) Schedule for the site and space(s) required is organised in accordance with organisational policy guidelines.
6) Any permits or licences required for propagation are identified and obtained.
7) Relevant individuals, groups, and bodies are liaised with in accordance with organisation policy and guidelines.
8) Documentation of plant characteristics and administrative details required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
9) Managers, suppliers and nursery staff are communicated with regularly throughout the propagation activity to ensure smooth operation and progress.

3 Monitor propagation program

1) Monitoring points and criteria identified for propagation program are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators are being met and amendments to the process or methods are made where necessary.
5) Nursery personnel are communicated with regularly throughout the propagation program's activity to ensure smooth operation and progress.
6) Checks are made to ensure that documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the propagation activity.

4 Review propagation program

1) Quality, quantity, timing, and availability of plants are compared with the target set by the propagation program.
2) Recommendations of alteration to nursery procedures are prepared based on the analysis of the data and discussions during the propagation process.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Client requirements may include size; seasonal toughness; provenance; species; resistance to frost; resistance to browsing
- Tools may include conveyors; mixing equipment; refrigeration units; cool store; mobile beds; fork lifts; tractors; spray equipment; hand tools; glasshouses; covered beds; irrigation systems; hoses; plumbing fittings; trolleys; seedling pots or trays; artificial media; potting mix; soil; sterilisation chamber.
- Personal protective equipment and clothing may include visibility vest; safety boots; spray masks; safety glasses
- Individuals/bodies/groups liaised with may include state, federal and local government authorities; Customs; Agriculture Departments; clients; transport organisations; forest establishment organisations
- Administrative details relating to seedlings may include date of propagation; batch numbers; personnel responsible for propagation; provenance of seed/vegetative material; species; chemical used
- Monitoring points may include stages of plant development
- Criteria to be monitored may include health and condition of seedlings; water; nutrient; weeds; rate of development
- Documentation may include seedling treatments; water volume administered.

Evidence Guide

Critical underpinning knowledge

- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Communicate, negotiate and liaise with bodies/groups internal and external to the organisation
- Recognise common diseases, pests, and nutrition deficiencies
- Supervise operational personnel to achieve organisation outcomes
- Prepare, compile and maintain accurate quality control and process documentation (records)
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Prepare, compile and write report on propagation program
- Measure and document the performance of the propagation operations
- Read complex information including charts and tables
- Read and interpret delivery documentation.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems			•
Using technology		•	

Manage tending operations - native forest FPI FGM 115 A

Description

This unit describes the work required to determine and implement appropriate tending operations within a managed native forest.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan tending operations

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state and local legislation and/or regulations.

3) Budget for tending operations is identified and confirmed with the appropriate person(s)/group.

4) End product requirements, stand treatment certification documentation, contractual requirements/obligations, and environmental and public relations imperatives are reviewed and analysed for impacts on the overall tending operations plan.

5) Current state of the forest resource is reviewed for inputs to the overall tending operations plan in accordance with organisation policy and guidelines.

6) Clients, technical operators, and marketing groups are liaised with for inputs to the overall tending operations plan in accordance with organisation policy and guidelines.

7) Tending plans are developed which include details of the equipment, methods and consumables to be used, in accordance with organisation policy and guidelines.

8) Tending plans include specifications for thinning, weed/insect management, stand health, pruning, and tree selection in accordance with organisational guidelines.

9) Any notifications of relevant groups and/or bodies are provided for in accordance with organisation policy and guidelines.

10) Overall specifications and quality parameters are determined for tending operations and documented in accordance with organisation guidelines

11) Approvals required for the plan are sought and obtained.

12) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement tending operations

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Emergency treatments and hazard notification procedures are prepared for and appropriate technical staff communications carried out in accordance with relevant national, state, and local legislation and/or regulations.
4) People, materials and equipment required for tending operations are co-ordinated and scheduled in accordance with organisation guidelines.
5) Schedule for the site is organised in conjunction with technical operators in accordance with organisational policy guidelines.
6) Any permits, approvals and/or licences required for the tending operations are identified and obtained.
7) Any relevant individuals, group, and/or bodies are liaised with during the tending operations in accordance with organisation policy and guidelines.
8) Documentation required by organisation and/or occupational health and safety guidelines, is determined and requirements for clear and accurate completion is clearly communicated to the appropriate individuals.
9) Operations supervisor is communicated with regularly throughout the tending operations to ensure smooth operation and progress.

3 Monitor tending operations

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental imperatives are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that specifications and quality and performance targets are being met and amendments to the plan or process are made where necessary.
5) Operations supervisor is communicated with regularly throughout the tending operations to ensure smooth operation and progress.
6) Checks are made to ensure that the documentation required by organisation and/or occupational health and safety guidelines, is completed and submitted during or after the progress of the tending operations.

4 Review tending operations

1) Data and documentation from the tending operations is analysed against the plan in accordance with organisation guidelines.
2) Recommendations for future operations are prepared based on the analysis of the data and discussions during the tending operation's conduct.
3) Report is prepared and presented to the appropriate bodies in accordance with organisational guidelines, and includes:
- any difficulties or issues faced during the tending operation's conduct,
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Timing of operations may be critical to the productivity of the forest
- Approvals required may include environmental bodies; local, state and federal government bodies and agencies; long-term budget approvals
- Nature and size of the crop and non-crop species may impact on the overall tending plan
- Availability and skill level of the labour force may impact on the overall tending plan
- Monitoring points may be time based, frequency based
- Documentation may include changes to the plan or process; supplementary approvals; supplementary notifications
- Report prepared following the tending operations may be submitted to environmental bodies; marketing groups; management; budget controller
- Permits and licences may relate to neighbouring properties; hours of operation; use and application of chemicals
- Individuals/bodies/groups liaised with may include environmental bodies; local, state and federal government bodies and agencies; clients; peers within the organisation; internal policy groups; labour force and operations supervisor
- Legislation, regulations, standards may include State forest codes of practice or equivalent; Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations
- Purpose of undertaking tending operations may be to maintain the health of the stand; improve productivity and long term sustainability; provide for end product mix requirements; management of notifiable weeds.
- Safety issues/hazards may include use of chemicals, including off-site effects; tools and equipment; dangers to the public
- Tending operations may have the potential to impact on the organisation's public relations
- Timing of operations may be critical to the success of the operation and on suitability for various forest products (e.g. pruning certification)
- Environmental regulations may include issues in relation to stream buffers, notification of neighbours

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Influence, and importance of, tending operations on the forest productivity and various end products
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Biology of relevant forest health problems
- Tree growth and development
- Weed species and herbicide interactions.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Present information in writing and/orally to a wide range of individuals and groups
- Assess and extract critical information from numerous sources (e.g. legislation, forest biology, tree physiology, new technology)
- Plan and cost control
- Manage time and projects
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Interpret and analyse data, including data from reports, maps and charts
- Read and act on written information
- Complete quality control and other documentation.

Assessment context

- Overall success of the operation must be assessed, including any recommendations made for future operations.
- Competency should be demonstrated in an actual workplace or in a situation that reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information			•
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems			•
Using technology		•	

Conduct non-commercial thinning operations FPI FGM 116 A

Description

This unit describes the work required to control (non-commercially thin) the species growing on site and their stocking rate so as to ensure maximum vigour and optimum product outcome. The logs generally do not have a commercial value. This includes treatment with chemicals, hand tools and mechanical equipment (e.g. chainsaw, harvesting equipment).

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools
RUA AG2009CH A	Apply chemicals and biological agents
FPIC2029A	Work within environmental constraints
FPI FGM 065 A	Select trees (for tending purposes)

1 Plan thinning operations

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Tending plan and relevant legislation or regulations are reviewed, analysed and considered for impacts on thinning operations planning.

4) Any existing organisation plans and/or regulations in relation to chemical use is taken into consideration.

5) Neighbouring landholders are liaised with in accordance with organisation policy and guidelines.

6) Sample area is identified within the forest and trees are measured in accordance with organisation guidelines.

7) The level of overwood treatment is recommended, taking any requirements for habitat or seed trees into consideration, in accordance with organisation guidelines.

8) Organisation's marketing, strategic and tending plans are reviewed, analysed and considered for impacts on thinning.

9) Quality targets and other performance indicators are determined and documented in accordance with organisation guidelines.

10) Any approvals required for the application and use of chemicals, and for budget expenditure are sought and obtained.

11) Method of operation is identified/selected in accordance with sampling undertaken, forest type, species, stand history and organisation guidelines.

12) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement thinning operations

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the thinning operations are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with any contractor in accordance with organisational policy guidelines.
5) Any permits or licences required for the thinning operations are identified and obtained.
6) Any timber harvesting plans, or equivalent, that are required are completed in accordance with organisational policy and guidelines.
7) Trees are identified and marked in the forest for treatment in accordance with the prescription.
8) Neighbouring landholders are liaised with during the operations in accordance with organisation policy and guidelines.
9) Records of notifications, approvals, and process required by organisation and/or occupational health and safety guidelines, are completed clearly and accurately.
10) Operational staff, clients, and any contractors are communicated with regularly throughout the thinning operations activity to ensure smooth operation and progress.

3 Monitor thinning operations

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that the pre-set performance indicators and quality targets are being met and amendments to the process or methods are made where necessary.
5) Operational staff, clients, and any contractors are communicated with regularly throughout the thinning operations activity to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines is completed clearly and accurately during the progress of the thinning operations activity.

4 Review thinning operations

1) Data and documentation from the thinning operations is analysed against the plan in accordance with organisation guidelines.

2) Recommendations are prepared based on the analysis of the data and discussions during the conduct of the operation.

3) Report is prepared in accordance with organisational guidelines, and includes:

- any difficulties or issues faced
- level of overwood removal
- methods used for treatment
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Appropriate overwood treatment methods may include felling; poisoning; sapringing; ringbarking
- Available information may include aerial photographs; history of forest; visual observation; local regulations and bylaws; aerial photography
- Documentation may be required by the organisation where chemical agents are used for treatment and may include changes to prescriptions; supplementary notifications; supplementary approvals; reports; amendments to maps and plans
- Environmental regulations may include issues in relation to stream buffers, notification of neighbours
- Individuals/bodies/groups liaised with may include peers; clients; marketing group/section; government bodies; labour force; neighbouring landholders
- Information media may include written/printed; oral; electronic; visual display units/personal computers
- Legislation, regulations, standards may include State forest codes of practice or equivalent; Australian Standards; duty of care; environmental agencies regulations; Environment Protection Act; isolation procedures; manufacturers' specifications and recommendations; occupational health and safety legislation; site regulations and procedures; statutory requirements; Trade Practices Act; traditional land owners requirements
- Level of overwood treatment may be expressed as a number of trees per hectare removed
- Maintenance of records may include collation (of information or documentation); interpret information in a way relevant to workplace requirements; organise and maintain records accurately; utilise a full range of information media
- Measurable performance indicators, specifications and targets
- Measurement of trees may include girth; height; number; spread
- Monitoring may be time based or number/frequency based and may include stream monitoring; mechanical damage to trees
- Parameters that may affect the treatment recommendation may include forest type; size and geography of treatment area; equipment and personnel available; budget available; local environmental conditions; age and size of trees
- Personal protective equipment and clothing may include spray mask and overalls; safety helmet; visibility vests; ear muffs; first aid kit
- Purpose of undertaking thinning/competition management operations may be to maintain the health of the stand; improve productivity and long term sustainability; provide for end product mix requirements; management of notifiable weeds
- Report at the completion of the operations may be presented to immediate supervisor; environmental bodies; marketing group; budget controller
- Safety issues/hazards may include use of chemicals, including off-site effects; tools and equipment; dangers to the public
- Stand parameters may include DBH distribution; basal area; crown health; tree size, species, tree bark characteristics
- Tending operations may have the potential to impact on the organisation’s public relations

Range of Variables (continued)

- Timing of operations may be critical to the success of the operation and on suitability for various forest products (e.g. pruning certification)
- Tools may include chainsaw; brushcutter; tractor - slasher; spray equipment (hand and mechanical); harvesting machinery; axe, chemical applicator stem injectors, chainsaws.

Evidence Guide

Critical underpinning knowledge

- Available product options
- Available thinning methods
- Environmental imperatives for forest area
- Hazards associated with treatments
- Influence, and importance of, tending operations on the forest productivity
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Pest, diseases, tree form and nutritional defects
- Possible damage to the stand
- Relevant biology and stand dynamics for the species.
- Relevant legislation and regulation requirements
- Stand parameters for forest type
- Treatments available for overwood trees
- Tree growth and development
- Use and limitations of relevant equipment and tools
- Weed species and herbicide interactions.

Critical skills include

- Achieve the required outcome for stand development in terms of the number of residual stems, and their distribution.
- Assess and extract critical information from sources such as legislation, forest biology, etc
- Avoid damage to retained stems
- Collect and record data required according to specific criteria
- Collate and assess information against specified criteria
- Complete data, quality control and other documentation clearly and accurately
- Interpret information in a way relevant to workplace requirements
- Interpret mathematical symbols contained in organisational documentation (e.g. harvesting plans)
- Match thinning methods with efficient operation and product options
- Maximise the value of forest products produced.
- Organise and maintain records accurately
- Plan and cost control
- Prepare and write progress, summary and completion reports
- Present information in writing and orally to a wide range of individuals and groups
- Protect the stand from subsequent wind damage
- Provide and interpret data, costings and calculations relating to time, financial information, weights, volumes, and lengths
- Read and act on written information including harvesting plans, maps, plans and reports
- Recognise common diseases, pests, and nutrition deficiencies
- Undertake treatments for overwood trees
- Utilise a full range of information media
- Write in keeping with the demands placed on writing style by reporting format
- Write reports and submissions where precise meaning is required.

Assessment issues

- Damage during thinning to retained stems
- The nature of the stand after thinning compared with the logging prescription
- Logging residue
- Cost efficiency of the operation
- Subsequent damage during wind storms
- Relevant legislation and regulation requirements.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams			
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology	•		

Manage stem improvement FPI FGM 117 A

Description

This unit describes the intervention work required to encourage the development of the preferred stem shape/number of branches.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced

1 Plan stem improvement

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Strategic and tending plans relating to the work are reviewed, analysed and considered for impacts on stem improvement planning.

4) Method of intervention is identified/selected in accordance with product required and organisation guidelines.

5) Any relevant individuals/groups/bodies are liaised with in accordance with organisation policy and guidelines.

6) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

7) Any approvals required for the plan are sought and obtained.

8) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines

2 Implement stem improvement

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) People, materials and equipment required for the stem improvement are co-ordinated and scheduled in accordance with organisation guidelines.

4) Schedule for the site is organised in conjunction with operational personnel and peers in accordance with organisational policy guidelines.

5) Any permits or licences required for the stem improvement are identified and obtained.

6) Any relevant individuals/groups/bodies are liaised with during the operation in accordance with organisation policy and guidelines.

7) Any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.

8) Operational staff, clients, and any contractors are communicated with regularly throughout the stem improvement activity to ensure smooth operation and progress.

3 Monitor stem improvement

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff, clients, and any contractors are communicated with regularly throughout the stem improvement activity to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the stem improvement activity.

4 Review stem improvement

1) Data and documentation from the stem improvement is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the conduct of stem improvement.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Methods of intervention may include pruning using mechanical or hand tools; the use of chemicals or biological agents
- Tools may include chainsaws
- Individuals/bodies/groups liaised with may include contractors; clients; peers; local, state, or federal government agencies/bodies
- Legislation, regulations, standards may include:Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent
- Purpose of undertaking stem improvement operations may be to encourage tree growth to suit marketing requirements
- Documentation may be required by the organisation where there is use the use of chemical or biological agents; the operation is to be contracted out
- Safety issues/hazards may include the use of machinery; the use of chemicals or biological agents; adverse weather conditions; adverse terrain conditions
- Measurable performance indicators, specifications and targets.

Evidence Guide

Critical underpinning knowledge

- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Relevant legislation and regulation requirements
- Organisation requirements for timber
- Pruning techniques for target species.

Critical underpinning skills

- Supervise operational staff and/or contractors to achieve specific organisation outcomes
- Recognise common diseases, pests, and nutrition deficiencies
- Schedule forest operations
- Pruning of target species appropriately
- Present information orally and in writing to a wide range of individuals and groups
- Read and act on written information including maps, plans, reports etc
- Assess and extract critical information from sources such as legislation, manufacturer's specifications, standards, codes of forest practices, etc
- Complete data, quality control and other documentation clearly and accurately
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Prepare and write progress, summary and completion reports
- Provide and interpret data, costings and calculations relating to time, financial information, weights, volumes, and lengths.

Assessment context

Appropriate licences must be held for the use of tools which require licences.
Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology	•		

Manage stand nutrition FPI FGM 118 A

Description

This unit describes the work required to monitor and support the nutrition of a stand of trees over time.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced

1 Plan stand nutrition

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Organisation environmental, marketing and business plans are reviewed, analysed and considered for impacts on stand nutrition planning.
4) Stand nutrition assessment is undertaken and analysed for impacts on stand nutrition planning.
5) Method(s) of ensuring adequate and appropriate level of stand nutrition is/are identified/selected in accordance with organisation guidelines and policies.
6) The relevant individuals/groups/bodies are liaised with in accordance with organisation policy and guidelines.
7) Measurable performance indicators, specifications and targets, including costs, are determined and documented in accordance with organisation guidelines.
8) Any approvals required for the plan are sought and obtained.
9) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement stand nutrition

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the fertiliser application are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with the relevant operational personnel in accordance with organisational policy guidelines.
5) Any permits, approvals or licences required for the stand nutrition are identified and obtained.
6) The relevant individuals/groups/bodies are liaised with during the fertilising of the stand in accordance with organisation policy and guidelines.
7) Documentation (map, plan, report, form etc) required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
8) Operational staff, clients, and any contractors are communicated with regularly throughout the stand nutrition activity to ensure smooth operation and progress.

3 Monitor stand nutrition

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental imperatives are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, or specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff, clients, and/or contractors are communicated with regularly throughout the stand nutrition activity to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the stand nutrition activity.

4 Review stand nutrition

1) Data and documentation about the nutritional status of the stand is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the provision of nutrition to the stand.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Individuals/bodies/groups liaised with may include neighbouring landholders
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent
- Purpose of undertaking stand nutrition operations may be to improve the marketability of the stand
- Safety issues/hazards may include the use of chemicals and/or biological agents
- Other sources of information may include aerial photo interpretation
- Measurable performance indicators, specifications and targets.

Evidence Guide

Critical underpinning knowledge

- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Relevant legislation and regulation requirements
- Fertiliser technology and options
- Nutrition requirements of target species
- Biology of target species
- Organisation operational plans and policies
- Organisation marketing, business and strategic plans and policies.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Interpret aerial photography
- Co-ordination and scheduling of operations
- Communicate organisation requirements to operational personnel and/or contractors
- Communicate with clients in relation to client requirements and preferences
- Present information orally and in writing to a wide range of individuals and groups
- Read and act on written information including maps, plans, reports etc
- Assess and extract critical information from sources such as legislation, manufacturer's specifications, standards etc, codes of forest practices, etc
- Complete data, quality control and other documentation clearly and accurately
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Prepare and write progress, summary and completion reports
- Provide and interpret data, costings and calculations relating to time, financial information, weights, volumes, and lengths.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology	•		

Provide and manage interpretations programs FPI FGM 019 A

Description

This unit describes the work required to determine what interpretations programs are required and to ensure their provision and delivery.

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI G29 A	Solve problems in the workplace - advanced
FPI FGM 120 A	Delivery interpretations activities

1 Determine interpretations program strategies

1) Interpretations program strategies reflect the organisation's strategies, plans, priorities and budget requirements.

2) Strategies reflect an in-depth knowledge of the organisation's client groups and awareness of their changing information needs, requirements and expectations.

3) Mechanisms are established to monitor trends and developments in ways to provide effective interpretations programs.

4) Strategies reflect awareness of current practice in similar organisations and of innovative ways to provide interpretations programs.

5) Innovative ways to provide interpretations programs are developed through evaluation of the organisation's practices, industry trends and developments and own initiative.

2 Plan interpretations programs

1) Topics of interpretations programs are determined and developed in consultation with appropriate person(s).

2) Interpretations programs are integrated with other relevant programs and activities in the organisation.

3) Plans reflect strategies which are determined and developed in conjunction with appropriate person(s).

4) Plans take account of staff competencies in providing interpretations programs and ways to develop and improve such competencies.

5) Plans incorporate measurable objectives and mechanisms to evaluate interpretations programs.

3 Monitor, evaluate and promote interpretations programs

1) Monitoring and evaluation are in accordance with organisational practices and available resources.

2) Mechanisms are established, implemented and monitored to promote interpretations programs to clients, staff and other relevant person(s).

3) Improved methods to assess the effect of interpretations programs on the public perception of forest management practices are explored and introduced where possible.

Range of Variables

- Clients targeted for interpretations programs may include people at any level in the organisation who operate within or for the forest; people outside the organisation who operate within or for the forest; people affected by the organisation's decisions or actions; people to whom the organisation should provide such a service to meet public and social accountability requirements; school children; people with an interest in the forest
- Interpretations programs aim to enhance the understanding and skills of a range of clients for a range of purposes
- Interpretations programs may reflect wide knowledge of forest growing and management resources and tools available nationally and internationally
- Client group may be both internal and external to the organisation
- Activities may include seminars; talks; lectures; information in in-house publications; exhibitions; media releases; technology-based training; skills-based training
- Trends and developments in interpretations programs may be theoretical or practical
- Methods of delivering interpretations programs may be formal or informal, on-the-job or off-the-job, and may include incorporation in induction programs and documentation; training in the use of Forest Growing and Management services and tools; advertising in newsletters; briefing sessions and seminars; leaflets, booklets and/or "how to" guides; computer-based presentations; technology-based training
- Other relevant programs and activities may include marketing and promotional programs
- Appropriate person(s) for developing interpretations programs and plans may include senior management representative; client group representative(s); technical specialists within the organisation; internal education, training and development staff; outside experts.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Appropriate training locations within a workplace
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Media relations/marketing
- Occupational health and safety standards to be observed
- Organisation's functions, policy and procedures
- Recognition of trainee characteristics (e.g. language and literacy/numeracy skills, cultural background, previous experience)
- Client needs: community interests; school curricula
- Computer-based presentation techniques and tools.

Critical underpinning skills

- Negotiate and liaise with bodies/groups internal and external to the organisation
- Communicate with clients in relation to client requirements and preferences
- Manage staff, projects, and budgets
- Prepare effective exhibitions
- Present information orally and in writing to a wide range of individuals and groups, including complex concepts and ideas
- Research information for oral and written presentations
- Prepare and write progress, summary and completion reports
- Prepare and edit explanatory material for the general public
- Use word processing equipment.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level		
	1	2	3
Collecting, analysing and organising information			•
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology	•		

Deliver interpretations activities FPI FGM 120 A

Description

This unit describes the work required to delivery interpretations activities to a range of client groups.

Suggested Pre-Requisites/Co-Requisites

FPI G20 A	Collect, analyse and organise information - basic
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI G29 A	Solve problems in the workplace - advanced

1 Identify suitable interpretations activities

1) Ideas for new or improved activities are initiated, gathered & assessed, taking into account the available resources & skills required.
2) Potential feasible activities are identified & assessed against the organisation's existing interpretations programs and organisational priorities.
3) Suitable activities are selected, specific objectives identified & necessary resources are estimated.
4) Any approvals & resources required are obtained from the appropriate authority in accordance with organisational procedures.

2 Plan interpretations activities

1) Action plans detailing the particular activities, are developed & the specific availability of required resources is determined.
2) Activities are adjusted as necessary to accommodate the available resources.
3) Possible contingencies are identified & plans are made to deal with them.

3 Organise resources for the interpretations activities

1) Bookings & access arrangements for the activities work smoothly for all participants, or issues are quickly resolved.
2) Equipment & materials are obtained within budget and organisation's purchasing, hiring & acquisition policies & procedures.
3) Materials & information necessary for the activities are available when required.
4) Equipment is checked to ensure it is operational & functional for the activities.
5) Promotional or publicity material contains all relevant information, is in a format & language suited to the target participants, & is disseminated to provide adequate notice.
6) Venue meets identified requirements, including access for participants with special needs & occupational health & safety requirements.

4 Conduct interpretations activities

1) Activities meet identified objectives & are suited to the size & nature of the group & characteristics of the participants.
2) Particular needs of participants are catered for in the design & delivery of activities.
3) Audience / group response is monitored &, where it is required, action is taken to modify the activity to meet the objectives within the available resources.
4) Appropriate presentation methods, equipment & materials are used to enhance the participants' interest & involvement.
5) Issues are resolved promptly or referred to the appropriate person(s).
6) Where necessary, clean-up & materials & equipment check are carried out & monitored.

5 Evaluate interpretations activities

1) Feedback & other data appropriate to evaluate the particular activity are collected & analysed for relevance to the objectives.
2) Materials & format used are evaluated & results are documented.
3) Activities are assessed against the planned objectives.

Range of Variables

- Clients targeted for interpretations programs may include people at any level in the organisation who operate within or for the forest; people outside the organisation who operate within or for the forest; people affected by the organisation's decisions or actions; people to whom the organisation should provide such a service to meet public & social accountability requirements
- Interpretations programs aim to enhance the understanding & skills of a range of clients for a range of purposes
- Interpretations programs may vary. They may reflect wide knowledge of forest growing & management resources & tools available nationally & internationally
- Client group may be both internal & external to the organisation
- Education activities may include seminars; talks; lectures; information in in-house publications; technology-based training; skills-based training
- Methods of delivering interpretations programs may be formal or informal, on-the-job or off-the-job, & may include incorporation in induction programs & documentation; training in the use of Forest Growing & Management services & tools; skills-based training.

Evidence Guide

Critical underpinning knowledge

- Appropriate training locations within a workplace
- Media relations / marketing
- Occupational health & safety standards to be observed
- Occupational health & safety guidelines, procedures, & principles, including manual handling
- Organisation's functions, policy & procedures
- Recognition of trainee characteristics (e.g. language & literacy / numeracy skills, cultural background, previous experience)
- Client needs: community interests; school curricula
- Computer-based presentation techniques & tools

Critical underpinning skills

- Negotiate & liaise with bodies / groups internal & external to the organisation
- Communicate with clients in relation to client requirements & preferences
- Manage staff, projects, & budgets
- Prepare effective exhibitions
- Present information orally & in writing to a wide range of individuals & groups, including complex concepts & ideas
- Research information for oral & written presentations
- Prepare & write progress, summary & completion reports
- Prepare & edit explanatory material for the general public
- Use word processing equipment.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies & Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing & organising information			•
Communicating ideas & information			•
Planning & organising activities			•
Working with others in teams		•	
Using mathematical ideas & techniques		•	
Solving problems		•	
Using technology	•		

Manage genetic resources FPI FGM 125 A

Description

This unit describes the work involved to manage the propagation - by sexual and asexual methods - and tending of nursery plants, including seed, cuttings, grafting, tissue culture, layering, etc.

Suggested Pre-Requisites/Co-Requisites

FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced

1 Plan for the management of genetic resources

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Genetic resources policies and marketing plans for the organisation are reviewed, analysed and considered for impacts on propagation and tending planning.
4) Quantities, timing, provenances and species are identified/selected in accordance with organisation policies and guidelines.
5) Colleagues within the nursery, clients and relevant organisational peers are liaised with in accordance with organisation policy and guidelines.
6) Specifications and targets for production quantities, timing, provenances and species are determined and documented in accordance with organisation guidelines.
7) Any approvals required for the plan are sought and obtained.
8) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement genetic resources management plan

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Liaison with the relevant nursery staff is undertaken in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with the relevant nursery staff in accordance with organisational policy guidelines.
5) Any permits or licences required for the production, collection and management of genetic resources are identified and obtained.
6) Any reports required by organisation and/or occupational health and safety guidelines, are completed clearly and accurately.
7) Operational staff, clients, and contractors are communicated with regularly throughout the production, collection and management of genetic resources to ensure smooth operation and progress.

3 Monitor genetic resources management plan

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that targets and specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff, clients, and contractors are communicated with regularly throughout the production, collection and management of genetic resources to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the production, collection and management of genetic resources.

4 Review genetic resources management plan

1) Data and documentation from the production, collection and management of genetic resources is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the production, collection and management of genetic resources.
3) Report is prepared in accordance with organisational guidelines to feed into future marketing, production and management planning, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Individuals/bodies/groups liaised with may include local, state and federal government bodies; internal and external contractors; clients; operational staff; peers and colleagues within the organisation; voluntary interest or action groups
- Difficulties with the operations may include wildings escaping to neighbouring properties
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent
- Safety issues/hazards to be considered during the planning may include use of chemicals and biological agents within the nursery; impact of water runoff on neighbouring land/waterways
- Measurable performance indicators, specifications and targets may include production quantities; seasonal and other timelines.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Organisational marketing, business and strategic plans in relation to the production, collection and management of genetic resources
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Propagation requirements and techniques of species grown by the organisation
- Local code of forest practice or equivalent
- Organisational occupational health and safety and human resources management policies
- Industry best practice in nursery management.

Critical underpinning skills

- Analyse data, reports, legislation, regulations and standards for impacts on current resources and recognise common diseases, pests, and nutrition deficiencies
- Plan for the future
- Use tools and techniques to solve problems
- Complete data, quality control and other documentation clearly and accurately
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Prepare and write progress, summary and completion reports.

Assessment context

Assessment of competency is to be made through practical demonstration in the work environment or in a simulated work environment.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology			

Develop a strategic plan for the forest FPI FGM 126 A

Description

This unit of competency is concerned with the development of a strategic plan for the management of a forest.

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Review the strategic direction of the forest

1) Viable directions and desired outcomes are examined, environmental influences assessed, and aspirations of stakeholders defined.

2) Resources and other strategic factors available for use in production are identified and assessed and their special characteristics or relevance to the current and potential business activities is determined.

3) Options for growth and/or diversification of feasible organisation(s) are assessed to determine long-term viability and stability of the business.

4) Organisations are selected which are both feasible and offer opportunities for growth and/or diversification, decisions are made using reasoned argument and appropriate evidence.

2 Specify forest objectives and targets

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Explicit objectives and targets which reflect the managers preference for feasible organisation performance and development and which are consistent with the overall purposes of the forest are prepared, in a form that enables progress towards them to be observed and measured.

3 Assess financial implications of the business, marketing, purchasing and personnel plans

1) Financial analysis is prepared defining all aspects of financial behaviour for the organisation and market conditions with best case/worst-case sensitivity defined.

2) Various plans are examined in light of historical records, management experience and recommendations prepared based upon sound reasoned argument and sound evidence.

4 Evaluate alternative plans

1) Range of variables likely to impact plan performance is identified, based upon historical data, experience, industry trends, expert advice and market conditions.
2) The most appropriate plan is selected from an evaluation based upon reasoned argument and appropriate evidence.

5 Identify assets to be purchased and sold during the planning period

1) Organisation production processes are analysed to determine asset requirements.
2) Capital costs of asset requirements are assessed and compared with organisation returns and with total business investment to determine optimum levels of investment in assets.
3) Machinery innovations are monitored and assessed and machines replaced as it is beneficial and cost effective.
4) Costs and benefits of alternatives to the purchase of new assets are analysed and assessed to determine best acquisition strategies.

6 Develop risk management strategies

1) Sources and types of risks are identified and the probability of their occurrence assessed.
2) Alternative management strategies to reduce production, market and financial risks are identified, assessed and applied as required.
3) The need for formal insurance cover on assets, personal accident and sickness, and public risk is assessed and cover taken out where risk or loss cannot be reduced to an acceptable level by effecting protection through management practices.

7 Implement a strategic plan for the forest

1) Selection of a strategic plan using the results of financial plans and the assessment of risks in the production and marketing of products is based on reasoned argument and appropriate evidence.
2) All required inputs and improvements/developments for operations are specified in the business plan.
3) Requirements of business departments are defined, planning periods determined and work objectives established.

Range of Variables

- Viable directions may include suitable business applications relative to the property, assets, facilities and capabilities of resources available
- Risks may include market variations, supplier viability, distribution channels, disaster, competition
- Resources include the quality, size, and potential uses of the forest resource.

Evidence Guide

Critical underpinning knowledge

- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Business planning
- Risk management strategies
- Strategic planning.

Critical underpinning skills

- Review the strategic direction of the business
- Specify forest and business objectives and targets
- Assess financial implications of the business, marketing, purchasing and personnel plans
- Evaluate alternative plans
- Identify assets to be purchased and sold during the planning period
- Develop risk management strategies
- Implement a strategic plan
- Prepare, compile and write a business plan
- Cost/benefit analysis and compounding/discounting skills.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems			•
Using technology	•		

Manage tending operations – plantations FPI FGM 127 A

Description

This unit describes the work required to determine and implement appropriate tending operations within a plantation.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan tending operations

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Budget for tending operations is identified and confirmed with the appropriate person(s)/group.

4) End product requirements, stand treatment certification documentation, contractual requirements/obligations, and environmental and public relations imperatives are reviewed and analysed for impacts on the overall tending operations plan.

5) Current state of the forest resource is reviewed for inputs to the overall tending operations plan in accordance with organisation policy and guidelines.

6) Clients, technical operators, and marketing groups are liaised with for inputs to the overall tending operations plan in accordance with organisation policy and guidelines.

7) Tending plans are developed which include details of the equipment, methods and consumables to be used, in accordance with organisation policy and guidelines.

8) Tending plans include specifications for thinning, weed/insect management, stand health, pruning, and tree selection in accordance with organisational guidelines.

9) Any notifications of relevant groups and/or bodies are provided for in accordance with organisation policy and guidelines.

10) Overall specifications and quality parameters are determined for tending operations and documented in accordance with organisation guidelines

11) Approvals required for the plan are sought and obtained.

12) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement tending operations

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Emergency treatments and hazard notification procedures are prepared for and appropriate technical staff communications carried out in accordance with relevant national, state, and local legislation and/or regulations.
4) People, materials and equipment required for tending operations are co-ordinated and scheduled in accordance with organisation guidelines.
5) Schedule for the site is organised in conjunction with technical operators in accordance with organisational policy guidelines.
6) Any permits, approvals and/or licences required for the tending operations are identified and obtained.
7) Any relevant individuals, group, and/or bodies are liaised with during the tending operations in accordance with organisation policy and guidelines.
8) Documentation required by organisation and/or occupational health and safety guidelines, is determined and requirements for clear and accurate completion is clearly communicated to the appropriate individuals.
9) Operations supervisor is communicated with regularly throughout the tending operations to ensure smooth operation and progress.

3 Monitor tending operations

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental imperatives are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that specifications and quality and performance targets are being met and amendments to the plan or process are made where necessary.
5) Operations supervisor is communicated with regularly throughout the tending operations to ensure smooth operation and progress.
6) Checks are made to ensure that the documentation required by organisation and/or occupational health and safety guidelines, is completed and submitted during or after the progress of the tending operations.

4 Review tending operations

1) Data and documentation from the tending operations is analysed against the plan in accordance with organisation guidelines.

2) Recommendations for future operations are prepared based on the analysis of the data and discussions during the tending operation's conduct.

3) Report is prepared and presented to the appropriate bodies in accordance with organisational guidelines, and includes:

- any difficulties or issues faced during the tending operation's conduct,
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Timing of operations may be critical to the productivity of the forest
- Approvals required may include environmental bodies; local, state and federal government bodies and agencies; long-term budget approvals
- Nature and size of the crop and non-crop species may impact on the overall tending plan
- Availability and skill level of the labour force may impact on the overall tending plan
- Monitoring points may be time based, frequency based
- Documentation may include changes to the plan or process; supplementary approvals; supplementary notifications
- Report prepared following the tending operations may be submitted to environmental bodies; marketing groups; management; budget controller
- Permits and licences may relate to neighbouring properties; hours of operation; use and application of chemicals
- Individuals/bodies/groups liaised with may include environmental bodies; local, state and federal government bodies and agencies; clients; peers within the organisation; internal policy groups; labour force and operations supervisor
- Legislation, regulations, standards may include State forest codes of practice or equivalent; Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations
- Purpose of undertaking tending operations may be to maintain the health of the stand; improve productivity and long term sustainability; provide for end product mix requirements; management of notifiable weeds.
- Safety issues/hazards may include use of chemicals, including off-site effects; tools and equipment; dangers to the public
- Tending operations may have the potential to impact on the organisation's public relations
- Timing of operations may be critical to the success of the operation and on suitability for various forest products (e.g. pruning certification)
- Environmental regulations may include issues in relation to stream buffers, notification of neighbours.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Influence, and importance of, tending operations on the forest productivity and various end products
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Biology of relevant forest health problems
- Tree growth and development
- Weed species and herbicide interactions.

Critical underpinning skills

- Presenting information in writing and/orally to a wide range of individuals and groups
- Assess and extract critical information from numerous sources (e.g. legislation, forest biology, tree physiology, new technology)
- Planning and cost control
- Recognise common diseases, pests, and nutrition deficiencies
- Time and project management
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Data analysis.

Assessment context

Overall success of the operation must be assessed, including any recommendations made for future operations. Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities			•
Working with others in teams			•
Using mathematical ideas and techniques		•	
Solving problems			•
Using technology	•		

Plan for native forest regeneration FPI FGM 128 A

Description

This unit describes the work required to plan the regeneration, or revegetation, of an area of native forest for timber production.

Suggested Pre-Requisites/Co-Requisites

FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Prepare regeneration plan

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Marketing, strategic, business plans and budgets are reviewed, analysed and considered for impacts on regeneration planning.

4) Method of regeneration is identified/selected in accordance with broad policies and organisation guidelines.

5) Trees to be sown/planted are of the appropriate species, provenance, distribution, and hardiness to suit both the area to be regenerated and the organisation marketing and business plans.

6) The relevant individuals/groups/bodies are liaised with in accordance with organisation policy and guidelines.

7) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

8) Any approvals required for the plan are sought and obtained.

9) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement regeneration

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) People, materials and equipment required for the implementation of the regeneration plan are co-ordinated and scheduled in accordance with organisation guidelines.

4) Schedule for the site is organised in conjunction with operational personnel in accordance with organisational policy guidelines.

5) Any permits or licences required for the regeneration are identified and obtained.

6) The relevant individuals/groups/bodies are liaised with during regeneration activities in accordance with organisation policy and guidelines.

7) Documentation (maps, plans, and reports) required by the organisation and/or occupational health and safety guidelines, is completed clearly and accurately.

8) Operational staff and clients are communicated with regularly throughout the regeneration activity to ensure smooth operation and progress.

3 Monitor forest regeneration

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff and clients are communicated with regularly throughout the regeneration activity to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation (maps, plans, and reports) required by organisation and/or occupational health and safety guidelines, are completed clearly and accurately during the progress of the regeneration activity.

4 Review forest regeneration

1) Data and documentation from the regeneration is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the conduct of the operation.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Other sources of information for planning may include aerial photo interpretation
- Individuals/bodies/groups liaised with may include Local, State, and Federal government representatives; local interest/lobby groups; friends' groups; representatives of industry bodies
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Prescription burning is the predominant tool for native forest regeneration
- Native forest regeneration will be in line with organisational marketing plan and local environmental imperatives.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Biology of the target species
- Seed collecting and distribution seasons for the target species
- Organisation marketing, business and strategic plans
- Original and potential ecosystems for target area.

Critical underpinning skills

- Interpretation of aerial photography
- Planning and scheduling for processes and materials
- Analysis of data
- Recognise common diseases, pests, and nutrition deficiencies
- Communication of organisation requirements to staff and contractors
- Communication of organisation processes to clients
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level		
	1	2	3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams	•		
Using mathematical ideas and techniques		•	
Solving problems			•
Using technology	•		

Design plantations FPI FGM 129 A

Description

This unit applies describes the work required to design a plantation, or monoculture, for an organisation. This unit also applies to an area that is to be used for multiple uses (eg, farm forestry).

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Prepare plantation design

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Marketing, strategic and business plans are reviewed, analysed and considered for impacts on plantation planning.
4) Location of area to be planted is identified from organisation maps, plans, and strategies.
5) Trees to be sown/planted are of the appropriate species, provenance, distribution, and hardiness to suit both the area to be planted and the organisation marketing and business plans.
6) The relevant individuals/groups/bodies are liaised with in accordance with organisation policy and guidelines.
7) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

2 Design components of plantation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Any surveys to be undertaken are specified and tolerances determined in accordance with organisation guidelines.
4) Layout for area is identified/selected in accordance with broad policies and organisation guidelines.
5) Roads, fences, drainage channels and forest area boundaries are determined in accordance with organisational plans and policies and parameters of site.
6) The site preparation techniques are determined in accordance with organisational policies and parameters of site.
7) Any approvals required for the plan are sought and obtained.
8) The plan and its performance indicators are clearly articulated and documented in accordance with organisation guidelines, and communicated to those who will implement the plan.

3 Review plantation design

1) Data and documentation from this, and any adjacent, plantation is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the conduct of the operation.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Other sources of information for design may include aerial photo interpretation
- Individuals/bodies/groups liaised with may include Local, State, and Federal government representatives; local interest/lobby groups; friends' groups; representatives of industry bodies
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Plantation design will be in line with organisational marketing plan and local environmental imperatives
- Operations which should be taken into account during the design phase include soil surveys, boundary surveys, intensive site preparation, weed control, application of fertiliser, road construction.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Biology of the target species
- Reproduction and planting parameters for the target species
- Organisation marketing, business and strategic plans
- Operations which will be required to establish a plantation
- Most suited species for target area that will satisfy marketing, business and strategic plans
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Plan and schedule processes and materials
- Analyse data
- Communicate organisation requirements to staff and contractors
- Communicate organisation processes to clients
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Interpret aerial photography.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level		
	1	2	3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems			•
Using technology	•		

Conduct a pests and diseases assessment FPI FGM 131 A

Description

This unit describes the work required to assess the presence and level of pests and diseases within a forest area. It includes the assessment of animal populations, weeds, diseases and pests.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI FGM 075 A	Collect data or a sample from sample area for assessment
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan pests and diseases assessment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Organisation's inventory program, strategic plans, and budgets are reviewed, analysed and considered for impacts on assessment planning.

4) Frequency of assessment for particular forest area and size of sample area are determined from inventory program, budgets, and organisation guidelines.

5) Any additional available information produced by the organisation in relation to the sample area is reviewed, analysed and considered for impacts on assessment planning.

6) Method of measurement is identified/selected in accordance with inventory programs, budgets, and organisation guidelines.

7) Operational personnel and immediate management are liaised with in accordance with organisation policy and guidelines.

8) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

9) Any approvals required for the assessment plan are sought and obtained.

10) The assessment plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement pests and diseases assessment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the assessment are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised, in conjunction with other relevant forest operations personnel, in accordance with organisational policy guidelines.
5) Any permits or licences required for the assessment are identified and obtained.
6) The nature, method, reason, location and time frame for the data collection are clearly communicated to operational personnel, and confirmation of the clear communication is sought.
7) The procedures, tool, implements, and forms that are to be used, and any potential hazards which may be faced, are clearly communicated to operational personnel, and confirmation of the clear communication is sought.
8) Documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
9) Operational staff and any contractors are communicated with regularly throughout the assessment activity to ensure smooth operation and progress.
10) Advice is given to operational staff and any contractors during the assessment, when requested, or the need is observed.

3 Monitor assessment

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, and specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff and any contractors are communicated with regularly throughout the assessment activity to ensure smooth operation and progress and confirmation of clear communication is sought.
6) Checks are made to ensure that the documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the assessment activity.

4 Review assessment

1) Data and documentation from the assessment is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the assessment's conduct.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any maps or plans produced or amended through the process
- the data/analysis of the data recorded during the process
- any difficulties or issues faced
- any recommendations for future work
- results
- costs.

Range of Variables

- Purpose of undertaking the assessment may be to assess the extent and impacts of animal populations; diseases; pests; weeds
- Tools may include measuring tape
- Personal protective equipment and clothing may include glasses; boots; vest; sunscreen; hat; gloves
- Individuals/bodies/groups liaised with may include neighbouring landholders; federal/state/local government bodies/agencies; clients; immediate management
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Documentation required for assessment may include creation of, or amendment to map; plan; report; form
- Method of measurement/survey may include the use of geographic information systems; Interpret aerial photography
- Safety issues/hazards may include ground conditions; sun/wind; aerial hazards; dead/burnt trees/limbs; hang-ups; pine cones; insects
- Monitoring points may be time based or number/frequency based
- Measurable performance indicators, specifications and targets may include accuracy of maps/plans; completion of data; rechecking/review of data
- Additional information produced by the organisation in relation to the sample area may include previous surveys/assessments; aerial photography; geographic information systems data; previous reports.

Evidence Guide

Critical underpinning knowledge

- Common sources of infestations in target area and forest type
- Data collection and analysis methods
- Map and plan preparation techniques
- Relevant legislation and regulation requirements
- Local, common, vegetation and soil types
- Characteristics and growth habits of local vegetation
- Soil characteristics and topography of local area
- Use and application of appropriate survey/assessment equipment
- Statistical analysis techniques applicable to forest assessments
- Sampling techniques
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Select sampling techniques and create sampling designs
- Identify species grow in the target area
- Prepare site maps/plans
- Operate equipment safely
- Identify common sources of infestations in target area and forest type
- Identify vegetation in reference texts etc
- Write reports and submissions where precise meaning is required
- Write in keep with the demands placed on writing style by report format
- Using and adapt complex maps and diagrams
- Give formal or informal presentations to individuals/groups, answer questions and provide accurate information
- Collect, organise, analyse and evaluate data given purpose of survey
- Recommend solutions for a pest/disease infestation
- Read and interpret information for application to forest assessments
- Read and interpret organisation guidelines/plans
- Provide and interpret data, costings and calculations relating to time, financial information, weights, volumes, and lengths
- Complete occupational health and safety documentation clearly and accurately.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems		•	
Using technology	•		

Conduct a stocking assessment FPI FGM 132 A

Description

This unit describes the work required to manage the assessment of stocking within a forest area. It includes the assessments commonly referred to as germination, survival, regeneration, and basal area surveys.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI FGM 075 A	Collect data or a sample from sample area for assessment
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan stocking assessment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Organisation's inventory program and strategic plans are reviewed, analysed and considered for impacts on assessment planning.

4) Frequency of assessment for particular forest area and size of sample area are determined from inventory program and organisation guidelines.

5) Any additional available information produced by the organisation in relation to the sample area are reviewed, analysed and considered for impacts on assessment planning.

6) Method of measurement is identified/selected in accordance with inventory programs and organisation guidelines.

7) Operational personnel and immediate management are liaised with in accordance with organisation policy and guidelines.

8) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

9) Any approvals required for the assessment plan are sought and obtained.

10) The assessment plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement stocking assessment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the assessment are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised, in conjunction with other relevant forest operations personnel, in accordance with organisational policy guidelines.
5) Any permits or licences required for the assessment are identified and obtained.
6) The nature, method, reason, accuracy, location and time frame for the data collection are clearly communicated to operational personnel, and confirmation of the clear communication is sought.
7) The procedures, tool, implements, and forms that are to be used, and any potential hazards which may be faced, are clearly communicated to operational personnel, and confirmation of the clear communication is sought.
8) Operational staff and any contractors are communicated with regularly throughout the assessment activity to ensure smooth operation and progress.
9) Advice is given to operational staff and any contractors during the assessment, when requested, or the need is observed.

3 Monitor assessment

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, and specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff and any contractors are communicated with regularly throughout the assessment activity to ensure smooth operation and progress and confirmation of clear communication is sought.
6) Checks are made to ensure that the documentation required by organisation and/or or occupational health and safety guidelines, is completed clearly and accurately during the progress of the assessment activity.

4 Review assessment

1) Data and documentation from the assessment is analysed against the plan in accordance with organisation guidelines
2) Recommendations are prepared based on the analysis of the data and discussions during the assessment's conduct
3) Report is prepared in accordance with organisational guidelines, and includes:
- any maps or plans produced or amended through the process
- the data recorded during the process
- any difficulties or issues faced
- any recommendations for future work
- results
- costs.

Range of Variables

- Purpose of undertaking the assessment may be to monitor germination; to determine survival rates; to observe the effects of browsing; to monitor the distribution and number of seedlings; to monitor regeneration rates; to calculate basal areas
- Tools may include measuring tape; compass; chain; gauges
- Personal protective equipment and clothing may include glasses; boots; vest; sunscreen; hat; gloves
- Individuals/bodies/groups liaised with may include neighbouring landholders; federal/state/local government bodies/agencies; clients; immediate management
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Documentation required for assessment may include creation of, or amendment to map; plan; report; form
- Method of measurement/survey may include the use of geographic information systems; interpret aerial photography; assessment of fixed plots on a survey grid
- Safety issues/hazards may include ground conditions; sun/wind; aerial hazards; dead/burnt trees/limbs; hang-ups; pine cones; insects
- Monitoring points may be time based or number/frequency based
- Measurable performance indicators, specifications and targets may include accuracy of maps/plans; completion of data; rechecking/review of data; accuracy of data collected
- Additional information produced by the organisation in relation to the sample area may include previous surveys/assessments; aerial photography; geographic information systems data; previous reports

Evidence Guide

Critical underpinning knowledge

- Required stocking rates for forest area
- Data collection and analysis methods
- Map and plan preparation techniques
- Relevant legislation and regulation requirements
- Local, common, vegetation and soil types
- Characteristics and growth habits of local vegetation
- Soil characteristics and topography of local area
- Use and application of appropriate survey/assessment equipment
- Statistical analysis techniques applicable to forest assessments
- Sampling techniques
- Recognise various components of the forest, e.g. seedlings
- Basic concepts of forest management, e.g. basal area, stocking rations
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Select sampling techniques and create sampling designs
- Identify species growing in the target area
- Prepare site maps/plans
- Operate equipment safely
- Identify vegetation in reference texts etc
- Write reports where precise meaning is required
- Write in keeping with the demands placed on writing style by report format
- Use and adapt complex maps and diagrams
- Give formal or informal presentations to individuals/groups, answer questions and provide accurate information
- Collect, organise, analyse and evaluate data given purpose of survey
- Read and interpret information for application to forest assessments
- Read and interpret organisation guidelines/plans
- Calculate basal area
- Provide and interpret data, costings and calculations relating to time, financial information, weights, volumes, and lengths
- Complete occupational health and safety documentation clearly and accurately.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems		•	
Using technology	•		

Conduct a wood volume/yield assessment FPI FGM 133 A

Description

This unit describes the work required to assess the wood volume/yield within a forest area. It includes the assessments commonly referred to as stand assessment, or assessment of timber volume by size classes, timber quality/damage, form, and/or growth monitoring.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI FGM 075 A	Collect data or a sample from sample area for assessment
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan wood volume/yield assessment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Organisation's inventory program and strategic plans are reviewed, analysed and considered for impacts on assessment planning.

4) Frequency of assessment for particular forest area and size of sample area are determined from inventory program and organisation guidelines.

5) Any additional available information produced by the organisation in relation to the sample area is reviewed, analysed and considered for impacts on assessment planning.

6) Method of measurement is identified/selected in accordance with inventory programs and organisation guidelines.

7) The purpose for assessment is clearly established and understood.

8) Operational personnel and immediate management are liaised with in accordance with organisation policy and guidelines.

9) Measurable performance indicators, level of accuracy required, specifications and targets are determined and documented in accordance with organisation guidelines.

10) Any approvals required for the assessment plan are sought and obtained.

11) The assessment plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement wood volume/yield assessment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the assessment are co-ordinated, trained, and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised, in conjunction with other relevant forest operations personnel, in accordance with organisational policy guidelines.
5) Any permits or licences required for the assessment are identified and obtained.
6) The nature, method, reason, location and time frame for the data collection are clearly communicated to operational personnel, and confirmation of the clear communication is sought.
7) The procedures, tool, implements, and forms that are to be used, and any potential hazards which may be faced, are clearly communicated to operational personnel, and confirmation of the clear communication is sought.
8) Documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
9) Operational staff and any contractors are communicated with regularly throughout the assessment activity to ensure smooth operation and progress.
10) Advice is given to operational staff and any contractors during the assessment, when requested, or the need is observed.

3 Monitor assessment

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, and specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff and any contractors are communicated with regularly throughout the assessment activity to ensure smooth operation and progress and confirmation of clear communication is sought.
6) Checks are made to ensure that the documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the assessment activity.

4 Review assessment

1) Data and documentation from the assessment is analysed against the plan in accordance with organisation guidelines.

2) Recommendations are prepared based on the analysis of the data and discussions during the assessment's conduct.

3) Report is prepared in accordance with organisational guidelines, and includes:

- any maps or plans produced or amended through the process
- the data/analysis of data recorded during the process
- any difficulties or issues faced
- any recommendations for future work
- estimates of yield and quality
- results
- costs.

Range of Variables

- Purpose of undertaking the assessment may be to assess timber volume by size classes; timber quality; timber damage; form; rates of growth
- Tools may include measuring tape
- Personal protective equipment and clothing may include glasses; boots; vest; sunscreen; hat; gloves; insect repellent
- Individuals/bodies/groups liaised with may include neighbouring landholders; federal/state/local government bodies/agencies; clients; immediate management
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements; timber quality or use legislation
- Documentation required for assessment may include creation of, or amendment to map; plan; report; form
- Method of measurement/survey may include the use of geographic information systems; Interpret aerial photography
- Safety issues/hazards may include ground conditions; sun/wind; aerial hazards; dead/burnt trees/limbs; hang-ups; pine cones; insects; hazardous plants
- Monitoring points may be time based or number/frequency based
- Measurable performance indicators, specifications and targets may include accuracy of maps/plans; completion of data; rechecking/review of data
- Additional information produced by the organisation in relation to the sample area may include: previous surveys/assessments; aerial photography; geographic information systems data; previous reports.

Evidence Guide

Critical underpinning knowledge

- Prescribed/determined required wood volume/yield rates for forest area
- Data collection and analysis methods
- Map and plan preparation techniques
- Relevant legislation and regulation requirements
- Local, common, vegetation and soil types
- Local wood quality characteristics
- Market contracts/industry requirements
- Characteristics and growth habits of local vegetation
- Soil characteristics and topography of local area
- Use and application of appropriate survey/assessment equipment
- Statistical analysis techniques applicable to forest assessments
- Sampling techniques
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Select sampling techniques and create sampling designs
- Identify species growing in the target area
- Prepare site maps/plans
- Safe operation of equipment
- Identify vegetation in reference texts etc
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Use and adapt complex maps and diagrams
- Give formal or informal presentations to individuals/groups, answer questions and provide accurate information
- Collect, organise, analyse and evaluate data given purpose of survey
- Read and interpret information for application to forest assessments
- Read and interpret organisation guidelines/plans
- Provide and interpret data, costings and calculations relating to time, financial information, weights, volumes, and lengths
- Complete occupational health and safety documentation clearly and accurately.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems		•	
Using technology	•		

Conduct a site factor assessment FPI FGM 134 A

Description

This unit describes the work required to assess the site factors within a forest area. It includes the assessment of soils, terrain, slope, rainfall and environmental aspects of the forest area.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI FGM 075 A	Collect data or a sample from sample area for assessment
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan site factor assessment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Organisation's inventory program and strategic plans are reviewed, analysed and considered for impacts on assessment planning.

4) Frequency of assessment for particular forest area and size of sample area are determined from inventory program and organisation guidelines.

5) Any additional available information produced by the organisation in relation to the sample is are reviewed, analysed and considered for impacts on assessment planning.

6) Method of measurement is identified/selected in accordance with inventory programs and organisation guidelines.

7) Operational personnel and immediate management are liaised with in accordance with organisation policy and guidelines.

8) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

9) Any approvals required for the assessment plan are sought and obtained.

10) The assessment plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement site factor assessment

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations
3) People, materials and equipment required for the assessment are co-ordinated and scheduled in accordance with organisation guidelines
4) Schedule for the site is organised, in conjunction with other relevant forest operations personnel, in accordance with organisational policy guidelines
5) Any permits or licences required for the assessment are identified and obtained
6) The nature, method, reason, location and time frame for the data collection are clearly communicated to operational personnel, and confirmation of the clear communication is sought
7) The procedures, tool, implements, and forms that are to be used, and any potential hazards which may be faced, are clearly communicated to operational personnel, and confirmation of the clear communication is sought.
8) Documentation, and any maps/plans, required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately
9) Operational staff and any contractors are communicated with regularly throughout the assessment activity to ensure smooth operation and progress
10) Advice is given to operational staff and any contractors during the assessment, when requested, or the need is observed

3 Monitor assessment

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, and specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff and any contractors are communicated with regularly throughout the assessment activity to ensure smooth operation and progress and confirmation of clear communication is sought.
6) Checks are made to ensure that the documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the assessment activity.

4 Review assessment

1) Data and documentation from the assessment is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the assessment's conduct.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any maps or plans produced or amended through the process
- the data recorded during the process
- any difficulties or issues faced
- any recommendations for future work
- results
- costs.

Range of Variables

- Purpose of undertaking the assessment may be to identify and record the following aspects of a forest area soils; terrain; slope; rainfall; environmental specifications; cultural
- Tools may include measuring tape; sampling jars; survey instruments; geographic information systems
- Personal protective equipment and clothing may include glasses; boots; vest; sunscreen; hat; gloves
- Individuals/bodies/groups liaised with may include neighbouring landholders; federal/state/local government bodies/agencies; clients; immediate management
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Documentation required for assessment may include creation of, or amendment to map; plan; report; form
- Method of measurement/survey may include the use of geographic information systems; Interpret aerial photography
- Safety issues/hazards may include ground conditions; sun/wind; aerial hazards; dead/burnt trees/limbs; hang-ups; pine cones; insects
- Monitoring points may be time based or number/frequency based
- Measurable performance indicators, specifications and targets may include accuracy of maps/plans; completion of data; rechecking/review of data
- Additional information produced by the organisation in relation to the sample area may include previous surveys/assessments; aerial photography; geographic information systems data; previous reports; outcomes of consultations with those in the local area.

Evidence Guide

Critical underpinning knowledge

- Measuring techniques for slope and rainfall
- Data collection and analysis methods
- Map and plan preparation techniques
- Relevant legislation and regulation requirements
- Local, common, vegetation and soil types
- Characteristics and growth habits of local vegetation
- Soil characteristics and topography of local area
- Use and application of appropriate survey/assessment equipment
- Statistical analysis techniques applicable to forest assessments
- Sampling techniques
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Collect, organise, analyse and evaluate data given purpose of survey
- Give formal or informal presentations to individuals/groups, answer questions and provide accurate information
- Identify cultural aspects in the field
- Interpret information for application to forest assessments
- Interpret organisation guidelines/plans
- Prepare site maps/plans
- Recognise common diseases, pests, and nutrition deficiencies
- Operate equipment safely
- Select sampling techniques and create sampling designs
- Use and adapt complex maps and diagrams
- Write in keeping with the demands placed on writing style by reporting format
- Write reports and submissions where precise meaning is required
- Read and interpret information for application to forest assessments
- Read and interpret organisation guidelines/plans
- Provide and interpret data, costings and calculations relating to time, financial information, weights, volumes, and lengths
- Complete occupational health and safety documentation clearly and accurately.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems		•	
Using technology	•		

Manage research FPI FGM 135 A

Description

This unit describes the work required to improve processes, techniques, and crops.

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex task

1 Plan research

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Marketing and business plans are reviewed, analysed and considered for impacts on research.

4) Subjects of research for the coming period are identified/selected in accordance with organisation marketing and business plans and opportunities within the organisation.

5) Relevant individuals/groups/bodies are liaised with in accordance with organisation policy and guidelines.

6) Research techniques and key guidelines are determined and documented in accordance with organisational guidelines and policies.

7) Methods of determining, or suggestions for, measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

8) Levels of accuracy required for research projects are determined and documented.

9) Policies in relation to commercial confidentiality are interpreted and clearly documented within the research plan.

10) Any approvals required for the research projects are identified, sought and obtained.

11) Formats for reporting research results and recommendations are determined, clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

12) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement research projects

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the research projects are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with operational personnel in accordance with organisational policy guidelines.
5) Any permits or licences required for the research projects are identified and obtained.
6) Guidelines in relation to commercial confidentiality are strictly adhered to.
7) Relevant individuals/groups/bodies are liaised with during the conduct of the research project in accordance with organisation policy and guidelines.
8) Documentation required by organisation and/or occupational health and safety guidelines, is completed clearly, accurately, and follows preset conventions.
9) Operational staff and clients are communicated with regularly throughout the research project to ensure smooth operation and progress.

3 Monitor research projects

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, and specifications are being met and amendments to the process or methods are made where necessary.
5) Checks are made, in accordance with organisation policy, to ensure that research conventions are being followed, that observations are accurately documented, and that the required degree of accuracy is being attained.
6) Checks are made, in accordance with organisation policy, to ensure that guidelines in relation to commercial confidentiality are strictly adhered to.
7) Operational staff, and clients are communicated with regularly throughout the research project to ensure smooth operation and progress.
8) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the research project.

4 Report on research projects

1) Data and documentation from the research project is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the research project.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future implementation
- any recommendations for future research
- results
- costs
- any data analysis.

Range of Variables

- Any aspect of the operation of the organisation may be the subject of research and may be either short or long term
- Analysis may be qualitative or quantitative and may take into account the opinions of both clients and operational personnel
- Documentation required by the organisation may include detailed reports of species, location, season, methods used; plans and diagrams
- Individuals/bodies/groups liaised with may include peers; management
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Flowering times for target species
- Reproduction techniques for target species
- Pollination techniques
- Genetic characteristics of target species
- Research techniques for a range of activities
- Organisational marketing and business policies, plans and guidelines
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Implement pollination techniques
- Manage personnel to achieve specific organisation outcomes
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Prepare and write technical and scientific reports.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems			•
Using technology	•		

Conduct tree breeding operations FPI FGM 136 A

Description

This unit describes the work required to improve the yield and form of trees through improved breeding.

Suggested Pre-Requisites/Co-Requisites

FPI G21 A	Collect, analyse and organise information - advanced
FPI G26 A	Work effectively in work groups

1 Plan tree breeding

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Marketing and business plans are reviewed, analysed and considered for impacts on tree breeding.
4) Species to be the subject of the breeding operation is identified/selected in accordance with organisation plans and guidelines.
5) Relevant individuals/groups/bodies are liaised with in accordance with organisation policy and guidelines.
6) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.
7) Any approvals required for the breeding operations are sought and obtained.
8) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement tree breeding

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the breeding operations are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with operational personnel in accordance with organisational policy guidelines.
5) Any permits or licences required for the breeding operations are identified and obtained.
6) Relevant individuals/groups/bodies are liaised with during the breeding operations in accordance with organisation policy and guidelines.
7) Documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
8) Operational staff and clients are communicated with regularly throughout the breeding operations to ensure smooth operation and progress.

3 Monitor tree breeding

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, and specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff, and clients are communicated with regularly throughout the breeding activity to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the breeding activity.

4 Review tree breeding

1) Data and documentation from the breeding operations is analysed against the plan in accordance with organisation guidelines.
2) Recommendations are prepared based on the analysis of the data and discussions during the breeding operations.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- any recommendations for future work
- results
- costs
- any data analysis.

Range of Variables

- Tools may include brushes
- Documentation required by the organisation may include detailed reports of species, location, season, methods used; plans and diagrams
- Individuals/bodies/groups liaised with may include peers; management
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Purpose of undertaking tree breeding may be to improve the yield and form of trees through improved breeding.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Flowering times for target species
- Reproduction techniques for target species
- Pollination techniques
- Genetic characteristics of target species
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Implement pollination techniques
- Manage personnel to achieve specific organisation outcomes
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Prepare and write technical and scientific reports.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems			•
Using technology	•		

Manage road construction and maintenance FPI FGM 137 A

Description

This unit describes the work required to plan for, and ensure the implementation of, road construction and maintenance. Roads may be heavy duty, all-weather logging roads, through to unmetalled earth roads.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G23 A	Plan a complete activity
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan road construction and maintenance

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Relevant strategic, establishment, and timber extraction plans, and relevant local, state, and/or federal legislation or regulations are reviewed, analysed and considered for impacts on road construction and maintenance planning

4) Any conservation areas and environmental difficulties are identified and analysed in relation to road and associated drainage construction and maintenance.

5) Appropriate planning and specialist personnel, and local authorities are liaised with in accordance with organisation policy and guidelines to identify any future plans for the area.

6) Determine control points, required grades, and water crossing points and structures from field observations and any available additional information in accordance with organisational guidelines.

7) Preliminary designs are drawn, computations undertaken, and plan is prepared in accordance with organisational guidelines.

8) Design for the road(s) is selected by analysing the costs, benefits, impact on the forest, provision of access to particular parts of the forest, and environmental aspects of the designs.

9) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

10) Any approvals required for the plan are identified and documented as required in the plan.

11) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Implement road construction

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the construction are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with operational personnel and source of equipment and takes seasonal weather conditions into consideration in accordance with organisational policy guidelines.
5) Any permits or licences required for the construction are identified, sought and obtained.
6) Neighbouring landholders, local authorities and interest groups are liaised with during the construction activity in accordance with organisation policy and guidelines.
7) Documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
8) Operational staff, clients, and contractors are communicated with regularly throughout the construction activity to ensure smooth operation and progress.

3 Maintain roads

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) People, materials and equipment required for the road maintenance are co-ordinated and scheduled in accordance with organisation guidelines.
4) Schedule for the site is organised in conjunction with operational personnel and source of equipment and takes seasonal weather conditions into consideration in accordance with organisational policy guidelines.
5) Any permits or licences required for road maintenance are identified, sought and obtained.
6) Neighbouring landholders, local authorities and interest groups are liaised with during maintenance activities in accordance with organisation policy and guidelines.
7) Documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately.
8) Operational staff, clients, and contractors are communicated with regularly throughout maintenance activities to ensure smooth operation and progress.

4 Monitor road construction and maintenance

1) Monitoring points are determined and adhered to in accordance with organisation policy.
2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
4) Checks are made, in accordance with organisation policy, to ensure that performance indicators, targets, specifications are being met and amendments to the process or methods are made where necessary.
5) Operational staff, clients, and contractors are communicated with regularly throughout the construction and maintenance activities to ensure smooth operation and progress.
6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the construction and maintenance activities.

5 Review road construction and maintenance

1) Data and documentation from the construction and/or maintenance activities is analysed against the plan in accordance with organisation guidelines
2) Recommendations are prepared based on the analysis of the data and discussions during the construction and maintenance activities.
3) Report is prepared in accordance with organisational guidelines, and includes:
- any difficulties or issues faced
- environmental issues
- any recommendations for future work
- results
- costs.

Range of Variables

- Equipment used may be wheeled or tracked for example dozer, front end loader, skidder or grader using bucket or blade attachments
- Operations may be conducted at forest harvesting site and include construction and maintenance of roads over a full range of conditions which the equipment is capable of negotiating and for which road transport of logs can be used
- Construction and maintenance will be carried out over the full range of operational weather conditions
- Road/track base and surface material may include crushed rock and sand over a range of sizes and materials typically used for road/track construction
- Additional material may include cords and pipes for water crossings
- Occupational health and safety regulations include codes of practice requirements including wearing of required personal protection and high visibility vest; manual handling requirements; maintenance of safe forest practices including location of other people and potential falling objects; required actions relating to forest fire
- Available additional information may include previous reports/maps/plans prepared by the organisation; geographic information systems data; aerial photography; discussions with construction and maintenance personnel
- Approvals may be required from local/state/federal agencies; organisation management; neighbouring landholders; landholders downstream or who may be affected by the road construction and maintenance activities
- Individuals/bodies/groups liaised with may include neighbouring landholders; interest/lobby groups; federal/state/local bodies/agencies

Range of Variables (continued):

- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Purpose of undertaking construction operations may be to provide access for fire fighting; timber extraction; management and tending operations; establishment operations
- Documentation required by the organisation for road construction may include that which provides sufficient evidence for contract payments; equipment logbooks; preparation and amendment of site maps and plans
- Safety issues/hazards may include topographic/slope hazards
- Monitoring points may be time based or number/frequency based and may include a predetermined time before timber extraction; regular, seasonal points; after predetermined forest operations
- Measurable performance indicators, specifications and targets may include time frames for construction; periods (or seasons) between maintenance activities; cost of construction; cost of maintenance; cleanliness, volume and location of run-off.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Relevant environmental imperatives for area
- Specific site plans and requirements
- Road transport requirements and capabilities in forest operations
- Ground and run-off water behaviour
- Roading requirements of establishment, tending, timber extraction plans
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Collection and analysis of data in relation to roading
- Management and supervision of operational staff and contractors to achieve specific organisational outcomes
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Preparation of maps, plans and reports to organisation standards
- Negotiation with landholders, authorities and organisation management to achieve agreed outcomes.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams			•
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology	•		

Operate 4x4 vehicle in off-road conditions FPI FGM 139 A

Description

This unit describes the operation of 4z4 vehicles (e.g. cars, trucks, utilities) in a range of off-road and adverse conditions.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints

1 Operate vehicles

1) Organisational & regulatory occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Pre-start checks of motor vehicles, and equipment carried out to manufacturer's specifications and roadworthy requirements
3) Tyres are checked for pressure suitable for terrain & or changed to operational guidelines
4) Loads are secured in accordance with organisational & legislative requirements
5) Vehicles are driven on and off road to legislative and organisation requirements (whilst monitoring gauges) at appropriate speeds for conditions and hazards.
6) Vehicles are parked and shut down to organisation and manufacturer's requirements
7) Faults or malfunctions are corrected and or reported to organisation requirements
8) Vehicle and equipment are cleaned & stored after use to organisation requirements
9) Any log books or reports required by the organisation are completed in accordance with organisational procedures

2 Operate vehicle on, or across, a slope

1) Organisational & regulatory occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Intended vehicle path is inspected prior to negotiation to be within drivers capabilities and vehicle manufacturer’s specifications
3) Correct gear / range is selected to negotiate slope
4) The effect on the centre of gravity of changing fluid loads is explained
5) Traction is maintained in accordance with requirements of the vehicle & the surrounding terrain
6) Hazards and risks associated with traversing cross slopes are described

3 Operate vehicle ascending a steep slope including stall recovery

1) Organisational & regulatory occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Intended vehicle path is inspected prior to negotiation
3) Appropriate gear is selected to ascend grade and engine revolutions maintained to ensure constant traction
4) Air conditioning unit is turned off to avoid engine acceleration
5) Foot brake is applied as vehicle stalls & handbrake applied, ignition turned off
6) Clutch is depressed & reverse gear selected
7) Clutch is released & handbrake is slowly released
8) Ignition is turned on & brakes are released
9) Vehicle is started & vehicle allowed to reverse down the slope
10) Brakes are applied as necessary to control descent.

4 Operate vehicle descending a steep slope including stall recovery

1) Organisational & regulatory occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) intended vehicle path is inspected prior to negotiation
3) Appropriate gear is selected to ascend grade and engine revolutions maintained to ensure constant traction
4) Air conditioning unit is turned off to avoid engine acceleration
5) Braking is used to control decent and skidding is avoided by the application of brakes to emulate ABS
6) Ignition is turned off, foot brake is applied & handbrakes engaged
7) Clutch is depressed & low gear is selected
8) Clutch is released & handbrake is slowly released
9) Ignition is turned on & brakes are released
10) Vehicle is started & allowed to continue down the slope
11) Brakes are applied as necessary to control descent & skids are steered into

5 Operate jack

1) Organisational & regulatory occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Jack is located under vehicle in accordance with vehicles manufacturer's specifications and organisation guidelines
3) Jack is used & operated in accordance with manufacturer's specifications and organisation guidelines

6 Operate vehicle in rugged terrain

1) Organisational and regulatory occupational health and safety procedures, practices, policies, and precautions are observed and followed
2) Intended vehicle path is inspected prior to negotiation.
3) Correct gear/range is selected to negotiate terrain.
4) Freewheel hubs are engaged and disengaged in accordance with driving conditions.
5) Vehicle controls are set in accordance with manufacturer's instructions for operation in the surrounding terrain.
6) Traction is maintained in accordance with requirements of the vehicle and the surrounding terrain.
7) Selection of appropriate gear/range before negotiating terrain is demonstrated.
8) Where necessary, chains are fitted to vehicle in accordance with manufacturer's instructions.
9) Vehicle load is inspected, positioned and secured to maximise traction for 4x4 driving.
10) Terrain is negotiated in accordance with requirements for specific driving conditions.

Range of Variables

- Organisation specifications may include: pre-operation checks, standards of operation, storage and usage of fuels and lubricants, policies and routines relating to wear and damage, safeguards, reporting routines
- Vehicles may include: all terrain vehicles, cars and utilities, a range of trailers, light trucks
- Pre-start checks may include: fuel, water, oil, brake and transmission fluid levels, battery water levels and electrolyte checks, tyres, belts, leads, hydraulic lines and connections, air cleaners, air conditioners, brakes, off-road safety equipment in line with manufacturer's recommendations
- Operating conditions will include: Rugged terrain off road conditions that can be smooth, rough, uneven, slippery, boggy, sandy, steep or hilly
- Terrain surface may be rock; ice; snow; mud
- Tyre pressures are maintained at levels appropriate to operating conditions
- Cabin drill includes adjustment of: seats; seatbelts; mirrors; steering
- Start-up check includes: fuel; coolant; oil; pump; water; agent status; equipment / locker security; visual inspection of vehicle
- Relevant legislation & procedures related to controlling vehicle movement may include: traffic regulations; organisation policy & procedures; accident procedures; emergency parking
- Manufacturer's specifications may include: engine characteristics; systems warning function; four wheel drive operation; radius of turning circle; safety procedures
- Operations are in line with: traffic regulations; organisation driving procedures; road & weather conditions; vehicle specifications; instructor guidelines; road gradient & terrain
- Installed devices may include: warning lights; tachometer; temperature gauge; electrical charging; ancillary systems indicators; speedometer; oil pressure; brake warning lights; audible warning devices
- Vehicles may include all types necessary for the efficient operation of the organisation
- Traffic conditions to be taken into account may include: speed limits for non-response operation; legal parking; traffic pattern & density; known peak periods & special community functions; effects of weather on roads; road surface / off-road terrain; visibility
- Operational conditions may include: emergency response driving; driving in adverse terrain; driving in special environments
- Considerations may include: procedures; traffic conditions; levels of emergency response; adverse weather; traffic regulations; warning devices; adverse terrain; type of vehicle

Evidence Guide

Critical underpinning knowledge

- Road traffic laws
- Organisation procedures for use of vehicles and equipment
- Relevant occupational health and safety requirements for storage of materials and equipment
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- The effect on the centre of gravity of changing fluid loads
- Hazards and risks associated with traversing cross slopes
- The effects of hard surface driving (e.g. highway wind up) on the 4x4 system
- Appropriate driving techniques and speeds for rock, mud, sand, ice and snow
- The appropriate use of diff locks.

Critical underpinning skills

- Drive vehicles in a range of conditions
- Demonstrate emergency procedures in the operation of vehicles
- Conduct pre-start checks
- Clean and store vehicles and equipment
- Identify operational faults
- Rectify minor faults
- Attach equipment to vehicles
- Complete time sheets and other maintenance records.

Operate 4x4 vehicle in off-road conditions FPI FGM 139 A

Assessment context

Appropriate license for vehicle driving must be obtained.
Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems		•	
Using technology		•	

Perform water crossing and recovery of 4x4 vehicles FPI FGM 140 A

Description

This unit describes the operation and recovery of 4x4 vehicles (e.g. cars, trucks, utilities) while crossing water bodies.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI FGM 139 A	Operate 4x4 vehicle in off-road conditions
FPIC2029A	Work within environmental constraints

1 Negotiate water crossings

1) Entry and exit points for crossing are identified and path selected for current flow.
2) Depth of water at intended crossing point is checked against engine air intake by capable swimmer only.
3) Identify gear ratio for completion of crossing without the need to change.
4) Appropriate cover affixed to cover front of vehicle to prevent water damage to engine area.
5) Engine revolutions are maintained without sudden acceleration or deceleration and bow wave maintained.
6) Describe why stalled engine should not be restarted with exhaust under water.
7) Brakes are dried off following any water crossing by gentle application whilst moving.
8) Engine oils are checked for contamination after crossing and diff and gear box oils checked after prolonged periods in water.

2 Recover vehicle

1) Identify a suitable recovery point.
2) Choker affixed with protective cover for tree base.
3) Three alternative anchor methods are described.
4) The advantages of using a snatch block is explained.
5) Pay out winch cable and inspect for damage wearing gloves at all times.
6) Person identified to provide directions and driver confirm hand signals.
7) All personnel are cleared from area to a minimum distance of 1½ times the cable length (bag placed over middle of cable).
8) Winch is engaged and operated in accordance manufacturers' specifications and organisation guidelines.
9) Towing point is located (not tow ball) and appropriate tow cable affixed slack taken up gradually.

Range of Variables

- Organisation specifications may include pre-operation checks, standards of operation, storage and usage of fuels and lubricants, policies and routines relating to wear and damage, safeguards, reporting routines
- Vehicles may include all terrain vehicles, cars and utilities, a range of trailers, light trucks
- Pre-start checks may include fuel, water, oil, brake and transmission fluid levels, battery water levels and electrolyte checks, tyres, belts, leads, hydraulic lines and connections, air cleaners, air conditioners, brakes, off-road safety equipment in line with manufacturer's recommendations
- Operating conditions will include off road conditions that can be smooth, rough, uneven, slippery, boggy, steep or hilly
- Tyre pressures are maintained at levels appropriate to operating conditions.

Evidence Guide

Critical underpinning knowledge

- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Road traffic laws
- Organisation procedures for use of vehicles and equipment
- Relevant occupational health and safety requirements for storage of materials and equipment.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Attachment of equipment to vehicles
- Record and reporting
- Identify operational faults
- Rectify minor faults
- Pre-start checks
- Clean and store vehicles and equipment
- Drive vehicles in a range of conditions
- Demonstrate emergency procedures in the operation of vehicles
- Complete time sheets and other maintenance records.

Assessment context

Appropriate license for vehicle driving must be obtained.
Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems		•	
Using technology		•	

Plan timber extraction activities FPI FGM 143 A

Description

This unit describes the work required to undertake the planning for timber extraction from the forest. It may be locally referred to as a *coupe plan* or a *timber harvesting plan.*

Suggested Pre-Requisites/Co-Requisites

FPI G24 A	Plan a complex activity
FPI G29 A	Solve problems in the workplace - advanced

1 Plan timber extraction

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Organisation's strategic, marketing and regeneration/re-establishment plans and policies are reviewed, analysed and considered for impacts on timber extraction planning.

4) Methods and tools to be used for extraction are identified/selected in accordance with organisation guidelines and policies.

5) Scheduling for the timber extraction activity is determined in conjunction with operational personnel, and in light of site requirements.

6) The capability of existing roads to carry the traffic relating to timber extraction is determined, and any maintenance required is arranged for.

7) The requirement for additional roads to carry the traffic relating to timber extraction is determined, and any associated construction is arranged for.

8) Clients, management, and operational personnel are liaised with in accordance with organisation policy and guidelines.

9) Any additional stakeholders or interested parties are liaised with in accordance with organisation policy and guidelines.

10) Any permits or licences required for the timber extraction activity are identified and documented.

11) Measurable performance indicators, specifications and targets are determined and documented in accordance with organisation guidelines.

12) Any approvals required for the plan are sought and obtained.

13) The plan and its performance indicators are clearly articulated and documented, and communicated to those who will implement the plan in accordance with organisation guidelines.

2 Monitor timber extraction

1) Monitoring points are determined and adhered to in accordance with organisation policy.

2) Checks are made to ensure that organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

3) Checks are made to ensure that site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

4) Checks are made, in accordance with organisation policy, to ensure that the pre-set performance indicators, targets, and specifications are being met and amendments to the process or methods are made where necessary.

5) Operational staff, clients, and any contractors are communicated with regularly throughout the harvesting activity to ensure smooth operation and progress.

6) Checks are made to ensure that any documentation required by organisation and/or occupational health and safety guidelines, is completed clearly and accurately during the progress of the timber extraction activity.

3 Review timber extraction

1) Data and documentation from the harvest is analysed against the plan in accordance with organisation guidelines.

2) Recommendations are prepared based on the analysis of the data and discussions during the extraction operations.

3) Report is prepared in accordance with organisational guidelines, and includes:

- any difficulties or issues faced
- any recommendations for future extraction operations
- results
- costs
- any data analysis.

Range of Variables

- The preparation of a plan for timber extraction activities may be required by local/state authorities and/or codes of practice
- Approvals required may be from local, state, or federal bodies or agencies; organisation management
- Additional stakeholders or interested parties may include: local interest/lobby groups; local law enforcement agencies
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Safety issues/hazards may include topographical characteristics of area; hazards associated with the equipment to be used for harvesting.

Evidence Guide

Critical underpinning knowledge

- Relevant legislation and regulation requirements
- Timber extraction techniques and processes
- Requirements of local/State forest codes of practice or similar
- Impact of a range of extraction techniques on the quality/volume of timber extracted and on the site itself
- Occupational health and safety guidelines, procedures, and principles, including manual handling.

Critical underpinning skills

- Recognise common diseases, pests, and nutrition deficiencies
- Management of staff and contractors to undertake a specific operation
- Anticipation of potential blockages to the timber extraction operation
- Writing reports where precise meaning is required
- Writing in keeping with the demands placed on writing style by reporting format
- Using and adapting complex maps and diagrams
- Giving formal or informal presentations to individuals/groups, answering questions and providing accurate information
- Collecting, organising, analysing and evaluating data in relation to timber extraction.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems			•
Using technology	•		

Cut, sort and set cuttings FPI FGM 146 A

Description

This unit describes the work required to cut, sort, and set cuttings in a nursery environment.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G41 A	Use basic hand held tools

1 Prepare cuttings

1) Parent plant is prepared and method of taking the cutting is employed suitable to the species and in accordance with organisational procedures.
2) Maximum viability of cuttings is maintained by conditioning and storage in accordance with the requirements of the species.
3) Tools are chosen appropriate to the task being undertaken, used in accordance with organisation guidelines and safe working practices are employed.

2 Sort and select cuttings

1) Work area is free from contamination and hygiene practices are followed in accordance with organisational guidelines.
2) Cuttings are selected for propagation in accordance with organisational guidelines and supervisor's instructions.
3) Maximum viability of cuttings is maintained by conditioning and storage in accordance with the requirements of the species.
4) Discarded cutting material is disposed of in accordance with organisational waste disposal guidelines and/or procedures.

3 Prepare growing site

1) Benches are free from contamination and hygiene practices are followed in accordance with organisation guidelines.
2) Growing environment is prepared to suit species, weed retardants are prepared and applied as specified in planting program.
3) Tools are chosen appropriate to the task being undertaken, used in accordance with guidelines and safe working practices are employed.

4 Propagate cuttings in growing media

1) Media components are prepared in accordance with manufacturers' directions, organisation guidelines, propagation method and plant needs.
2) Media storage procedures are performed and hygiene practices followed in accordance with organisation guidelines.
3) Pre-planting treatment is applied and/or carried out appropriate to the species, in accordance with organisational policy.
4) Placement and depth of cutting are in accordance with planting method and species.
5) Cuttings are handled in a way that prevents damage.
6) Water and nutrients are applied to suit the media conditions, cutting requirements and techniques employed, and in accordance with manufacturers' instructions.
7) Labels and identification are correct and applied in accordance with organisational guidelines.
8) Remedial action is taken as specified in planting program, to control pests and diseases.
9) Records are completed accurately and at the required time in accordance with organisational guidelines.
10) Tools are chosen appropriate to the task being undertaken, used in accordance with guidelines and safe working practices are employed.

5 Graft cuttings to mature plant

1) Mature plant is prepared in accordance with species and organisational guidelines.
2) Pre-planting treatment is applied and/or carried out appropriate to the species, in accordance with organisational policy.
3) Cuttings are handled in a way that prevents damage.
4) Grafting type is in accordance with species and organisational guidelines.
5) Labels and identification are correct and applied in accordance with organisational guidelines.
6) Remedial action is taken as specified in planting program, to control pests and diseases.
7) Records are completed accurately and at the required time in accordance with organisational guidelines.
8) Tools are chosen appropriate to the task being undertaken, used in accordance with guidelines and safe working practices are employed.

Range of Variables

- Growing media may include sand; potting mix; gravel; gro-wool; sawdust; pine bark; water (hydroponics); scoria.
- Growing environment may include heat; light; humidity; wind; sun; moisture; topography; rainfall.
- Nutrients may include chemicals; fertilisers; organic material.
- Remedial action may include removal of infected material; treatment with chemicals.
- Weed retardants may include weed-mat; slatted benches; chemical solutions.
- Tools may include motorised or electrically powered automated systems to manually operated equipment and tools
- The full range of seasonal factors and growing cycle is included, as appropriate.

Evidence Guide

Critical underpinning knowledge

- Media mixing and storage procedures
- Growing environments and weed retardants that are suited to cuttings
- Pre-planting treatments, water and nutrients suited to cuttings
- Remedial action for weeds, pests and diseases
- Techniques of taking and setting cuttings.

Critical underpinning skills

- Take and set cuttings
- Prepare growing media
- Record information on a simple form accurately
- Maintain a clean/hygienic working environment to prevent contamination
- Prepare accurate and clear labels
- Prepare growing site
- Prepare mature plants for grafting
- Read and interpret information gained from tables/charts
- Complete forms which require accurate technical information.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			
Communicating ideas and information			
Planning and organising activities	•		
Working with others in teams			
Using mathematical ideas and techniques	•		
Solving problems			
Using technology			

Read and interpret maps FPI FGM 147 A

Description

This unit is concerned with interpreting maps and plans for navigation in the forest.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G22 A	Plan to undertake a routine task

1 Select traverse route

1) Current position in the field is located using landmarks and key geographical features.

2) Current position in the field is identified on map or plan in accordance with organisational procedures.

3) Required destination is identified on map or plan in accordance with organisational procedures.

4) Hazards and potential hazards in traversing from location to destination are recognised and interpreted from map or plan, field observations, and local knowledge.

5) Traverse route to destination is selected using information from map or plan and field observations.

6) Distance to required destination is estimated using map scale and selected traverse route.

Range of Variables

- Map types may include cadastral, topographic and other organisational maps of varying scale
- Map features may include those normally found on maps of forested country used for general management and fire protection use such as roads, watercourses, quarries, water points, ramps and features specific to forestry such as plantation compartments.

Evidence Guide

Critical underpinning knowledge

- Uses of a range of maps and plans
- Representation of topographic features on maps and plans
- Common scales used on maps and plans
- Use and manipulation of scales.

Critical underpinning skills

- Demonstrate use of map scale
- Explain meaning of map symbols and line types
- Locate own position on a map
- Explain meaning of map meridian
- Read and record grid references
- Recognise map type and map features
- Interpret forest area detail
- Scale distances from map
- Recognise topographic map features.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities	•		
Working with others in teams			
Using mathematical ideas and techniques			
Solving problems			
Using technology			

Trap and bait pests FPI FGM 148 A

Description

This unit describes the work involved in trapping and baiting browsing pests such as rabbits, foxes, and rats.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints
RUA AG2009CH A	Apply chemicals and biological agents

1 Select pest control method

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Pests to be controlled are identified from tracks, faeces, or supervisor's instructions.
3) Pest control method is selected based on forest type, species, organisation procedures, and supervisor's instructions.
4) Any permits or licences required are obtained and retained in accordance with organisational and regulatory requirements.

2 Trap pests

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Neighbouring landholders are notified of trapping operation in accordance with organisational procedures.
3) Appropriate signage is erected in accordance with organisational procedures.
4) Placement of trap(s) is in accordance with local conditions and/or supervisor's instructions.
5) Trap is set in accordance with manufacturer's instructions and/or supervisor's instructions.

3 Bait pests

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Neighbouring landholders are notified of baiting operation in accordance with organisational procedures.
3) Appropriate signage is erected in accordance with organisational procedures.
4) Chemical(s) are prepared and mixed in accordance with organisational procedures and safety guidelines.
5) Bait is prepared in accordance with organisational procedures and safety guidelines.
6) Distribution of bait is in accordance with organisational procedures, safety guidelines, local conditions and/or supervisor's instructions.

4 Complete pest control operation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Pests are disposed of in accordance with organisational occupational health and safety and environmental management procedures.
3) Records are completed in accordance with organisational requirements and procedures.
4) Any temporary signs are removed and stored in accordance with organisational procedures.

Range of Variables

- Target species may include rats; rabbits; foxes; kangaroos; wallabies; dogs
- Traps may include all legal approved forms of trapping pests
- Baits may include all legal approved baits and methods of distribution.

Evidence Guide

Critical underpinning knowledge

- Chemical bait uses and dose rates
- Animal handling techniques to minimise animal distress
- Appropriate control methods for specific target species
- Local regulations and restrictions relating to the trapping and baiting of pests
- Organisational occupational health and safety requirements and procedures relating to the trapping and baiting of pests
- Documentation required to be completed.

Critical underpinning skills

- Placing and setting traps
- Calculating and measuring quantities and rates for bait distribution
- Baiting and trapping pests to minimise animal distress
- Applying State regulations and industry standards pertaining to storage, handling and disposal of poison use, ie. Manufacturer's materials safety data sheets.
- Completing and maintaining accurate organisational reports and forms for trapping and baiting.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities	•		
Working with others in teams			
Using mathematical ideas and techniques			
Solving problems			
Using technology			

Conduct grader operations FPI FGM 149 A

Description

This unit applies to grader operations in a forest environment.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Plan and prepare for operations

1) Briefing, handover details, authorisation and clearances are received, interpreted and clarified in accordance with site procedures and regulations.

2) Appropriate type of equipment and/or attachments are selected according to job type and specifications to maximise efficiency and effectiveness of work activities.

3) Potential risks and hazards are identified and managed according to the work plan in accordance with site procedures and regulations, occupational health and safety and other relevant legislation.

4) Personal protective equipment is selected and used in accordance with manufacturers' guidelines, site procedures and regulations and occupational health and safety and other relevant legislation.

5) Equipment pre-operational checks are performed according to manufacturers' specifications, site procedures, regulations, occupational health and safety and other relevant legislation.

6) Site environmental and heritage concerns are adhered to according to relevant legislation.

2 Identify and engage material

1) Start-up, park and shut-down procedures are carried out in accordance with manufacturers' specifications, site procedures and regulations.

2) Equipment is operated within recommended speed, engine capability and limitations according to manufacturers' specifications.

3) Assessment of material and site conditions determine appropriate operating technique.

4) Removal of contaminant is carried out upon identification and disposed of according to site procedures and regulations.

5) Emergency plan is adhered to in case of fire and/or accident in accordance with manufacturers' guidelines, site procedures and regulations, occupational health and safety and other relevant legislation.

3 Grade site

1) Site is graded to haulable surface according to site conditions, engineering specifications, site procedures and regulations, occupational health and safety and other relevant legislation.
2) Communication with other equipment operators and personnel is maintained using approved communication methods in accordance with site procedures and regulations
3) Equipment performance is monitored utilising appropriate indicators to aid efficient operations.
4) Equipment is manoeuvred to maximise efficiency and ensure safety of other equipment and personnel.
5) Work is completed in accordance with agreed work plan and outcomes.

4 Carry out operator maintenance

1) Visual inspection and fault finding are conducted in accordance with manufacturers' specifications and site requirements.
2) Routine operational servicing is conducted to ensure peak performance of equipment in accordance with manufacturers' specifications, site procedures, regulations, occupational health and safety and other relevant legislation.

5 Conduct housekeeping activities

1) Equipment is cleaned in accordance with manufacturers' specifications, site procedures and regulations.
2) Attachments and other ancillary equipment are cleaned and stored in accordance with manufacturers' specifications, site procedures and regulations.
3) All required records and documentation are completed accurately and promptly in accordance with site requirements.

Range of Variables

- Briefing and hand over details, authorisation and clearances may be written or verbal and may include nature and scope of task, potential hazards, adequacy of lighting machine and site, access road plan, survey plan, instructions, geological details, face plan, haul routes, services, resource requirements/allocations, schedule, site characteristics and requirements, materials and equipment to be used, isolation requirements, safety requirements, environmental considerations, site requirements
- Potential risks and hazards may include unsafe ground, fences, holes, pot holes, materials, over-hanging rocks, vehicles, abandoned equipment, equipment, personnel, chemicals, contaminants, adverse weather conditions (electrical storms, floods) fires
- Personal protective equipment may include safety helmet, safety boots, safety harness when working at heights, gloves, eye protection, hearing protection, respirator, personal protection from the elements
- Protective equipment may include fire extinguishers (water, foam, dry chemical powder, carbon dioxide), barricades, out of service tags, danger tags
- Site environmental and heritage concerns may include dust, noise, water, flora and fauna, heritage legislation, culturally sensitive sights and artefacts
- Pre-operational checks are those checks specified by the manufacturer prior to operating the item of equipment and may include visual and audio warning devices and lights, engine and stop engine lights, fluid levels, cab, air filter restriction indicator, display instrumentation and gauges, computer systems
- Capacity of equipment and/or attachments may include efficient and safe operating speed, duration of operation, type of activities performed, weight and/or load limitations, operating limitations
- Start-up, park and shutdown procedures may include safety mechanisms operational (horn, operating lights), correct location of equipment, vehicle is left secured

Range of Variables (continued):

- Communication methods may include two way radio operations, authorised signalling methods, emergency communication and signalling procedures, computer based systems, telephone, loudspeaker, hand or whistle signals
- Indicators may include brake oil temperature, engine oil pressure, brake air pressure, water temperature, service meter, voltmeter, torque converter oil temperature, tachometer, speedometer/odometer, parking brake, steering filters, transmission filter, fuel filter, retarder, computer indicators
- Materials may include rejects, topsoil, gravel, road base, sand, water, rubbish, oxidised waste, sulphide rock fill
- Site conditions may include wet, dry, day, night, stability of ground, broken ground, stable ground (compaction) amount of scale, slope of working surface, degree of compaction, location of water table
- Contaminant may include timber, plastic, metal or steel rods, metal bucket teeth, old fencing, old piping, animal carcasses, ear plugs, consumables, cigarette butts
- Emergency plan may include notification of authorities, evacuation procedures, isolation procedures, equipment shut down procedures, clean up, first aid, use of personal protective equipment and protective equipment
- Visual inspection and fault finding may include vehicle number, danger tags, personnel proximity, tyres and rim condition, wheel nuts and studs, light positioning and cleanliness, radiator top up tank, oil leaks, fuel leaks, water leaks, no combustible material around exhaust, damage to equipment, portable fire extinguisher, fire suppression unit, cab mounts, windows, engine oil to be checked before starting engine, grease lines, cab condition
- Routine operational servicing keeping cab clean, checking fluid levels, greasing, tightening loose fittings, filter changing
- Equipment cleaning methods may include water, steam cleaning, degreasing, vacuum, forced air
- Records may include end of shift documentation, work log, supplies log, computer readings
- Relevant legislation codes, regulations and standards include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations.

Evidence Guide

Critical underpinning knowledge:

- Site procedures
- Environmental and heritage procedures
- Occupational health and safety procedures
- Emergency procedures
- Isolation procedures
- Site safety requirements
- Equipment safety requirements
- Start up and shut down procedures
- Operational procedures and checks
- Equipment processes, technical capability and limitations
- Grading procedures
- Surface maintenance techniques.

Critical underpinning skills:

- Complete log and other vehicle records
- Calculate time and quantities
- Use communications equipment
- Interpret plans, reports, maps, specifications
- Read and interpret site and vehicle plans and records
- Interpret ground conditions
- Organise work tasks
- Select and fit personal and protective equipment
- Safe work practices
- Hazard identification
- Hazardous goods handling techniques
- Use of vehicle for grading, levelling, battering, boxing out, drain construction, marking out
- Use of layers.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.
Any licenses required by regulation are obtained prior to operation of vehicles, plant and/or equipment.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology		•	

Conduct roller/compactor operations FPI FGM 150 A

Description

This unit applies to roller/compactor operations in a forest environment.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints

1 Plan and prepare for operations

1) Briefing, handover details, authorisation and clearances are received, interpreted and clarified in accordance with site procedures and regulations.

2) Appropriate type of equipment and/or attachments are selected according to job type and specifications to maximise efficiency and effectiveness of work activities.

3) Potential risks and hazards are identified and managed according to the work plan in accordance with site procedures and regulations, occupational health and safety and other relevant legislation.

4) Personal protective equipment is selected and used in accordance with manufacturers' guidelines, site procedures and regulations and occupational health and safety and other relevant legislation.

5) Equipment pre-operational checks are performed according to manufacturers' specifications, site procedures, regulations, occupational health and safety and other relevant legislation.

6) Site environmental and heritage concerns are adhered to according to relevant legislation.

2 Identify and engage material

1) Start-up, park and shut-down procedures are carried out in accordance with manufacturers' specifications, site procedures and regulations.

2) Equipment is operated within recommended speed, engine capability and limitations according to manufacturers' specifications.

3) Equipment is manoeuvred to maximise efficiency and ensure safety of other equipment and personnel.

4) Assessment of material and site conditions determine appropriate operating technique.

5) Removal of contaminant is carried out upon identification and disposed of according to site procedures and regulations.

6) Emergency plan is adhered to in case of fire and/or accident in accordance with manufacturers' guidelines, site procedures and regulations, occupational health and safety and other relevant legislation.

3 Carry out compacting

1) Correct degree of compaction is achieved through equipment operations according to work plan and manufacturers' instructions and engineering specifications.

2) Communication with other equipment operators and personnel is maintained using approved communication methods in accordance with site procedures and regulations.

3) Equipment performance is monitored utilising appropriate indicators to aid efficient operations.

4) Work is completed in accordance with agreed work plan and outcomes.

4 Carry out operator maintenance

1) Visual inspection and fault finding are conducted in accordance with manufacturers' specifications and site requirements.
2) Routine operational servicing is conducted to ensure peak performance of equipment in accordance with manufacturers' specifications, site procedures, regulations, occupational health and safety and other relevant legislation.

5 Conduct housekeeping activities

1) Equipment is cleaned in accordance with manufacturers' specifications, site procedures and regulations.
2) Attachments and other ancillary equipment are cleaned and stored in accordance with manufacturers' specifications, site procedures and regulations.
3) All required records and documentation are completed accurately and promptly in accordance with site requirements.

Range of Variables

- Rollers and compactors may include rollers, tractors, dozer, front end loader with roller, smooth drum, vibrating, multi tyred, grid, sheep foot
- Briefing and hand over details, authorisation and clearances may be written or verbal and may include nature and scope of task, potential hazards, adequacy of lighting machine and site, access road plan, survey plan, instructions, geological details, face plan, haul routes, services, resource requirements/allocations, schedule, site characteristics and requirements, materials and equipment to be used, isolation requirements, safety requirements, environmental considerations, site requirements
- Site procedures and regulations may be found in operations manual, induction documentation, training materials, policy and procedures documents, verbal or written instructions, managers rules
- Potential risks and hazards may include unsafe ground, unstable faces, fences, adjoining pit walls, holes, pot holes, materials, over-hanging rocks, vehicles, abandoned equipment, equipment, personnel, chemicals, contaminants, adverse weather conditions (electrical storms, floods) fires, over flying aircraft
- Personal protective equipment may include safety helmet, safety boots, safety harness when working at heights, gloves, eye protection, hearing protection, respirator, personal protection from the elements
- Protective equipment may include fire extinguishers (water, foam, dry chemical powder, carbon dioxide), barricades, out of service tags, danger tags
- Site environmental and heritage concerns may include dust, noise, water, flora and fauna, heritage legislation, culturally sensitive sights and artifacts
- Pre-operational checks are those checks specified by the manufacturer prior to operating the item of equipment and may include visual and audio warning devices and lights, engine and stop engine lights, fluid levels, cab, air filter restriction indicator, display instrumentation and gauges, computer systems
- Capacity of equipment and/or attachments may include efficient and safe operating speed, duration of operation, type of activities performed, weight and/or load limitations, operating limitations
- Start-up, park and shutdown procedures may include safety mechanisms operational (horn, operating lights), correct location of equipment, vehicle is left secured
- Communication methods may include two way radio operations, authorised signaling methods, emergency communication and signaling procedures, computer based systems, telephone, loudspeaker, hand or whistle signals
- Indicators may include brake oil temperature, engine oil pressure, brake air pressure, water temperature, service meter, voltmeter, torque converter oil temperature, tachometer, speedometer/odometer, parking brake, steering filters, transmission filter, fuel filter, retarder, computer indicators
- Materials may include: rejects, topsoil, gravel, road base, sand, water, rubbish, oxidised waste, sulphide rock fill
- Site conditions may include wet, dry, day, night, stability of ground, broken ground, stable ground (compaction) amount of scale, slope of working surface, degree of compaction, location of water table

Range of Variables (continued)

- Contaminant may include timber, plastic, metal or steel rods, metal bucket teeth, old fencing, old piping, animal carcasses, ear plugs, consumables, cigarette butts
- Emergency plan may include notification of authorities, evacuation procedures, isolation procedures, equipment shut down procedures, clean up, first aid, use of personal protective equipment and protective equipment
- Visual inspection and fault finding may include vehicle number, danger tags, personnel proximity, tyres and rim condition, wheel nuts and studs, light positioning and cleanliness, radiator top up tank, oil leaks, fuel leaks, water leaks, no combustible material around exhaust, damage to equipment, portable fire extinguisher, fire suppression unit, cab mounts, windows, engine oil to be checked before starting engine, grease lines, cab condition
- Routine operational servicing keeping cab clean, checking fluid levels, greasing, tightening loose fittings, filter changing
- Equipment cleaning methods may include water, steam cleaning, degreasing, vacuum, forced air
- Records may include end of shift documentation, work log, supplies log, computer readings
- Relevant legislation codes, regulations and standards include Environmental Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations.

Evidence Guide

Critical underpinning knowledge:

- Compacting procedures
- Emergency procedures
- Environmental and heritage procedures
- Equipment processes, technical capability and limitations
- Equipment safety requirements
- Isolation procedures
- Occupational health and safety procedures
- Operational procedures and checks
- Site procedures
- Site safety requirements
- Start up and shut down procedures
- Surface maintenance techniques.

Critical underpinning skills:

- Ancillary equipment operation, maintenance, cleaning
- Calculate time and quantities
- Compacting
- Complete log and other vehicle records
- Hazard identification
- Hazardous goods handling techniques
- Interpret ground conditions
- Interpret plans, reports, maps, specifications
- Maintain records
- Organise work tasks
- Read and interpret site and vehicle plans and records
- Safe work practices
- Select and fit personal and protective equipment
- Use communications equipment
- Use of layers
- Use protective equipment.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.
Any licenses required by regulation are obtained prior to operation of vehicles, plant and/or equipment.
Some aspects may be conducted under simulated conditions where issues of safety, environmental damage are limiting factors.
All assessments must be valid, reliable, fair and flexible accumulating sufficient evidence to demonstrate the required competence.

Key Competencies and Application to Standards

Key Competency	Level		
	1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology		•	

Description

This unit is concerned with locating, testing and gaining approval for a quarry ("borrow pit") operation for the purpose of sourcing material for forest roads and track construction and maintenance.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G21 A	Collect, analyse and organise information - advanced
FPI G24 A	Plan a complex activity
FPI G26 A	Work effectively in work groups
FPIC2029A	Work within environmental constraints
FPI FGM 147 A	Read and interpret maps

1 Select quarry site

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.

2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.

3) Relevant organisational plans are reviewed, analysed and considered for impacts on quarry location.

4) Relevant individuals, groups and/or bodies are liaised with prior to locating the quarry in accordance with organisation policy and guidelines.

5) The proposed location for the quarry is inspected, and the quality and extent of the material visually assessed for suitability.

6) The land tenure, end use for the required quarry material, and the annual and envisaged total quantities required of the quarry are researched and determined.

7) Material from the proposed quarry site is sampled and tested by the appropriate body (ies) for suitability.

8) Decision on choice of quarry site is determined from research undertaken and is taken in accordance with organisational guidelines.

9) Any reports required by the organisation or local authorities are prepared in accordance with the requirements of the respective bodies.

2 Plan quarry operation

1) Organisational occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Quantities required and method of extracting material from the quarry are determined from research and organisational plans.
4) Conduct a cost/benefit analysis on the quarry project in accordance with organisational guidelines.
5) Any licences or permits that are required are identified, applied for and obtained from the appropriate body (ies).
6) People, materials and equipment required for the quarry's operation are co-ordinated and scheduled in accordance with organisation guidelines.
7) Schedule for the site is organised in conjunction with adjacent work plans and road maintenance/construction plans in accordance with organisational policy guidelines.
8) Neighbouring landholders, local authorities and relevant government bodies are liaised with during the quarry planning process in accordance with organisation policy and guidelines.
9) Schedule for the quarry and any other documentation (map, plan, report) required by organisation and or occupational health and safety guidelines, is completed clearly and accurately.

Range of Variables

- Individuals/bodies/groups liaised with may include neighbouring landholders; local authorities; federal, state, or local government agencies
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Material may be sent out of the organisation for testing or may be tested within the organisation
- Use of the material from the quarry may be to construct and maintain roads and tracks.

Evidence Guide

Critical underpinning knowledge

- Organisational occupational health and safety guidelines, procedures, and principles, including manual handling
- Relevant legislation and regulation requirements
- All safety and environmental requirements for operation in forest settings
- Use and application of the range of equipment operated in the quarry.

Critical underpinning skills

- Presenting information in writing and/orally to a wide range of individuals and groups
- Assess and extract critical information from numerous sources
- Safety issues and hazards associated with extracting materials from quarries
- Planning and cost control
- Time and project management
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Data analysis
- Scheduling work for people and equipment.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information			•
Communicating ideas and information			•
Planning and organising activities			•
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology	•		

Extract material from a quarry FPI FGM 152 A

Description

This unit describes the work required to extract material from a quarry ("borrow pit") operation for the purpose of sourcing material for forest road and track construction and maintenance.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G26 A	Work effectively in work groups
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints

1 Prepare for extraction

1) Organisational and regulatory occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Vehicles, plant and equipment required for the extraction operation are selected based on the material to be extracted, the local conditions, and organisational guidelines.
4) Site plans, operational plans and other relevant organisational documentation are examined for impact on timing of operations and placement of material.
5) Any colleagues to be involved are liaised with and tasks allocated in accordance with organisational procedures and guidelines.

2 Extract material

1) Organisational and regulatory occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Any personal protective equipment required by organisational occupational health and safety practices is selected and used in accordance with organisational guidelines.
4) Appropriate signage is erected in accordance with organisational procedures.
5) Vehicles, plant and equipment required for the extraction operation are operated in accordance with manufacturer's instructions and organisational guidelines.
6) Operational staff, clients, and any contractors are communicated with regularly throughout the extraction operations to ensure smooth operation and progress.
7) Extracted material is placed in the previously determined location in accordance with organisational guidelines and site requirements.

3 Complete extraction operation

1) Organisational and regulatory occupational health and safety procedures, practices, policies, and precautions are observed and followed.
2) Site environmental concerns are adhered to in accordance with relevant national, state, and local legislation and/or regulations.
3) Extracted material is processed in accordance with use requirements.
4) Operational staff, clients, and any contractors are communicated with regularly throughout the extraction and processing operations to ensure smooth operation and progress.
5) Any additional appropriate signage is erected at the completion of each work period, and site made safe in accordance with organisational procedures.
6) Processed material is placed in the previously determined location in accordance with organisational guidelines and site requirements.
7) Any reports, documentation, and/or log books required by the organisation's procedural or occupational health and safety guidelines are completed clearly and accurately.

Range of Variables

- Use for the extracted material may be for constructing roads/tracks; maintaining roads/tracks; constructing/maintaining landings
- Material may be processed in crushing plant
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements
- Vehicles, plant and equipment may include tracked or wheeled equipment with blade or bucket attachments; trucks; conveyors; drills
- Use requirements of the material will determine the coarseness of the processed material.

Evidence Guide

Critical underpinning knowledge

- Organisational occupational health and safety guidelines, procedures, and principles, including manual handling
- Quarry operations and associated hazards
- Use and application of the range of equipment operated in the quarry
- Application of relevant legislation and regulation
- Safety issues and hazards associated with extracting materials from quarries.

Critical underpinning skills

- Safely extracting material from a quarry
- Presenting information in writing and orally to a wide range of individuals and groups in the context of quarry operations
- Time and project management
- Read and act on written information including maps, plans, reports etc.
- Write reports and submissions where precise meaning is required
- Write in keeping with the demands placed on writing style by reporting format
- Complete data, quality control and other documentation clearly and accurately.

Extract material from a quarry FPI FGM 152 A

Assessment context

Any licenses required by regulation are obtained prior to operation of vehicles, plant and/or equipment. Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology		•	

Spot fires from a fire tower FPI FGM 153 A

Description

This unit is concerned with spotting fires and communicating with fire command/control from a fire tower.

Suggested Pre-Requisites/Co-Requisites

Competence in the following units is also required, and may be demonstrated prior to or simultaneously with this unit.

FPI FGM 147 A	Read and interpret maps
FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G22 A	Plan to undertake a routine task

1 Locate position in the field

1) Current position in the field is located using landmarks and key geographical features.

2) Current position in the field is identified on map or plan in accordance with organisational procedures.

2 Note and record smoke and other sightings

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.

2) Smoke and other sightings are noted and reported promptly in accordance with organisational procedures.

3) Locations and bearings of sightings, and estimated distances to sightings are recorded using the formats and conventions required by the organisation's procedures.

4) An accurate chronological log is maintained of all sightings and noteworthy events using the formats and conventions required by the organisation's procedures.

3 Communicate with fire command/control

1) Location of fire tower and sightings are accurately and clearly relayed to fire command using conventional descriptions.

2) Meteorological readings are taken and accurately recorded using the formats and conventions required by the organisation's procedures.

3) Meteorological conditions are relayed to fire command/control in accordance with organisational and/or fire command/control instructions.

4) Information is relayed accurately and clearly between colleagues as and when required by fire command/control.

Range of Variables

- Fire towers include all types and locations commonly found in forested and grassland country
- Communications equipment may include public radio and telephone networks or those used by the organisation; local fire brigades; emergency management organisations
- Potential hazards may include electro-magnetic radiation; exposure to extreme weather
- Safe working practices may include evacuation procedures when threatened by fire; appropriate clothing; hydration and nutrition requirements.

Evidence Guide

Critical underpinning knowledge

- Representation of topographic features on maps and plans
- Common scales used on maps and plans
- Use and manipulation of scales
- Radio and telephone procedure
- Terrain and features visible from the tower
- Precautions to be taken in a range of extreme weather conditions
- Smoke types and colours
- Organisational and fire command/control conventions for recording and reporting fire sightings in an emergency situation.

Critical underpinning skills

- Locate own position on a map
- Read and record grid references
- Recognise map type and map features
- Controlling radio traffic in line with organisation procedures
- Tower climbing procedures
- Interpret forest area detail from a map
- Scale distances from a map
- Recognise topographic map features
- Read compass bearings and estimate distances
- Work in isolated situations for periods of time
- Measure and record meteorological data
- Maintain a neat and accurate chronological log
- Interpret and describe observed features, including colour and distance.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level		
	1	2	3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques		•	
Solving problems	•		
Using technology	•		

Graft cuttings FPI FGM 154 A

Description

This unit is concerned with grafting cuttings onto a mature plant.

Suggested Pre-Requisites/Co-Requisites

Competence in the following units is also required, and may be demonstrated prior to or simultaneously with this unit.

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G41 A	Use basic hand held tools

1 Prepare cuttings

1) Parent plant is prepared and method of taking the cutting is employed suitable to the species and in accordance with organisational procedures.
2) Maximum viability of cuttings is maintained by conditioning and storage in accordance with the requirements of the species.
3) Tools are chosen appropriate to the task being undertaken, used in accordance with organisation guidelines and safe working practices are employed.

2 Sort and select cuttings

1) Work area is free from contamination and hygiene practices are followed in accordance with organisational guidelines.
2) Cuttings are selected for propagation in accordance with organisational guidelines and supervisor's instructions.
3) Maximum viability of cuttings is maintained by conditioning and storage in accordance with the requirements of the species.
4) Discarded cutting material is disposed of in accordance with organisational waste disposal guidelines and/or procedures.

3 Graft cuttings to mature plant

1) Mature plant is prepared in accordance with species and organisational guidelines.
2) Pre-planting treatment is applied and/or carried out appropriate to the species, in accordance with organisational policy.
3) Cuttings are handled in a way that prevents damage.
4) Grafting type is in accordance with species and organisational guidelines.
5) Labels and identification are correct and applied in accordance with organisational guidelines.
6) Remedial action is taken as specified in planting program, to control pests and diseases.
7) Records are completed accurately and at the required time in accordance with organisational guidelines.
8) Tools are chosen appropriate to the task being undertaken, used in accordance with guidelines and safe working practices are employed.

Range of Variables

- Growing environment may include heat; light; humidity; wind; sun; moisture; topography; rainfall
- Nutrients may include chemicals; fertilisers; organic material
- Remedial action may include removal of infected material; treatment with chemicals
- Tools used are hand-held and may include grafting/budding knife; secateurs; grafting tape.

Evidence Guide

Critical underpinning knowledge

- Pre-planting treatments, water and nutrients suited to cuttings
- Techniques of taking cuttings.

Critical underpinning skills

- Take cuttings
- Record information on a simple form accurately
- Maintain a clean/hygienic working environment to prevent contamination
- Prepare accurate and clear labels
- Prepare mature plants for grafting
- Read and interpret information gained from tables/charts
- Complete forms which require accurate technical information.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information			
Planning and organising activities	•		
Working with others in teams			
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology			

Interpret and use aerial photographs for forest management FPI FGM 155 A

Description

This unit is concerned with using aerial photography as a tool to assist with forest management in both plantation and native forests.

Suggested Pre-Requisites/Co-Requisites

Competence in the following units is also required, and may be demonstrated prior to or simultaneously with this unit.

FPI FGM 147 A	Read and interpret maps
FPI G31 A	Interpret and solve numerical problems - advanced
FPI G28 A	Solve problems in the workplace

1 Select aerial photographs

1) Availability of relevant photography is determined and its suitability for the current forest management application is determined.
2) Type of photography appropriate for the current forest management application is determined.
3) Location of appropriate photography is determined and obtained in accordance with organisational guidelines.

2 Establish key aspects of aerial photograph

1) Direction of North and flight line path is established from photographs.
2) Mapsheet, flight orientation, photography type, focal length, film number, run number, frame number, height above sea level, and date of photography, are established from photographs and recorded.
3) Pair of overlapping aerial photographs are orientated and aligned for stereoscopic viewing.
4) Scale of photographs is calculated.

3 Interpret forest management information from aerial photographs

1) Stratification which meets stakeholder needs and forest management objectives is established.
2) Type of photography appropriate for the current forest management application is confirmed using established stratification.
3) Photomapping standards are interpreted and applied for consistent data-gathering.
4) Forest attributes are identified and required forest management information is derived from aerial photographs in accordance with appropriate guidelines for the project.
5) Records of observations are made and maintained in accordance with organisational guidelines.
6) Photographs are interpreted and mapped in accordance with organisational guidelines and aerial photographs interpretation convention.
7) Records of any field observations/validation are made and maintained in accordance with organisational guidelines and formats.

4 Update maps/plans from aerial photographs

1) Need for maps/plans to be updated is determined from the nature of the project and the needs of the organisation.

2) Maps and/or plans are updated manually or electronically (digitally) with information gleaned from photographs using appropriate symbols, colours and conventions.

3) Map and/or plan legends are updated manually or electronically (digitally) with information gleaned from photographs using appropriate symbols, colours and conventions.

Range of Variables

- Forest management information derived from photo may include area; height; species; crown cover; crown form; disturbance
- Factors to be considered when selecting photography for a project are colour or black and white, date of acquisition, scale, minimum mappable area, actual smallest operational unit area, scale of mapping relative to scale of presentation
- Aerial photographs may be held by the organisation; required to be purchased; borrowed from another organisation
- Applications of aerial photographs to natural resource management include road/plantation design; field navigation and the interpretation of forest types; forest structure; environmental processes such as salinity discharge ecological vegetation communities such as coastal heathlands; land capability classes; remnant vegetation e.g. roadside vegetation; diseased vegetation classes such as *Eucalyptus* dieback from *Phytophthora*
- Guidelines for photograph interpretation may include predetermined classes; stratification
- Standards and requirements include scale, flying height and focal length; required percent endlap and sidelap; orientation, location and number of flight lines required; total number of photographs required; allowable drift, crab, tilt and image motion; camera characteristics format, lens quality, shutter speed and aperture; film and filter characteristics; acceptable seasons of the year, time of day, and allowable present cloud cover; hot spots
- Photographic classes include terrestrial, vertical and oblique
- Photographic types include project, mapsheet, spot and stratigraphic
- Types of aerial photographic film include black and white, black and white infra-red, colour, colour infra-red
- Basic principles which underpin all photo interpretation include absolute and relative size, shape, shadow, tone or colour, texture, pattern, and location, association and convergence of evidence
- Topographic features include roads and tracks, watercourses, ridges and spurs, saddles, peaks and knobs
- Coding systems must be short, precise, consistent and flexible
- Coding systems must reflect all likely combinations that describe the stratification
- Field verification includes accuracy of all mapped topographic information; measure of accuracy of associated base topographic or digital base map; spatial accuracy of strata; measure of accuracy of content of strata
- To transfer data is to rescale from one source to another. The transfer medium may be map to map, photograph to map or diapositive to map
- Tools for transfer of photo data include electronic data transfer technology; manual light table; mechanical light tables including Omnigraph, Kartoflex, Zoom Transfer Scope, Artiscope and Sketchmaster
- Map/plans may be updated manually or electronically using data transfer technology and may include cadastral plans; topographic maps; locality plans; site plans; maps and plans generated through the use of Geographic Information Systems.

Evidence Guide

Critical underpinning knowledge

- Common scales used on maps and plans
- Environmental processes and forest dynamics
- Local forest types and structures
- Representation of topographic features on maps and plans
- The range of photographic film, photo types
- Use and manipulation of scales
- Uses of aerial photography for forest management.

Critical underpinning skills

- Recognise map type and map features
- Interpret forest area detail from a map
- Scale distances from a map
- Recognise topographic map features
- Calculate scale of an aerial photograph
- Calculate and manipulate height and area information
- Care and storage of aerial photographs
- Identify and interpret title panel information on an aerial photograph
- Identify disease symptoms in trees/forest areas on an aerial photograph
- Identify vegetation characteristics on an aerial photograph
- Locate required photographs from appropriate records (eg. flight plan map)
- Read and interpret complex information including charts, tables, maps, and flight plan.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques			•
Solving problems		•	
Using technology		•	

FPI FGM 155 A Interpret and use aerial photographs for forest management

Arrange contract FPI FGM 156 A

Description

This unit describes the work required to receive, evaluate, and recommend tenders, as well as to notify other tenderers of the outcome.

Suggested Pre-Requisites/Co-Requisites

Nil.

1 Receive tender

1) Tenders are received in accordance with organisation procedures.
2) Record of applications maintained in accordance with organisational procedures and formats.

2 Evaluate tenders against agreed criteria

1) A comparative statement of tenders which highlights key factors is prepared.
2) Bids are compared and assessed in accordance with organisational guidelines and criteria.
3) The bid, or shortlist of bids, that meet(s) service requirements is/are identified.
4) Tender presentations are organised and conducted to assist in the selection process, where required.

3 Prepare recommendations

1) Quality accreditation, previous project records, employment practices and occupational health and safety records for recommended tender are verified.
2) An accurate report with clear recommendations is prepared to enable appropriate personnel to make informed decisions.

4 Formalise acceptance of tender

1) A letter of acceptance is sent to successful tenderer outlining accurate details and conditions.
2) Contract documentation is completed, or arranged to be completed, in accordance with standards and organisation procedures.
3) Unsuccessful tenderers are informed of outcome according to organisation procedures.

Range of Variables

- Application of this competency will vary according to the organisation's size; location; organisational structure; resources; state/territory statutory requirements; business/strategic plans; and policies and practices
- Comparative statement may include matrix; data; criteria; compliance; score
- Organisation policies may include code of conduct; probity guidelines; anti-corruption policies; equal employment opportunity; occupational health and safety; risk management; security of tenders
- Formalisation may include contract-signing procedure; preliminary deposits
- Service requirements may include financial stability; capacity; employment and industrial relations history; quality assurance; occupational health and safety record
- Presentation may include meetings; site visits; project inspections; interviews.

Evidence Guide

Critical aspects of evidence

- An accurate evaluation report
- Identify the financial stability of the tenderer
- Identify the quality standards of the tenderer
- Ensure confidentiality of tender process.

Underpinning knowledge

- Relevant organisation policy and procedures
- Quality assurance methods
- Relevant Australian and industry standards
- Statutory and organisation tender requirements
- Contractual processes
- Statutory organisation requirements
- Tendering codes of practice
- Evaluation methods
- Safe handling of tenders.

Underpinning skills

- Report writing
- Oral presentation skills, interview techniques
- Applying criteria
- Verification of claims
- Investigation.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology			

Prepare a budget FPI FGM 157 A

Description

This unit describes the work involved to develop and finalise a budget.

Suggested Pre-Requisites/Co-Requisites

Nil.

1 Collect and collage relevant data

1) Data required for budget preparation is identified and accessed.
2) Previous budgets and the financial implications of organisation's current activities and plans are analysed and evaluated.
3) Relevant employees/departments/committees are consulted and given the opportunity to contribute to the budget planning process.
4) Possible changes of circumstance which will impact on the budget are identified.
5) Any anomalies in the information received are checked with the appropriate person.

2 Justify proposals for expenditure

1) Estimates of costs and benefits are made which are supported by valid, relevant information.
2) Assessments of alternative courses of action are considered in making the final recommendations.
3) Appropriate members of staff are encouraged to contribute to the recommendations.
4) The net benefits likely to be achieved from the expenditure are clearly indicated.
5) Possible future variation in levels of activity are taken into account.
6) Recommendations are presented clearly, concisely and in an appropriate format.
7) Where challenges to the proposal are made, further explanation is given to promote acceptance.
8) Estimates are compared with actual costs and benefits and used to improve future calculations.

3 Seek out alternative or additional financial opportunities

1) Effective and comprehensive methods for discovering alternative or additional sources of funding/income are employed.
2) Sources of funding/income are assessed to ensure they comply with organisation objectives and policies.
3) Management approval for funding submission/income generating activity is obtained where necessary.
4) Submissions for funding are prepared and submitted in accordance with organisational guidelines.

4 Prepare draft budget for comment

1) The draft budget is prepared to accurately reflect the financial requirements of the organisation.
2) The draft budget is clear and accurate and presented in an appropriate format.
3) Income and expenditure estimates are clearly identified and are supported by valid, reliable and relevant information.
4) The draft budget is prepared consistent with organisation objectives and ensures the efficient and effective operation of organisation in the short, medium and long term.
5) The draft budget is completed within required timeframe.
6) The draft budget is circulated to appropriate people for comment.

5 Prepare final budget

1) Comments on draft budget are considered and relevant people are advised of implications.
2) Required modifications to draft budget are agreed and incorporated.
3) Proposed budget is completed in required format within required timeframe.
4) Proposed budget is negotiated through appropriate formalities in accordance with organisational guidelines.
5) Relevant people are informed of budget requirements in a timely and accurate manner.

Range of Variables

- Application of this competency will vary according to the organisation's size; location; organisational structure; resources; state/territory statutory requirements; business/strategic plans; and policies and practices
- Budget may include section/departmental budget; the budget for a particular service or project; operational income and expenditure; strategic/management plan objectives; cash flow management; asset replacement; asset sales; entrepreneurial ventures and available revenue sources
- Relevant people may include public when budget is made available for public comment; other organisation staff
- Data may include previous budget; employee costs; overhead costs; organisation policy
- Data sources may include awards; departmental records; organisation reports; legislative requirements; industrial agreements.

Evidence Guide

Critical aspects of evidence

- Budget is developed in accordance with established financial/accounting standards and organisation policies, procedures and timelines
- Budget promotes effective and efficient operations.

Underpinning knowledge

- Relevant financial/accounting standards organisation policy and procedures
- Budget processes and procedures
- Relevant computer software.

Underpinning skills

- Negotiation with internal and external customers
- Report presentation
- Research
- Interpretation
- Consultation in a culturally diverse workforce.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology	•		

Respond to, and prepare, a tender FPI FGM 158 A

Description

This unit describes the work involved in responding to and preparing a tender/bid.

Suggested Pre-Requisites/Co-Requisites

Nil.

1 Identify requirements of the tender

1) All available information is obtained from the tender supplier, including protocols.
2) Other successful bid documents are accessed to inform tender bid.
3) Project specifications are identified from details supplied.
4) Scope of the job is defined by review of details supplied.
5) Appropriate personnel are consulted for input to the tender bid.
6) Resources required to compete for tender are determined and documented in accordance with organisational guidelines.

2 Prepare relevant information

1) Resource requirements to complete the works are identified.
2) Tender information is collated and prepared in an appropriate format.
3) Draft tender document is circulated to appropriate personnel for review and modification.

3 Undertake a bid estimation

1) Estimations are detailed in accordance with established procedures and requirements, balancing time, cost, quality and quantity against the tender specifications.
2) Work is appropriately sequenced in accordance with works requirements.
3) Contingency plans are detailed in accordance with established procedures.
4) Bid is prepared according to identified format and organisation requirements.
5) Budget approval is sought from the appropriate authority.

Range of Variables

- Tenders may include in-house; negotiated; open; selective
- Estimates may include oral; written
- Capacity scan may include resources; time; other priorities; competition; facilities; expertise of staff
- Resources may include work; time; personnel; equipment
- Information from tender supplier may include specifications; performance measures; due date; number of copies required; format of information; protocols.

Evidence Guide

Critical aspects of evidence

- Indication of meeting all legislative requirements.

Underpinning knowledge

- Core and non-core activities
- Occupational health and safety
- Risk assessment
- Work flow.

Underpinning skills

- Logical argument for written reports
- Verbal presentation of bid.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems	•		
Using technology	•		

Construct and maintain roads/tracks FPI FGM 159 A

Description

This unit describes the work involved to plan for the construction, construct, and subsequently maintain roads and tracks in a forest environment.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G26 A	Work effectively in work groups
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints

1 Plan road

1) Data relating to road requirements and restrictions interpreted from timber harvesting plan, coupe plan, expected time frame for usage and likely weather conditions.
2) Assistance is sought to survey road location where necessitated by requirements.
3) Extraction methods, lifting equipment, transport equipment and maximum road loads are identified.
4) Water courses and other ground obstacles are surveyed and their impact on road design noted.
5) Location and design of log landings are identified and road entry points planned.
6) Crossing or entry points for other roads and tracks are planned.
7) Soil conditions are investigated to establish profile to sub-base level.
8) Extent and depth of clearing and cutting is planned to meet identified requirements.
9) Soil dumping or storage areas are planned to meet volume of soil to be removed, access, restoration requirements and harvesting plan.
10) Plans meet environmental care principles and statutory body requirements.
11) Plans provide adequate width, slope and clearance for manoeuvring of transport equipment to be used.
12) Availability of required road base and additional material is confirmed or material ordered.
13) Communication is maintained with operational personnel to ensure effective planning and co-operation.

2 Establish road line

1) Occupational health and safety and fire safety regulations, policies and precautions are followed.
2) Road/track line is established by line-of-site, pegging and/or marking trees.
3) Road/track line is cleared in accordance with planned requirements.
4) Co-ordination is maintained with faller to remove trees necessary to establish road.
5) Line avoids obstacles and provides for equipment, log and soil stability.
6) Stumps and unrecoverable trees are extracted and removed in accordance with standard operating techniques for available equipment.
7) Communication is maintained with supervisor and other workers to share relevant workplace information and maintain operational safety.

3 Cut road/track to sub-base

1) Occupational health and safety and fire safety regulations, policies and precautions are followed.
2) Soil is removed to establish base of suitable width, slope and stability.
3) Soil removed is dumped or stored in accordance with plans.
4) Batter angles of material adjacent to road base are suitable for soil and weather conditions.
5) Stability and control of equipment is maintained during manoeuvring.
6) Equipment is used to compact and stabilise adjacent soil during construction.
7) Provision for drainage and crossing points are progressively made in accordance with plans.
8) Communication is maintained with supervisor and other workers to share relevant workplace information and maintain operational safety.

4 Prepare road/track surface and drainage

1) Occupational health and safety and fire safety regulations, policies and precautions are followed.
2) Road/track base and surface material are transferred, spread and compacted to meet planned road/track design.
3) Drains are provided and water run-off established.
4) Water crossing points are established where depth of drainage becomes excessive or natural water courses occur.
5) Water management meets environmental care principles and statutory body requirements.
6) Road/track surface is suitable for support, effects of tree/log movement, manoeuvring and traction of machines to be used.

5 Prepare crossings

1) Occupational health and safety and fire safety regulations, policies and precautions are followed.
2) Use of culvert or cording is selected in accordance with volume of crossing water predicted.
3) Road/track surface is cut and prepared using appropriate substrate and compaction.
4) Pipes or cords are placed and correctly backfilled and compacted.
5) Intersection points for tracks and roads are prepared to provide suitable entry/exit levels and control water flow.
6) Prepared crossings meet requirements of local harvesting plan.

6 Maintain road/track

1) Condition of road/track is monitored in relation to volume of traffic and expected future requirements.
2) Specific damage likely to lead to safety or environmental issues is identified and repaired or reported to controlling body immediately.
3) Normal wear and damage repair is planned and carried out with minimal disruption to other harvesting activities.
4) Ineffective drainage is noted and modified.
5) Areas of consistent damage are redesigned and remade with assistance from supervisor or other site personnel.

Range of Variables

- Equipment used may be wheeled or tracked for example dozer, front end loader, skidder or grader using bucket or blade attachments
- Operations may be conducted at forest harvesting site and include construction and maintenance of roads over a full range of conditions which the equipment is capable of negotiating and for which road transport of logs can be used
- Construction and maintenance will be carried out over the full range of operational weather conditions
- Road/track base and surface material may include crushed rock and sand over a range of sizes and materials typically used for road/track construction
- Additional material may include cords and pipes for water crossings
- Occupational health and safety regulations include codes of practice requirements including wearing of required personal protection and high visibility vest; manual handling requirements; maintenance of safe forest practices including location of other people and potential falling objects; required actions relating to forest fire.

Evidence Guide

Critical underpinning skills

- Construct and maintain roads/tracks of the required range of site and weather conditions and terrain.

Critical underpinning knowledge

- General environmental care and statutory body requirements
- Specific site plans and requirements
- Road transport equipment requirements and capabilities in forest operations with respect to timber being harvested
- Ground-water behaviour.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.
Appropriate licenses for any use of vehicles, plant or equipment must be obtained.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams		•	
Using mathematical ideas and techniques		•	
Solving problems		•	
Using technology		•	

Provide nursery support FPI FGM 160 A

Description

This unit describes the supporting role workers provide in a forest by receiving and storing goods and materials and maintaining relevant associated records.
The work is likely to be under direct supervision with regular checking. Competency at this level involves the application of knowledge and skills to a limited range of handling tasks. There is a specified range of contexts and duties where the choice of actions required is made quite clear by the supervisor.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G22 A	Plan to undertake a routine task

1 Handle goods and materials

1) Stock is placed neatly in accordance with organisation guidelines and in the place designated by the supervisor.
2) Delivery documentation is checked against goods received, and loading area is left clean and tidy in accordance with organisation guidelines.
3) Safe lifting methods are employed and equipment operation and work practices conform with organisation occupational health and safety guidelines.

2 Maintain records

1) Records are completed in entirety, at the appropriate time, and in a legible fashion in accordance with organisation guidelines.

3 Sort and select open-rooted nursery stock

1) Work area is free from contamination and hygiene practices are followed in accordance with organisational guidelines and supervisor's instructions.
2) Open-rooted seedlings or cuttings are lifted from loosened beds without damage to shoots or roots.
3) Open-rooted seedlings or cuttings are counted, sorted, culled and bundled in accordance with organisational guidelines.
4) Discarded material is disposed of in accordance with organisational waste disposal procedures.

Range of Variables

- Criteria for culling may include size; length of top; length and density of root system; collar diameter; overall shape; colour; sturdiness; presence of damage
- Handling stock may include loading, unloading, moving
- Records may include customer order forms, time sheets, delivery dockets, forest production records.

Evidence Guide

Critical underpinning knowledge

- Principles of occupational health and safety
- Basic stock control procedures
- Organisational waste disposal procedures.

Critical underpinning skills

- Handle goods and materials
- Maintain records
- Match plants to culling criteria
- Estimate size and length to match with culling criteria
- Count stock (and plants) to ensure correct stock movements.

Assessment context

Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions.
Appropriate licenses for any use of vehicles, plant or equipment must be obtained.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology	•		

Transport plant, equipment and personnel FPI FGM 161 A

Description

This unit applies in all contexts to the transporting of plant, equipment and personnel.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined Occupational Health & Safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G22 A	Plan to undertake a routine task
FPI G29 A	Solve problems in the workplace - advanced
FPIC2029A	Work within environmental constraints

1 Organise for the transportation of plant, equipment and personnel

1) Briefing, handover details, authorisation and clearances are received, interpreted and clarified in accordance with organisational procedures and regulations.

2) Equipment and authorised personnel requirements are organised on time according to transportation schedule.

3) Operational delays are minimised through the adherence to schedule specifications.

4) Potential risks and hazards are identified and managed according to the work plan in accordance with organisational procedures and regulations, occupational health and safety and other relevant legislation.

5) Equipment pre-operational checks are performed according to manufacturers' specifications, organisational procedures, regulations, occupational health and safety and other relevant legislation.

6) Site environmental concerns are adhered to according to relevant legislation.

2 Load, transport and unload plant and equipment

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.

2) Start-up, park and shut-down procedures are carried out in accordance with manufacturers' specifications, organisational procedures and regulations.

3) Load is determined in accordance with manufacturers' specifications to prevent damage to carrying equipment or loss of load.

4) Plant and equipment are loaded and secured in accordance with organisational procedures and regulations, manufacturers' specifications, and occupational health and safety and other legislation.

5) Plant and equipment are transported to specified destination on time with their condition maintained in accordance with organisational procedures and regulations, occupational health and safety and other relevant legislation.

6) Plant and equipment is unloaded in accordance with manufacturers' specifications, avoiding damage to equipment or personnel.

7) Transportation of plant and equipment is completed to plan within the operating capacity of the equipment.

3 Transport personnel

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Transport capacity and vehicle restraint requirements are adhered to in accordance with organisational procedures and regulations, manufacturers' specifications, and occupational health and safety and other legislation.
3) Vehicles follow approved transport routes and speed limits according to organisational procedures and regulations and manufacturers' specifications.
4) Transportation of personnel is carried out ensuring the safety of personnel, the vehicle, other vehicles, equipment, and the surrounding environment.
5) Transportation of personnel is completed to plan within the operating capacity of the vehicle.
6) Transportation of personnel conducted at authorised times according to site schedule, organisational procedures and regulations, occupational health and safety and other legislation.

4 Carry out operator maintenance

1) Organisational occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Visual inspection and fault finding are conducted in accordance with manufacturers' specifications and organisational requirements.
3) Routine operational servicing is conducted to ensure peak performance of equipment and according to manufacturers' specifications, organisational procedures, regulations, occupational health and safety and other relevant legislation.

5 Conduct housekeeping activities

1) Equipment is cleaned in accordance with manufacturers' specifications, organisational procedures and regulations.
2) Attachments and other ancillary equipment are cleaned and stored in accordance with manufacturers' specifications, organisational procedures and regulations.
3) All required records and documentation are completed accurately and promptly in accordance with organisational requirements.

Range of Variables

- Briefing and hand over details, authorisation and clearances may be written or verbal and may include nature and scope of task; potential hazards; access road plan; survey plan; instructions; haul routes; services; resource requirements/allocations; schedule; site characteristics and requirements; materials and equipment to be used; safety requirements; environmental considerations
- Organisational procedures and regulations may be found in operations manual; induction documentation; training materials; policy and procedures documents; verbal or written instructions
- Safe operating procedures may include adhering to all site procedures; observing site speed limits; working safely around other machines and personnel; observing right of way in incline and decline; wearing of seat belts; use of the self-rescue device; respiratory devices; hazard identification and recognition procedures; awareness and access to escape ways; emergency procedures; observation of electrical and mechanical procedures; first aid
- Start-up; park and shutdown procedures may include safety mechanisms operational (horn; operating lights); correct location of equipment; vehicle is left secured

Range of Variables (continued)

- Plant and equipment may include support vehicles; float; vehicles approved for dangerous goods; earth moving equipment; laser profile; water/water trucks; witches hats; tapes; signs; flags; pegs; rope measuring tape; cutting implements; lifting and handling equipment (winch; crane; block and tackles); ancillary equipment (generators; pumps; lights; compressors; cleaning equipment; power tools; hand tools); pipes; equipment components
- Load calculations may include height; weight; width; safety
- Personnel may include supervisors; drivers; trades persons; maintenance staff; service personnel; contractors; inspectors; visitors; licensed operators
- Vehicle restraint requirements may include seat belts; hold down chains/binders; ropes
- Road conditions recognised are for forest and open roads and include surface conditions, wet spots, slope, curvature, width, shoulder condition and presence of other equipment
- Legislation, regulations, standards may include Environment Protection Act; environmental agencies regulations; duty of care; isolation procedures; occupational health and safety legislation; site regulations and procedures; Australian Standards; manufacturers' specifications and recommendations; State forest codes of practice or equivalent; statutory requirements; Trade Practices Act; traditional land owners requirements.

Evidence Guide

Critical underpinning knowledge

- Manufacturer's and work site requirements including forest conditions, forest hazards and open road hazards
- Road traffic laws
- Organisation procedures for use of vehicles and equipment
- Relevant occupational health and safety requirements for storage of materials and equipment
- Occupational health and safety guidelines, procedures, and principles, including manual handling
- Emergency procedures
- Site safety requirements
- Equipment safety requirements
- Operational, start up, and shutdown procedures and checks
- Equipment processes, technical capability and limitations
- Hauling and towing procedures
- Personnel transport procedures.

Critical underpinning skills

- Plan, load, unload and move a range of loads over full range of road conditions
- Manoeuvre truck in difficult sites and conditions
- Drive truck safely using all available controls
- Conduct pre-start checks
- Clean and store vehicles and equipment
- Identify operational faults
- Complete time sheets and other maintenance records
- Use communication methods to advise and anticipate conditions.
- Use communications equipment
- Interpret plans, reports, maps, specifications
- Read and interpret plans and documents
- Maintain records
- Interpret ground conditions
- Report defects
- Select, fit, and use personal and protective equipment.

Assessment context

Appropriate license for vehicle driving must be obtained.
Competency should be demonstrated in an actual workplace or in a situation which reproduces workplace conditions. Some aspects may be conducted under simulated conditions where issues of safety, environmental damage are limiting factors.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems		•	
Using technology		•	

Collect, treat and store seed FPI FGM 162 A

Description

This unit describes the work involved in the collection, treatment and storage of seed from forest species.

Suggested Pre-Requisites/Co-Requisites

FPIOHS1A	Follow defined occupational health and safety policies and procedures
FPI G23A	Plan a complete activity
FPI G41 A	Use basic hand held tools
FPIC2029A	Work within environmental constraints

1 Prepare to collect seed

1) Organisational occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Seed collecting equipment is sourced and transported to seed collecting site
3) Seed which is to be collected is identified from maps, diagrams or instructions

2 Collect seed

1) Organisational occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Site environmental concerns are adhered to in accordance with relevant national, state, & local legislation and/or regulations
3) Seed is collected using selected method in accordance with legislation, codes of practice, organisation requirements, conditions of permit & agreements with land holders, tenants & others
4) As appropriate, health of parent plants is protected during seed collection
5) Seed is placed in clean containers & labelled to codes of practice, organisation requirements & to maintain location & genetic identity

3 Clean and store seed

1) Organisation occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Seeds are separated from other materials according to organisation requirements using available separation methods
3) Cleaned seed is weighed using the specified scales & stored in accordance with organisational procedures & requirements of the species
4) Seeds are treated in accordance with organisation requirements
5) Seed weight, place of origin, species, & container identifier are recorded in accordance with organisational procedures
6) Seeds are packaged for storage according to legislative and organisation requirements, codes of practice & client requirements to protect the seeds & to maintain traceability to collection source

Range of Variables

- Seed collection resources may include: pruning & shaking equipment; sheets, tarpaulins; clean containers for holding seeds; personal protective equipment; vacuum seed collecting machines; ladders or elevating work platforms
- Seed may be treated to: remove pests & diseases or facilitate regeneration
- Health of parent plants may require: hand picking or careful & selective pruning
- Occupational health & safety issues may include: assessment of hazards & risks in the seed collection & treatment processes; inspection & minor maintenance of equipment; following occupational health & safety administrative procedures; use of personal protective equipment; training in procedures & use of equipment; handling of minerals / chemicals used in the treatment of seed for storage
- Seed separation methods may include: hand selection; wind separation/winnowing; sieving; vibrating; flotation; drying & crumbling of husks
- Seed treatment may include: heat; mechanical or chemical protection against pests
- Seed packaging may include; vacuum sealing; use of inert atmospheres such as nitrogen & carbon dioxide; control of packing environment (temperature, light., & moisture)
- Method of collection may include: collecting after falling / felling; ladders; climbing; shaking; high-powered rifles; cherry-pickers

Evidence Guide

Critical underpinning knowledge:

- Effect of seed collection techniques on plant health
- Characteristics of mature, healthy seed
- Diseases & pests likely to infect the seed
- OH & S requirements relating to seed treatment processes

Critical underpinning skills:

- Plan seed collection processes
- Identify health of individual plants
- Use vehicles & equipment in a range of terrain
- Use a range of seed collection methods & related equipment
- Use a range of cleaning methods & related equipment

Assessment context

This unit should be assessed in the workplace or simulated workplace using the appropriate range of equipment to collect a range of seeds and to apply a range of treatments.
Assessment of competency in this unit may be combined with other units at the request of person being assessed & where the assessor is able to plan combined opportunities for evidence gathering

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities			
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems			
Using technology	•		

Maintain Visitor sites FPI FGM 163 A

Description

This unit describes the work involved in inspecting, cleaning and maintaining visitor sites.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined occupational health and safety policies and procedures
FPI G22 A	Plan to undertake a routine task
FPI G23 A	Plan a complete activity
FPI G41 A	Use basic hand held tools

1 Prepare for visitor site maintenance

1) Organisation occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Maintenance prescriptions are identified from job prescription or supervisors instructions
3) Appropriate cleaning and other maintenance equipment is selected in accordance with task requirements
4) Maintenance equipment is transported and stored in accordance with organisational requirements
5) Site conditions & hazards are identified & assessed in accordance with organisational procedures and guidelines for visitor site maintenance
6) Supplies of consumable items are checked and ordered according to supervisors instructions

2 Maintain visitor site

1) Organisation occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Site environmental concerns are adhered to in accordance with relevant national, state, & local legislation and/or regulations
3) Visitor site is inspected to determine maintenance and cleaning requirements
4) Visitor site is maintained according to organisation guidelines
5) Waste materials are handled and removed according to organisation guidelines
6) Vandalised structures or natural features and facilities which have deteriorated beyond enterprise acceptable standards are noted, reported to supervisor
7) Communication with site personnel is maintained to share relevant workplace information and to ensure efficient work flow coordination and personnel cooperation

Range of Variables

- Visitor facilities may vary from camp grounds, toilet and shower blocks and natural features
- Maintenance may include lawn mowing and edging, raking leaves, cleaning toilets, shower blocks and other structures, supplying firewood, repainting and other minor repairs and removing rubbish
- Wastes may include blood, bandages, sanitary bins, garbage, and sharps
- Supplies may include toilet paper, cleaning chemicals, lawn mower fuel, paint etc.
- Work site hazards may include contaminated waste materials, visitors moving around adjacent to maintenance activities, unsafe structures
- Maintenance equipment may include manual cleaning tools, power tools and petrol driven lawn mowers, whipper snippers and edgers

Evidence Guide

Critical underpinning knowledge:

- OH&S issues relating to the handling and disposal of chemicals and wastes
- OH&S guidelines, procedures, & principles, relating to conducting maintenance activities on sites which are being used by the public
- Identification of hazardous or unsafe facilities
- Operation of septic tanks and other plumbing associated with visitor use facilities
- Maintenance requirements of equipment such as lawn mowers and whipper snippers

Critical underpinning skills:

- Handle contaminated wastes
- Conduct operations in such a way that no damage occurs to equipment, property, environment, co-workers or public
- Communicate with co-workers to maintain safe working conditions
- Interpret & use written information contained in organisation instructions

Assessment context

This unit should be assessed in the workplace or simulated workplace using as wide as possible range of visitor site maintenance tasks as possible.
Assessment of competency in this unit may be combined with other units at the request of person being assessed & where the assessor is able to plan combined opportunities for evidence gathering.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities		•	
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems	•		
Using technology	•		

Operate 4X4 vehicle on unsealed roads FPI FGM 164 A

Description

This unit describes the operation of 4X4 vehicles (eg cards, truck, utilities) during driving operations on unsealed roads.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined occupational health & safety policies and procedures
FPI G20 A	Collect, analyse and organise information - basic
FPI G29 A	Solve probelsm in the workplace - advanced
FPIC2029A	Work within environmental constraints

1 Operate vehicles

1) Organisational & regulatory occupational health & safety procedures, practices, policies, & precautions are observed & followed

2) Pre-start checks of motor vehicles, and equipment carried out to manufacturer's specifications and roadworthy requirements

3) Tyres are checked for pressure suitable for terrain &/or changed to operational guidelines

4) Loads are secured in accordance with organisational & legislative requirements

5) Vehicles are driven on to legislative and organisation requirements (whilst monitoring gauges) at appropriate speeds for conditions and hazards.

6) Vehicles are parked and shut down to organisation and manufacturer's requirements

7) Faults or malfunctions are corrected &/or reported to organisation requirements

8) Vehicle and equipment are cleaned and stored after use to organisation requirements

9) Any log books or reports required by the organisation are completed in accordance with organisational procedures

2 Operate vehicle ascending a steep slope

- Organisational & regulatory occupational health and safety procedures, practices, policies, & precautions are observed and followed
- Intended vehicle path is inspected prior to negotiation
- Appropriate gear is selected to ascend grade and engine revolutions maintained to ensure constant traction
- Air conditioning unit is turned off to avoid engine acceleration at crest is demonstrated

3 Operate vehicle descending a steep slope

1) Organisational and regulatory occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Intended vehicle path is inspected prior to negotiation
3) Appropriate gear is selected to ascend grade and engine revolutions maintained to ensure constant traction
4) Air conditioning unit is turned off to avoid engine acceleration
5) Braking is used to control descent and skidding is avoided by the application of brakes to emulate ABS

4 Operate vehicle over various terrain

1) Organisational and regulatory occupational health and safety procedures, practices, policies and precautions are observed and followed.
2) Selection of appropriate gear before negotiating terrain are demonstrated
3) Freewheel hubs are engaged and disengaged in accordance with various driving conditions.

Range of Variables

- Organisation specifications may include: pre-operation checks, standards of operation, storage and usage of fuels and lubricants, policies and routines relating to wear and damage, safeguards, reporting routines
- Vehicles may include: all terrain vehicles, cars and utilities, a range of trailers, light trucks
- Pre-start checks may include: fuel, water, oil, brake and transmission fluid levels, battery water levels and electrolyte checks, tyres, belts, leads, hydraulic lines and connections, air cleaners, air conditioners, brakes, off-road safety equipment in line with manufacturer's recommendations
- Operating conditions may include: conditions that can be smooth, rough, uneven, slippery, boggy, sandy, steep or hilly
- Terrain surface may be rock; ice; snow; mud
- Tyre pressures are maintained at levels appropriate to operating conditions
- Cabin drill includes adjustment of: seats; seatbelts; mirrors; steering
- Start-up check includes: fuel; coolant; oil; pump; water; agent status; equipment / locker security; visual inspection of vehicle
- Relevant legislation & procedures related to controlling vehicle movement may include: traffic regulations; organisation policy & procedures; accident procedures; emergency parking
- Manufacturer’s specifications may include: engine characteristics; systems warning function; four wheel drive operation; radius of turning circle; safety procedures
- Operations are in line with: traffic regulations, organisation driving procedures; road & weather conditions; vehicle specifications; instructor guidelines; road gradient & terrain
- Installed devices may include: warning lights; tachometer; temperature gauge; electrical charging; ancillary systems indicators; speedometer; oil pressure; brake warning lights; audible warning devices
- Vehicles may include all types necessary for the efficient operation of the organisation
- Traffic conditions to be taken into account may include: speed limits for non-response operation; legal parking; traffic pattern & density; known peak periods & special community functions; effects of weather on roads; road surface / off-road terrain; visibility
- Operational conditions may include: emergency response driving; driving in adverse terrain; driving in special environments
- Considerations may include: procedures; traffic conditions; levels of emergency response; adverse weather; traffic regulations; warning devices; adverse terrain; type of vehicle

Evidence Guide

Critical underpinning knowledge:

- Road traffic laws
- Organisation procedures for use of vehicles and equipment
- Relevant occupational health and safety requirements for storage of materials and equipment
- Occupational health & safety guidelines, procedures, & principles, including manual handling
- The effect on the centre of gravity of changing fluid loads
- Hazards and risks associated with traversing cross slopes
- The effects of hard surface driving (e.g. highway wind up) on the 4x4 system
- Appropriate driving techniques and speeds for rock, mud, sand, ice and snow
- The appropriate use of diff locks

Critical underpinning skills:

- Drive vehicles in a range of conditions
- Demonstrate emergency procedures in the operation of vehicles
- Conduct pre-start checks
- Clean and store vehicles and equipment
- Identify operational faults
- Rectify minor faults
- Attach equipment to vehicles
- Complete time sheets & other maintenance records

Assessment context

Appropriate licence for vehicle driving must be obtained.
Competency should be demonstrated in an actual workplace or in a situation that reproduces workplace conditions.

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities	•		
Working with others in teams	•		
Using mathematical ideas and techniques	•		
Solving problems		•	
Using technology		•	

Measure Trees FPI FGM 165 A

Description

This unit describes the work involved in measuring trees and recording tree measurement data.

Suggested Pre-Requisites/Co-Requisites

FPI OHS 1A	Follow defined occupational health & safety policies and procedures
FPI G22 A	Plan to undertake a routine task

1 Identify tree measuring requirements

1) Organisational occupational health & safety procedures, practices, policies, & precautions are observed & followed
2) Confirmation of measurements including tolerances, allowances, calibration requirements & special procedures is obtained from supervisor
3) Tree measurement tools are selected, maintained & stored according to enterprise requirements

2 Measure Trees

1) Occupational health & safety precautions are taken while working within the forest & the appropriate personal protective equipment is used.
2) Site environmental concerns are adhered to in accordance with relevant national, state, & local legislation &/or regulations
3) Area of forest to be worked within is identified from written or verbal request & located on the ground
4) Equipment to be used is selected & used in accordance with organisational procedures
5) Tree measurements are taken & recorded to organisational standards
6) Stand height is calculated according to sampling technique used
7) Log volume is measured & recorded to organisation standards
8) Stem form or crown class is classified to organisation standards

Range of Variables

- Trees may include plantation & native forest trees of a variety of species & ages
- Equipment includes diameter tapes, length tapes, optical wedges, clinometers, Vertex
- Measurements include tree diameter & girth (over or under bark at breast height or ground level), tree height, log length,
- Calculations include log & tree volume & stand height
- Classifications include stem form & crown class
- Tree abnormalities include butt swell, double leaders, heavy branching, ramicorns

Evidence Guide

Critical underpinning knowledge:

- Tree measuring techniques including relevant mathematical calculations & basic trigonometry
- Species & characteristics of vegetation to be measured

Critical underpinning skills:

- Identify tree form & abnormalities
- Interpret verbal or written instructions
- Locate forest or plot area in the field from a map or plan
- Correctly use measuring equipment
- Conduct operations in such a way that no damage occurs to equipment, property, environment, forest trees or personnel.

Assessment context

This unit should be assessed in the workplace or simulated workplace using as wide as possible range of tree trunk abnormalities & measuring equipment.
Assessment of competency in this unit may be combined with other units at the request of person being assessed & where the assessor is able to plan combined opportunities for evidence gathering.

Key Competencies and Application to Standards

Key Competency	Level 1	2	3
Collecting, analysing and organising information	•		
Communicating ideas and information	•		
Planning and organising activities			
Working with others in teams	•		
Using mathematical ideas and techniques		•	
Solving problems	•		
Using technology		•	

Carry out patrol FPI FGM 166 A

Description

This unit is concerned with the patrolling of the forest estate and visitor site facilities, the assessment of risk to both the public and/or the forest estate and any subsequent follow-up action.

Suggested Pre-Requisites/Co-Requisites

FPI G 16 A	Maintain interactive communication in the workplace - intermediate
FPI G 23 A	Plan a complete activity
FPI G 24 A	Plan a complex activity
FPI G 29 A	Solve problems in the workplace - advanced

1 Prepare for patrol

1) Patrol routes & area are defined from supervisors instructions or roster
2) Equipment, maps, forms & documents which might be required during patrol are accessed & stored in patrol vehicle
3) Communication links to base & other work centres are ascertained & appropriate communication equipment prepared & stored in patrol vehicle
4) Supervisors, co-workers & appropriate authorities are notified of intended patrol activities
5) Contingency plans are made & communicated to appropriate personnel, according to organisation guidelines

2 Carry out patrol

1) Occupational health & safety & fire procedures, practices, policies, & precautions are observed & followed
2) Work site environmental & heritage concerns are adhered to in accordance with relevant enterprise guidelines
3) During patrol, risks & potential consequences to staff, the public &/or the forest estate are identified & assessed
4) Risk control measures are undertaken promptly & in accordance with organisation guidelines
5) Appropriate follow up action is implemented & documented in accordance with organisation guidelines

3 Respond to complaints from the public and/or possible breaches of legislation

1) Occupational health & safety & fire procedures, practices, policies, & precautions are observed & followed
2) Complete details of complaints or breaches are assessed for further action
3) Physical evidence is collected or documented in accordance with organisation guidelines for the collection of evidence
4) Written or oral evidence is collected & documented in accordance with organisation guidelines for the collection of evidence
5) Appropriate follow up action is taken in accordance with organisation guidelines

Range of Variables

- Visitor sites include developed & undeveloped camping, bush camping areas, day use areas & other recreational activity areas
- The forest estate includes all areas within & immediately adjacent to the forest boundaries. It includes enterprise assets such as offices, accommodation etc, structures such as fences & roads & forest products.
- Communication equipment includes radios, either h& held or installed in vehicles, & telephones
- Contingency plans include search & rescue of lost members of the public, recovery of vehicles, clearing of roads, evacuation plans, bush fire control assistance to the police or other government agencies & administration of first aid
- Breaches of legislation include unauthorised use of roads to which public access is restricted, unauthorised use of firearms by members of the public, damage or theft of the forest estate by members of the public & illegal activities by members of the public, particularly in campsites

Evidence Guide

Critical underpinning knowledge:

- Map reading & patrol area geography
- Use of communications equipment
- Role & interrelationship of government agencies controlling public l&
- Legislation applicable to the management of public use of the forest estate
- Collection & documentation of evidence
- Follow up procedures & actions required
- Organisation risk assessment guidelines
- Organisation public relations guidelines

Critical underpinning skills:

- Communicate in a fair, friendly & firm manner with members of the public
- Use appropriate questioning technique to gather oral evidence
- Collect oral & written evidence in a format which may be presented in court
- Prepare & write clearly written, accurate & complete reports

Assessment context

This unit may be assessed in the workplace or simulated workplace using as wide as possible range of contingency situations as possible.
Assessment of competency in this unit may be combined with other units at the request of person being assessed & where the assessor is able to plan combined opportunities for evidence gathering

Key Competencies and Application to Standards

Key Competency	Level 1	Level 2	Level 3
Collecting, analysing and organising information		•	
Communicating ideas and information		•	
Planning and organising activities		•	
Working with others in teams	•		
Using mathematical ideas and techniques			
Solving problems		•	
Using technology		•	