

PROCEDURE

1 Reporting of a Hazard or Incident Event

The contractor must:

- 1.1 Notify the Forest Products Commission (FPC) within 24 hours of all hazards and incident events via either the FPC1089 Contractor Hazard/Incident Event Notification form or using the company's notification form. Please email to hazard@fpc.wa.gov.au. ALL INJURIES MUST BE REPORTED IMMEDIATELY TO THE OSH CO-ORDINATOR (0448 610 450). Please also refer to Contractor Procedure O1 - Safety Requirements.
- 1.2 Undertake appropriate investigations to identify incident causes and develop actions to eliminate or minimise the risk of reoccurrence.
- 1.3 In the event of a road incident the contractor is required to provide the FPC with dashcam footage and GPS data.
- 1.4 Report any legislated notifiable injuries or diseases as identified in 2.2 of this procedure.
- 1.5 Participate in investigations as required.
- 1.6 Comply with any findings generated from an investigation process.

2 WorkSafe severe injury reporting – *Occupational Safety and Health Regulations 1996* (OSHR 1996)

The Contractor must:

- 2.1 Notify the FPC OSH Coordinator, FPC Authorised Officer and WorkSafe of all deaths and certain types of injury (OSHR 1996, r. 2.4) or disease (OSHR 1996, r. 2.5) in connection with the contracted work immediately.

Types of injuries to be reported include:

- A fracture of the skull, spine or pelvis.
- A fracture of any bone in the arm, other than wrists or hands, or in the leg, other than the ankle or foot.
- An amputation of an arm, a hand, finger, finger joint, leg, foot, toe or toe joint.
- The loss of sight.
- Any injury other than those referred to above which, in the opinion of a medical practitioner, is likely to prevent the employee from being able to work for at least 10 days.

All workplace deaths must be reported to WorkSafe as soon as practical on 1800 678 198 (24 hours).

1 PURPOSE / OBJECTIVES

1. Raise awareness of Significant Environmental Aspects and the need to avoid or minimise environmental impacts on soil, water, biodiversity (habitats) and the future productive capacity of the site.
2. To protect the environmental features identified in and adjoining the worksite.
3. To ensure activities are conducted in accordance with the Department of Biodiversity, Conservation and Attractions (DBCA) Disturbance Approval System (DAS) for disturbance activities when operating on DBCA - managed lands or equivalent planning approval on other land tenures.

2 Procedure

2.1 Forest Products Commission (FPC) Certification and Contractor Induction

The FPC has:

- A responsibility to minimise environmental harm by managing and monitoring its activities in the forest.
- Developed an Integrated Forest Management System (IFMS) to meet the requirements of the Australian Forestry Standard (AS4708) and the international standard for Environmental Management Systems (ISO 14001).
- A responsibility to make Contractors aware of the FPC's Significant Environmental Aspects and the potential impacts of contracted works.
- Developed a system of contractor inductions to meet these requirements. Each induction will:
 - Be conducted prior to a contract employee starting work.
 - Remain current for three years provided there are no significant changes to the FPC's Environmental Management requirements (e.g. significant aspects, operational control procedures, compliance requirements).

The Contractor must:

1. Ensure all employees participate in Integrated Forest Management System (IFMS) inductions as per Contractor Procedure E5 – E Learning Modules – Integrated Forest Management System (IFMS).
2. Report to the FPC Authorised Officer when a new person has been employed and when they intend to start work.
3. Ensure that employees receive an onsite induction prior to starting work at any worksite managed by the FPC.

4. Ensure that personnel indirectly related to providing services under this contract (e.g. maintenance personnel) are to remain under the direct supervision of inducted staff while at the worksite.

2.2 Forest Features

The FPC Authorised Officer must:

1. Provide the contractor with management advice and maps for the features at the worksite. These features include (but are not limited to):
 - Cultural heritage sites - Aboriginal and other.
 - Old-growth forest areas.
 - Neighbour values.
 - Soil values.
 - Water values.
 - Significant species values, including threatened and priority flora and fauna.
 - Scientific plots.
 - Visual values.
 - Slopes >15 degrees.
 - Gates, fences and other infrastructure.
2. Provide work instructions to the Contractor that contain management requirements relevant to the features at the pre-operation briefing.
3. Monitor the operation to ensure it is conducted and completed in accordance with the required environmental standards.
4. Assess the Contractor's ability to comply with the environmental standard requirements and record the level of compliance on the relevant contractor assessment form (e.g. FPC105, FPC106).
5. Demarcate features as per Contractor Procedure S1 – Standard Bush Signs and Markings.

The Contractor must:

6. Participate in the pre-operation briefing to discuss areas where a variation to normal management practices is required.

7. Report to the FPC Authorised Officer any unusual features observed that are not shown on the worksite map including:
 - Other cultural heritage sites such as old timber tramways, bridges, formworks, telegraph poles, artefacts and modified trees.
 - Treemarking of unusual colour/markings, star pickets or metal tags.
8. Not operate within two tree lengths of the new feature until the FPC Authorised Officer has assessed the feature and determined the correct management procedure.
9. Attend any specialised training deemed necessary by the FPC Authorised Officer at their own expense, with the exception of the cost of materials and the instructor.
10. Not damage fencing or other infrastructure on or bordering operational areas. The Contractor must, at their own expense and without delay:
 - Prevent stock movement resulting from fences damaged by their operations.
 - Repair or replace infrastructure damaged by their operations. Infrastructure includes (but not limited to) fences, telephone lines, power lines, pipes, railway lines, conveyer belt lines etc.
11. Not remove any trees in old-growth forest areas unless authorised.
12. Maintain environmental values and avoid negative environmental impacts.
13. A person must not, without lawful authority (as defined under the CALM Regulations 2002), bring an animal onto an FPC managed worksite.

2.3 Neighbour values

The FPC Authorised Officer must:

1. Consult with neighbours prior to and/or during an operation, if required.
2. Identify those values that may be affected by the operation and develop strategies to reduce the likelihood of unacceptable impact on the neighbour's values.
3. If required, restrict Contractor access and/or working hours at a worksite. This information will be in the work instructions and made known at the pre-operation briefing.

The Contractor must:

4. Comply with worksite restrictions based on neighbour values that are in the work instructions discussed at the pre-operation briefing or occur during the course of the operation.

5. Not assume authority when talking to neighbours unless authorised by the FPC and advise the FPC Authorised Officer of issues raised.
6. Report to the FPC Authorised Officer any entry to the worksite by a neighbour or member of the public.

2.4 Coupe / Road Closure

The FPC Authorised Officer must:

1. Close an operation where it would create an unacceptable level of risk or damage to the environment or place the Contractor at risk of injury.
2. Where possible, discuss the extent and duration of the closure prior to implementing it.

Note: This clause is for short-term closures and does not limit any Suspension Clauses in the Contract.

2.5 Public Drinking Water Source Areas (PDWSAs)

Specific site by site management information will be provided by the FPC Authorised Officer at the pre-operation briefing.

The Contractor must:

1. Plan and implement their operation to minimise soil disturbance or the potential to cause soil movement into waterways, wetlands and reservoirs.
2. Locate all chemical drums such that there is no possibility of contamination of waterways (Code of Practice for Timber Plantations in Western Australia).
3. Refuel all machinery away from waterways, wetlands and reservoirs (Code of Practice for Timber Plantations in Western Australia).
4. Contain all spills (oil, hydrocarbon, chemical, fertiliser or biosolids) as soon as possible and then report to the FPC Authorised Officer, regardless of the size, as per Contractor Procedure E1.
5. Not store or use any animal manure or fertiliser without written permission of the CEO (Applicable to Metropolitan Water Supply Sewerage and Drainage Act areas only).
6. Not lay, place or use upon any part of the catchment area any poison, pesticide, insecticide, herbicide or other dangerous substances without written permission of the CEO and then they shall be applied in the manner required by the Health (Pesticides) Regulations 2011. (Applicable to Metropolitan Water Supply Sewerage and Drainage Act areas only)

7. Not store Hydrocarbon (Petroleum) Products within Catchment Areas and Water Reserves. (Applicable to Metropolitan Water Supply Sewerage and Drainage Act areas only)

2.6 Pollution including Conservation and Land Management Regulations 2002 requirements

The Contractor must:

1. Not without lawful authority, camp on CALM (DBCA) land except in a designated camping area. Lawful authority must be obtained via the relevant FPC Manager.
2. A person camping in a designated camping area must comply with conditions specified on signs erected in or in the vicinity of signs designating that area as a camping area.
3. Not dispose of any litter, food scraps, refuse, unserviceable equipment or machinery or other unwanted material resulting from operations on to any work site or adjoining area. If subsequent clean-up is required, it will be done at the Contractor's expense.
4. Catch and remove discharged oil, fuel or lubricants. If subsequent clean-up is required, it will be done at the Contractor's expense.
5. Maintain machinery and equipment (including guards) to a high standard so as to prevent or minimise oil and hydrocarbon spills, chemical spills and machine fires.
6. Have at least 1 'spill kit' on-site for each operation. A spill kit shall contain Safety Data Sheets (SDS), appropriate Personal Protective Equipment (PPE), shovel, absorbent material, and a sealable container for small volumes of contaminated soil.
7. Not degrease and service machinery in the field unless measures are in place to prevent contamination of soil and water.
8. Ensure that refuelling of machinery occurs within the operational area and not within 100m of any water course, wetland or reservoir.
9. Not store fuels and oils in the forest overnight.
10. Remove all oil and fuel drums from the operational area daily.
11. Any human waste is to be buried 15cm deep and 200m from any watercourse.
12. A person must not swim, bathe or wash in any reservoir or tank containing water stored for human consumption or use on CALM land.

1. PURPOSE / OBJECTIVES

The purpose of online eLearning awareness sessions for contractors is to ensure all contractor personnel have an awareness of the Forest Products Commissions (FPC) Integrated Forest Management System (IFMS), general safety requirements and where applicable other eLearning modules related to the specific works being undertaken by the contractor. These modules also raise awareness of the role contractors play in assisting the FPC to achieve required commitments and how contractors performance can affect the FPC's ability to fulfil its compliance obligations.

This includes being aware that there are identified significant environmental aspects/impacts (risks) and associated hazards, that have a potential to cause a significant impact/injury and how specified management practices (operational controls) can reduce these impacts.

2. PROCEDURE

2.1 Who needs to complete the IFMS online awareness modules?

All contractor staff that work for or on behalf of the FPC including direct employees and subcontractors.

2.2 When should online awareness sessions be completed?

- Before the first day of operation, then renewed every 3 years.

It is the responsibility of the contractor to notify the FPC and request logons to complete mandatory awareness modules for each new staff member and these must be completed prior to any new staff commencing in the field. Under special circumstances contractor staff can continue to work in the short term provided that a contractor representative who has completed the required mandatory modules provides full time (100%) supervision. These exceptions must be approved by the Senior Coordinator Forest Management Systems (FMS).

It is the FPC Authorised Officers responsibility to ensure all contractor staff on site have completed the required eLearning modules.

2.3 Awareness

All persons on site must have an awareness of the respective environmental aspects/impacts and general safety requirements pertaining specifically to the site they are on and be able to carry out the relevant operational control strategies, as appropriate. All activity on site must be adequately supervised to ensure appropriate work practices are adhered to and appropriate controls are in place to safeguard people and the environment from harm. These awareness modules are in addition to any on-site handover(s)/briefings that include such things as site specific hazard identification, job specifications and/or job standards/requirements. The FPC is committed to the provision of a safe and healthy environment for the FPC's employees, contractors, sub-contractors, general public and clients.

Contractor staff may freely discuss these modules with their supervisor or an FPC Authorised Officer to help with comprehension, but completion of actual competency questions within the online modules must be solely undertaken by individuals with no help provided from other sources

All modules contain assessment questions and the pass mark is 85%. If the 85% pass mark is not achieved the trainee will be required to re-attempt the module. If the trainee fails to achieve a pass after three separate attempts, a face to face meeting will be required with the Senior Co-ordinator

FMS or the Occupational, Safety and Health Co-ordinator. Trainees may be randomly tested by an FPC Authorised Officer to ensure they have the required knowledge. If at any time an FPC Authorised Officer is not confident of the trainee's knowledge, they may recommend the suspension of the employee(s) from the FPC sites and the employee may be required to repeat awareness modules.

2.4 Record of Completion of Modules and Other Contractor Training

The online Vocam system records the results of each trainee's modules completed. A register is maintained by the Occupational, Safety, Health & Environmental Branch for the FPC contractor managers to access. This is available on the FPC intranet under "Registers". This file is updated to reflect the Vocam records as well as containing other training i.e. green card. The register contains active and inactive personnel and can be used by FPC staff and/or can be extracted and provided to the contractor.

2.5 Onsite Handover(s)/briefing(s)

In addition to the completion of eLearning modules, there also needs to be onsite specific pre operation briefings, refer to Contractor Procedure E3.

1. Purpose / Objectives

1. Minimise the chance of uncontrolled fire impacting life and property, community and industry assets and associated environmental values.
2. Ensure contractors provide basic fire safety skills and equipment at worksites for their employees to help mitigate fire risk, and safely provide initial suppression efforts to protect their equipment and surrounding forest assets.
3. This checklist is applicable to FPC Native Forest and Plantations operations only.

2. PROCEDURE

The Contractor must:

1. Adhere to this procedure and operational restrictions as instructed at all times.
2. Ensure all personnel and equipment complies with this procedure at all times. Failure to comply may result in the suspension of services until the issue is rectified.
3. Ensure all field employees have successfully completed the FPC Bushfire Safety & Survival Awareness module within the first six months of employment and provide FPC with details of all current employees if not consistent with FPC's industry training register.
4. Ensure that all personnel conform with the minimum standards for Personal Protective Equipment (PPE) for all fire suppression activities as outlined in 2.7
5. Take all necessary precautions to prevent the occurrence or spread of fire in their worksite.
6. Not light fires in any forest area without the permission of the FPC and local fire authority. (DBCA, Shire FCO)
7. During the Restricted and Prohibited burning periods, notify the FPC of their intent to work on weekends or public holidays by midday of the preceding workday. The FPC Duty Officer will determine if the proposed work can occur and what restrictions will apply.
8. Monitor the State's emergency broadcaster (ABC radio) and the Department of Fire and Emergency Services website (<http://www.dfes.wa.gov.au/totalfirebans/Pages/default.aspx>) for any Local Government imposed bans.

The FPC must:

1. Inspect all [Contractor Fire Requirements](#) across all active operations during the second week of December each year. Copies of the [Form FPC810](#) Checklist with comments will be provided to the contractor (*with actions requiring attention*) A copy should be retained on Contractors operational file and within Contractor Fire Requirement records (788FP)
2. Notify the contractor during the Restricted and Prohibited burning periods of any operational restrictions based on the forecast fire danger such as shut down times, additional suppression equipment required and/or the requirement to monitor the site for 1 hour after the machine has come to rest.

- 3 Advise the relevant fire manager for the area of the intended worksite location of Contractor(s) during the Restricted and Prohibited period.
4. Notify the FPC Duty Officer and relevant land manager during the Restricted and Prohibited burning periods regarding the Contractor's intention to work on weekends or public holidays and establish the fire related requirements, restrictions that may be necessary.

2.1 Fire Reporting and Suppression on or near the worksite

1. In the event of a fire occurring the contractor must **Call 000** fire emergency in the first instance to log the incident with COMCEN (Department of Fire and Emergency Services Communication Centre). Where radio / phone communications are limited, this may require immediately travelling to the nominated emergency communications point in the contractor's emergency safety plan for the worksite to initiate the 000 call.
2. Once the emergency call has been made then the contractor must notify the **FPC Duty Officer (08 9725 5288)** of the incident . The FPC DO will liaise with the land manager on the further coordination for the effective and efficient management of the fire incident.
- 3 Within employee capacity and training and due consideration for personal safety, the contractor will endeavour to suppress a fire starting on, or in the vicinity of, the worksite until trained fire crews arrive, and assume control.
4. The contractor and their employees will be competent in the use of the on-site suppression equipment to protect life and property initially.
5. As may be required, the contractor will assist with the evacuation of personnel and equipment.
6. The Contractor is responsible for any of their own costs incurred in suppressing or attempting to suppress a fire on their worksite.

The Contractor should follow the **FPC Bushfire Emergency Response Procedure** in reporting and responding to a fire. **"ADVISE"**.

- *Alert someone who can contact others to seek help to suppress.*
- *Defend if safe to do so, take action to suppress where safe and skills support action.*
- *Vocalise "communicate" your movements constantly, so others are aware of your situation, location.*
- *Identify safe escape routes should fire escalate.*
- *Safety zone, know where they are and when to go there*
- *Equipment is critical, ensure PPE is always used when responding to bushfire.*

2.2 Vehicles and equipment

The Contractor must (at all times):

1. Ensure all vehicles and equipment (including chainsaws) entering the forest have:
 - An effective exhaust system maintained in good working order (BFR 1954 24A.5).
 - Appropriate spark arrester fitted to all internal combustion engines (BFR 1954 24A.5(b)).
 - A fire rake or shovel with their fire unit.
 - For all machines including graders and bulldozers: exhaust systems that discharge emissions vertically upwards (BFR 1954 37A(b)).
 - All harvest and road work machinery to be fitted with approved, serviceable fire extinguisher (AS 1851.1). Min requirement – 9L water extinguisher (AS 1841.2) or 9L foam extinguisher (AS 1841.4) or 4.5kg dry powder extinguisher (AS 1841.5).
 - All log haulage vehicles must carry fire extinguisher in line with AS 2444.
 - Alternative Fire Stryker extinguisher will be considered with light fleet vehicles as an alternative.
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2. Light vehicles must remain within 10 m of roads unless being used in a fire suppression capacity.
3. Daily machine start-up procedures should include a check that the machine is clean of combustible material, particularly the spaces between the engine and engine guards.

2.3 Fire-fighting appliances

During the Restricted and Prohibited burning periods, or as determined by the FPC the Contractor must:

1. Provide on-site, and maintain in good working order, a mobile fire-fighting unit consistent with the requirements of the Guidelines for applying stipulated operational restrictions for that specific operation site. Comprising of a full water tank with a minimum capacity of 400 litres connected to a powered pump with minimum of 20 m heat tolerant PVC/Nitrile hose and capacity to pump 100L/min (minimum).
2. Locate the fire suppression unit/s as per applicable Guidelines for applying operation restrictions to manage fire risk – [FPC145](#), [FPC146](#) and [FPC147](#).
3. Ensure all personnel at the worksite can safely operate the fire-fighting suppression unit in the event of an emergency.
4. Remain on site for one hour after machine operations have ceased for the day to monitor any accidental workplace ignitions. On days of HVMB machines must cease in forest operations in line with local government restrictions and monitor area from established roads (as above)

2.4 Smoking

1. Is prohibited in all in forest operations, except where the area is clear of all vegetation or other flammable material. (*Eg: Cleared breaks, roads*)
2. There will be no smoking of cigarettes within six metres of any refuelling site.

2.5 On-site maintenance – Hot Works

The Contractor must:

1. Only conduct in forest maintenance involving hot works once authorisation from the FPC is obtained and ensure:

All hot work to be carried out on mineral earth breaks > 10m in width.

Before hot work, the area will be wet down with a fire unit in a 10m radius.

There is a minimum of 2 approved fire extinguishers in working order onsite and in close proximity.
 - A serviceable fire unit of minimum 500L will be on standby at the site of the hot work. Where Fire Danger exceeds FDR Moderate, 1500 L of water must be on standby prior to commencing works.
2. There must be a minimum of two persons onsite at all times during hot works, with one person trained in the use of the fire extinguishers and fire appliances to monitor worksite for the duration of the works and for 30min after completion.
3. Not undertake hot works on days when the Fire Danger for the area of operation is considered “catastrophic” unless it is relation to the provision of an essential service.

The FPC must:

1. Consult and Comply with the relevant land manager regarding the intended timing and location of any hot works authorised during the Restricted and Prohibited period, for work on all land tenures.

2.6 Applying the Guidelines for Operational Restrictions

1. The **Site Hazard** across all FPC worksites will be determined, based on *local topography, soils, fuel structure, types and loadings*.
2. Operation type, method and machines will be considered to establish the **Operational risk**.
3. Daily restrictions to operations will be determined by applying the daily **Fire Danger Rating**, (FDI or FBI) forecast weather conditions for site and operational risk factors.
4. FPC and the Contractors suppression training, capacity and experience, and the local fire agencies ability to respond to bushfire for the operational period will also be taken into consideration.

5. Daily restriction details FPC199 will be forwarded to Contractor managers each day by email. It will be the contractors' responsibility to forward these restrictions on to all employees and ensure compliance with the relevant guidelines
- FPC147 Softwood Plantations Southwest WA
 - FPC146 Softwood Plantations Swan Coast Area
 - FPC145 Native Forest Operations Southwest WA

2.7 Minimum Personal Protective Equipment (Fire Protection)

All employees working in the field must have access to the clothing/equipment below to protect themselves if exposed to bushfire and radiant heat in the workplace.

- Long sleeve Hi Visibility Cotton Shirt
- Long Trousers (Non-flammable material)
- Standard Safety Helmet for Forest operations
- Standard Lace-up Safety Boots for Forest Operations (*Recc Heat resistant soles*)

Note: Heat resistant gloves and smoke goggles are recommended however not mandatory

1. PURPOSE / OBJECTIVES

1. Contractors have a systematic approach to safety, which they can demonstrate throughout the life of the contract.

2. PROCEDURE

2.1 Safety Requirements

The FPC must:

Prior to operations commencing, ensure the Contractor has provided documented evidence that they meet the Forest Products Commission (FPC) requirements of the contract. This must be in the form of either:

- a copy of a certificate confirming certification to AS/NZS ISO 45001
- a Safety Management Plan (SMP) that has been independently verified by a WorkSafe Plan Assessor within the last three years as meeting the Commission's requirements of the Contract.

This will include processes to manage safety relevant to contracted works including, but not limited to: hazard management, training, incident management and investigation, emergency planning, plant safety and processes to address specific hazards.

2.2 Operational Requirements

The FPC must:

1. Assess the Contractor's safe systems of work through routine work inspections and the work certification process.
2. Consult with the Contractor where a safety risk is identified on the worksite and where necessary, close the worksite until agreed safety standards are achieved and maintained.
3. Notify the contractor of identified hazards or safety risks in the worksite.

The Contractor must:

1. Prior to the commencement of the contract, provide the FPC with documented evidence that their Safety Management Plan has been independently assessed by a WorkSafe Plan Assessor within the last three years using the Contractor Safety Management Plan Evaluation Template.

OR

If certified, provide the Commission with a copy of their certificate confirming certification to AS/NZS ISO 45001. Contractors must immediately notify the FPC if they lose certification. A copy of recertification certificates must be provided to the FPC when reissued.

2. Document all hazards, risk levels and means of risk control, and appropriately address all hazards in the workplace.

3. Document safe systems of work in compliance with the relevant legislative requirements. (Safe operating procedures, practices, work instructions or safe working method statements)
4. Provide evidence of safe systems of work and associated documentation as requested by the FPC.
5. Develop and implement a site specific safety management plan (applicable to Harvest and Haulage contracts).
6. Where required, prepare Safe Work Method Statements for high-risk construction work (work on or adjacent to public roads).
7. Regularly inspect the site to ensure that the inspections are documented and any identified risks on the site have been managed.
8. Submit a Monthly Contractor Safety Report ([Form FPC662](#)) to the FPC each month.
9. Prior to any operation commencing, a Site Specific Safety Plan (SSSP) must have been completed and signed by all workers on the work site.

2.3 Reporting Hazards and Incident Events

The Contractor must:

1. Notify the Forest Products Commission (FPC) OSHE Branch immediately or as soon as practicable of all safety incidents via either the [Form FPC1089](#) Contractor Hazard/Incident Report or using the company's incident report form.
2. Notify the Forest Products Commission (FPC) within 24 hours of all hazards and environmental incidents.
3. Undertake appropriate investigations to identify incident causes and develop actions to eliminate or minimise the risk of reoccurrence.
4. In the event of a heavy vehicle road incident the contractor is required to provide the FPC with dashcam footage, GPS data and all other documentation and information as referred to within the FPC Major Incident template.
5. Report any legislated notifiable injuries or diseases.
6. Participate in investigations as required, be responsive to requests for information and comply with any findings generated from an investigation.
7. Notify the FPC and WorkSafe of all notifiable incidents as referred to under Part 3 – Incident Notification of the Work Health and Safety Act 2020.
A notifiable incident is:
 - (a) the death of a person; or
 - (b) a serious injury or illness of a person; or
 - (c) a dangerous event.

A serious injury or illness is:

- (a) that requires the person to have immediate treatment as an in-patient in a hospital; or
- (b) that require the person to have immediate treatment for –
 - (i) the amputation of any part of the person's body; or
 - (ii) a serious head injury; or
 - (iii) a serious eye injury; or
 - (iv) a serious burn; or
 - (v) the separation of the person's skin from an underlying tissue (such as degloving or scalping); or
 - (vi) a spinal injury; or
 - (vii) the loss of a bodily function; or
 - (viii) serious lacerationsor
- (c) requires to person to have treatment by a medical practitioner within 48 hours of exposure to a substance; or
- (d) that occurs in a remote location and requires the person to be transferred urgently to a medical facility for treatment; or
- (e) that, in the opinion of a medical practitioner, is likely to prevent the person from being able to do the person's normal work for at least 10 days after the day on which the injury or illness occurs,

A dangerous incident is;

An incident in relation to a workplace that exposes a worker or any other person to a serious risk to a person's health or safety emanating from an immediate or imminent exposure to -

- (a) an uncontrolled escape, spillage or leakage of a substance; or
- (b) an uncontrolled implosion, explosion or fire; or
- (c) an uncontrolled escape of gas or steam; or
- (d) an uncontrolled escape of a pressurised substance; or
- (e) electric shock; or
- (f) the fall or release from a height of any plant, substance or thing; or
- (g) the collapse, overturning, failure or malfunction of, or damage to, any plant that is required to be authorised for use in accordance with the regulations; or
- (h) the collapse or partial collapse of a structure; or
- (i) the collapse or failure of an excavation or of any shoring supporting and excavation; or

- (j) the interruption of the main system of ventilation in an underground excavation or tunnel; or
- (k) any other event prescribed by the regulations, but does not include an incident of a prescribed kind.

Call 1800 678 198 to report a workplace related death, serious injury or illness, or immediately life-threatening dangerous incident. **These must be reported to WorkSafe immediately after becoming aware of the incident.**

2.4 Emergency response

The Contractor must:

1. Ensure at least two employees possess first aid qualifications if there are more than two people on site, and that suitable first aid kits are available in each vehicle and plant. Note any employee working alone must have first aid training.
2. Ensure field employees have immediate access to communications systems to notify other employees and emergency services in case of an emergency.
3. Ensure documented emergency procedures are available, tested and employees are trained to use the procedures.

2.5 Training and licenses

The Contractor must:

1. Ensure all employees are competent to perform their duties in a safe manner and are familiar with the relevant aspects of the Contractor's safety management system.
2. Provide an induction and supervision program for new employees and other employees being retrained.
3. Maintain training and qualification records for all employees and make them available when requested by the FPC.
4. Ensure employees hold the appropriate licence(s)/qualifications for machines they operate and are able to produce the licence when requested by the FPC.
5. Ensure employees who perform construction work (road work, earth moving, etc.) possess a valid construction induction certificate (white card).
6. Ensure all employees, where required, are registered as a Forest Industry Worker using the [Form FPC14](#) Application to register as a Forest Industry Worker.
7. Make employees available to attend training courses nominated by the FPC. No payment will be made to the Contractor for attending this training.

1. PURPOSE

To ensure a safe work environment where Workers are fit for work and not exposed to hazards and risks associated with the use of alcohol and/or non-approved drugs.

2. SCOPE

The procedure applies to all field-based contractors operating worksites on behalf of FPC and includes contractor employees, sub-contractors and any other person associated with the contractor. Worksites are those sites on which the Contractor performs work for the benefit of FPC and where the FPC can reasonably direct the actions of the Contractor.

This Procedure is in addition to Alcohol and Other Drug procedures FPC's field-based contractors have in place as part of their Safety Management System and is not a replacement.

Hereafter all field-based persons engaged by the Contractor operating Worksites on behalf of FPC will be referred to as 'Workers'.

3. POLICY STATEMENT

The FPC is committed to the maintenance of a safe and healthy workplace free from injury or risk of harm associated with alcohol and non-approved drugs. To achieve this:

- All Workers will present fit for work and free of impairment by alcohol and any other form of drug (legal or illegal). A fit state is defined as a BAC less than 0.02% or as required by Law. The prescribed limit for other drugs is a negative test result. A fit state is defined as below the limits listed by the Australian Standard AS 4760 for oral testing and Australian Standard AS 4308 for urine testing. Should another type of alcohol or drug test be required for any reason then the relevant Australian Standard limits will apply.
- No Worker will be permitted to undertake tasks on behalf of FPC if they are not in a fit state.
- All Worksites will be free from alcohol and illegal drugs.

4. PROCEDURE

All field-based contractors will comply with this procedure.

4.1 Alcohol and other drug procedure training and awareness

Contractors will ensure their Workers have appropriate alcohol and other drug awareness training. Contractors will ensure their Workers are aware of the contractor's alcohol and other drug procedure and management process, in addition to participation in testing required by FPC.

4.2 Identification of persons in an unfit state due to alcohol or other drug use

Contractors will have a system in place to identify and confirm persons unfit due to alcohol or other drugs at their worksites. Strategies used to confirm unfit persons, must include reasonable cause testing and randomised testing conducted in accordance with FPC [Contractor Guideline Drug and alcohol testing](#).

4.3 Alcohol and other drug testing methods

The alcohol testing method will be by breathalyser (the unit must meet the Australian Standard: AS 3547-1997/ Amendment 1-2000 Type 2). Drug testing will be oral fluid testing in accordance with Australian Standard AS 4760. In the case that oral testing is unavailable, then drug testing will be via a urine sample in accordance with Australian Standard AS 4308. Should another type of alcohol or drug test be required for any reason then the relevant Australian Standard limits will apply.

Where the Worker is not engaged in a high-risk activity and no vehicles or heavy machinery is being operated by the Workers, a fit state is deemed to be a Blood Alcohol Concentration (BAC) of no more than 0.02%. Where Workers are engaging in high-risk activities, or operating vehicles or heavy machinery, a BAC of 0.00% applies. The prescribed limit for other drugs is a negative test result. A fit state is defined as below the limits listed by the Australian Standard AS 4760 for oral testing and Australian Standard AS 4308 for urine testing, or the relevant Australian Standard where another type of test is required.

4.4 Reasonable cause alcohol and other drug testing

If a Contractor or their supervisor has reasonable grounds to believe a Worker is unfit, using or in possession of alcohol or other drugs in the workplace, they will initiate an alcohol and other drug test.

If any person believes an individual is affected by alcohol or other drugs at a Worksite, it should be reported to the Contractor or supervisor as soon as practical.

Notification of test results will be in accordance with section 4.9.

4.5 Contractor alcohol and other drug testing

Contractors will conduct their own randomised and reasonable cause testing in accordance with FPC Contractor Guideline Drug and alcohol testing and provide test results to FPC on request. Notification of test results will be in accordance with section 4.9.

If a Contractor does not have the capacity to undertake the necessary randomised testing, FPC may direct the Contractor to be included within FPC's testing program.

4.6 FPC randomised alcohol and other drug testing

Random testing will be done privately and with all due respect and professionalism by a suitably qualified external provider. The random testing for alcohol and/or other drugs may be conducted at any time during work hours.

All Workers will be eligible for selection for random testing. Specific individuals will be selected for testing from the larger test group by using a simple random selection process. The specific random selection process may vary from time to time depending on the available methods but will be agreed beforehand by FPC and the approved provider.

Persons who are randomly selected by the testing provider will be required to present themselves for testing immediately. The person may have a union delegate or other representative present during the testing procedure. If the person randomly selected is not readily available, that will not preclude them from undergoing a test.

Testing locations, dates and times will be selected by the FPC Manager Environment and Safety in consultation with the approved provider based on risk and/or efficiency. Testing locations may include an FPC workplace, including FPC offices or field locations.

4.7 Refusal to participate in testing

An individual will be deemed to have returned a positive test result if they:

- refuse a Contractor, Supervisor or FPC direction to undertake an alcohol or other drug test; or
- refuse to comply with the testing process, such as refusal to provide a saliva sample, sign the chain of custody form, labels or tamper with evidence seals, etc; or
- after attending work, the individual leaves the Worksite prior to participating in required testing without the consent of their Contractor or Supervisor; or
- fail to present for testing without notifying their Contract Manager or Supervisor of the need to take leave. In this case, a medical certificate may be required to substantiate the need for leave; or
- fail to present for testing without being on approved leave; or
- fail to return to the Worksite if within reasonable travelling distance and participate in random testing to be determined by their Contract Manager, Supervisor or FPC.

If any of the above occurs, a “three strikes” approach will be adopted to ensure individuals clearly understand the consequences of their decision not to participate. To ensure consistency of approach, the following process shall be adopted:

- The external provider will inform the individual who has refused the test that the refusal will have the same consequences as a positive result i.e. that the individual will be deemed to be unfit for work. The individual will be offered the test again. This would be the second request for the test.
- If the individual still refuses, the external provider will then contact the individual’s Site Supervisor or Contract Manager, who will speak with the individual and attempt to clarify the reasons for non-participation and explain the possible consequences. The Site Supervisor or Contract Manager will reoffer the test to the individual. This will be considered the third and final request for the test.
- If the individual still refuses, the refusal will be recorded as ‘Refused Test’ and recorded as a positive result. FPC will direct the Contractor to remove the Worker from the worksite as soon as practical, the Worker must not operate a vehicle. Their return to the worksite will not be considered until the matter has been discussed with FPC and resolved to the satisfaction of all parties. FPC and the Contractor will undertake to expedite resolution of the matter.

4.8 Alcohol and other drug testing post incident

Unless there is reasonable justification, contractors are required to ensure that Workers involved in a high potential incident (HPI) undergo a same day alcohol and other drug test. In the event that a Worker fails to complete an alcohol and other drug test on the same day, as required after a HPI or when directed by FPC (without reasonable justification why this cannot be done provided to and agreed by FPC), the individual may be deemed to have returned a positive test result. FPC may direct the Contractor to remove the Worker from the worksite as soon as practical, the Worker must not operate a vehicle. Their return to the worksite will not be considered until the matter has been discussed with and resolved to the satisfaction of all parties. FPC and the Contractor will undertake to expedite resolution of the matter.

In the event that a same day drug and alcohol test is not completed, as required after a HPI or when directed by FPC, then the Worker will be required to complete a urine test as soon as is reasonably practicable.

4.9 Notification to FPC of test results for testing conducted by the contractor

In the case that a Worker produces a non-negative drug test result, the contractor is required to notify the Manager Environment and Safety (via phone or email) on the day of the test and confirm that the Worker has been removed from the worksite pending the results of a laboratory confirmation drug test. The Worker must not operate a vehicle. Please note the name of the Worker does not need to be disclosed to the FPC.

If the laboratory confirmation test result is negative, then no further action is required.

In the case that a Worker produces a confirmed positive alcohol or laboratory confirmation drug test result, then the contractor must report this to the FPC within 24 hours using either the company's incident report or the [Form FPC1089 Contractor Hazard/Incident Report](#).

In the event FPC requests that a Worker undergo a drug and alcohol test, the contractor must provide evidence the Worker has been tested. This can either be a test report from an accredited company or a Drug and alcohol test record (Appendix 1).

4.10 Process for dealing with non-negative drug testing outcomes

Where a preliminary alcohol test returns a positive result that is equal to or above the BAC limits (defined in Section 4.3) then a second test will be completed 10-15 minutes following the first test.

In the case that a preliminary drug test returns a non-negative result then the Worker will be required to provide an additional sample for confirmation testing at an accredited laboratory.

In the case that a preliminary drug test returns a non-negative result and the Worker has not declared a reasonable explanation for that result (e.g. the Worker is taking prescription medication) then the Worker will be offered a repeat test as soon as practicable. If the repeat test is negative, then this will be recorded as a negative result. If the result of the repeat test is non-negative, the Worker will be requested to provide an additional sample for confirmation testing at an accredited laboratory. In the event the worker declines to provide a sample for confirmation testing at an accredited laboratory then Section 4.7 applies.

In the case that a Worker produces a positive alcohol or non-negative test result the Worker will be removed from the Worksite as soon as practical, the Worker must not operate a vehicle. Once the Worker has left the Worksite, the Contractor's own procedures will apply.

In the case that a Worker produces a negative laboratory confirmation drug test result then the worker is permitted to immediately return to the worksite.

In the case that a Worker produces a positive alcohol or laboratory confirmation drug test result the following actions apply:

- The FPC and the Contractor will conduct and complete their respective incident investigations.
- The FPC and the Contractor will discuss and agree on actions arising from the incident.

- The Contractor may then submit a written request to FPC for the Worker to return to an FPC managed worksite. The Contractor request will provide evidence, acceptable to FPC, that the Worker is in a fit state to return to work and that appropriate management actions are in place. This includes provision of a negative test result.
- Subject to provision of satisfactory evidence, FPC approves the return to work of the Worker to the Worksite if this is a first offence and is not related to a workplace incident.
- If this isn't the Workers first confirmed positive result FPC may, having regard to the circumstances in consultation with the Contractor, impose a permanent ban on the worker at Worksites operated by the Contractor on behalf of FPC.

FPC and the Contractor will undertake to expedite resolution of positive test results.

4.11 Safeguards in relation to use of medications

It is the responsibility of the Worker to inform their employer if they are taking any medication that may cause impairment whilst at work, especially with regards to operation of heavy machinery and driving. It is recognised that certain medications may return a positive test result. To avoid an issue, it is recommended that Workers provide a letter from their GP to Management setting out the medications and noting it does not impact their ability to undertake their duties and that letter is kept on file, is current and is available at the time of testing. Any Worker required to undertake a drug test can choose to declare any medication taken immediately prior to the test being conducted or can declare following the test if a non-negative test result is recorded. Such information will be kept confidential by the external provider and only used in determining if such medication has contributed to or caused a non-negative result. All formally recorded information will be collected by the external provider and treated in accordance with the FPC's and external providers Privacy Policy.

4.12 Possession of Illegal Drugs

Workers who are found to be in possession of illegal drugs at a worksite shall be referred to WA Police.

4.13 Privacy and Confidentiality

The FPC will respect the privacy and confidentiality of personal information and will comply with all relevant legal requirements regarding the storage and disclosure of such information. Any information produced during or in relation to alcohol or other drug testing results will be confidential.

The Manager Environment and Safety can provide a Worker with a copy of their test result upon request. This is provided in confidence. A Worker may also request a copy of their test results directly from the testing provider.

4.14 Counselling and Support Services

Counselling and support services are available via:

- The FPC's Employee Assistance Program (EAP), PeopleSense. Phone 1300 307 912 (24 hours a day, 7 days a week) or visit their web site: <http://www.peoplesense.com.au>

- The Alcohol and Drug Support Line <https://www.mhc.wa.gov.au/alcoholanddrugssupportline>. This is a confidential, non-judgemental telephone counselling, information and referral service for anyone seeking help for their own or another person's alcohol or drug use.

4.15 Definitions

Term	Definition
Alcohol	Includes any substance or beverage that contains ethyl alcohol including, but not limited to beer, cider, wine, pre-mix drinks and spirits.
AS 4760	The " <i>Australian Standard 4760: Procedures for specimen collection and the detection and quantitation of drugs of abuse in oral fluid</i> "
AS 4308	The " <i>Australian Standard 4308: Procedures for specimen collection and the detection and quantification of drugs of abuse in urine</i> "
BAC	Blood alcohol concentration measured as percentage of alcohol in the blood.
Drug	<p>Any substance banned under the <i>Misuse of Drugs Act 1981</i> and the <i>Poisons Act 1984</i> and some currently legal drugs which have the potential to cause impairment.</p> <p>The term 'drug' includes (but is not limited to) cannabis and hashish, opiates (such as heroin, morphine, desomorphone (krokodil) cocaine, amphetamine type substances (speed, 'P', ecstasy and party pills containing benzylpiperazine), synthetic cannabinoids, cathinone derivatives (bathsalts), LSD, NBOMe, kava and other phenylethylamine psychedelic substances.</p> <p>The term also includes misuse of some prescription drugs (e.g. tranquillisers, sedatives, oxycodone) and any legal party pills and herbal highs. Other 'mind altering' substances can be added to the testing suite as they become available and are misused.</p>
High Potential Incident	Any event that had the potential to cause a serious injury or a fatality.
Non-negative test	If the on-site screening device indicates the possible presence of a drug class (using the screening test cut off concentration) as defined by AS 4760 or AS 4308 or if the specimen integrity is in question, the result is reported as "non-negative".
Positive test	<p>A non-negative sample that has been subsequently confirmed positive by an external accredited testing laboratory.</p> <p>A second breath test conducted using the on-site breathalyser device records that a person's blood alcohol content is 0.02% or above.</p>
Worker	Anyone who carries out work in any capacity on behalf of FPC, includes contractor employees, sub-contractors and any other person associated with the contractor.
Worksite	Those sites on which the Contractor performs work under contract with the FPC and where the FPC can reasonably direct the actions of the Contractor.

APPENDIX 1 FPC CONTRACTOR DRUG AND ALCOHOL TEST RECORD

FPC CONTRACTOR DRUG AND ALCOHOL TEST RECORD



TEST INFORMATION				
Subjects Name			Signature	
Role in Company			Medications Taken?	
Date of test			Time of test	
Testing Conducted by			Signature	
Worksite Location				
Reason for Test	<input type="checkbox"/> Induction	<input type="checkbox"/> Random	<input type="checkbox"/> Post Incident	<input type="checkbox"/> Causal

ALCOHOL TEST				
<input type="checkbox"/> Breath Alcohol Analysis (BAC)				
BAC Reading	<input type="checkbox"/> 0.000% Initial reading	<input type="checkbox"/> Positive Initial reading and (BAC)	%	
Second reading after 15 minutes	(BAC)	%	Time of Second Reading	
Breathylser (type/brand)		Serial #	Next Recalibration Date	

DRUG TEST				
<input type="checkbox"/> Saliva		<input type="checkbox"/> Urine		
Drug Class	Tick if an Indicator (non-negative)	NOTES		
THC	<input type="checkbox"/>			
COC	<input type="checkbox"/>			
OPI	<input type="checkbox"/>			
METH	<input type="checkbox"/>			
AMP	<input type="checkbox"/>			
BZO	<input type="checkbox"/>			
OXY	<input type="checkbox"/>			
Other	<input type="checkbox"/>			
Test Kit Name		Batch #	Expiry Date	

OUTCOMES	COMMENTS / ACTIONS
<input type="checkbox"/> Alcohol (passed test)	
<input type="checkbox"/> Drugs (passed test)	
<input type="checkbox"/> Failed – Above BAC limit (Alcohol)	
<input type="checkbox"/> Failed – Non-Negative sample (Drugs)	

Introduction

The purpose of this protocol is to provide a standard for Plantation post thin inventory assessment plots.

The assessment should include measurements of:

1. Stocking (live planted trees, this does not include wildings)
2. Stem diameter at 1.3m (breast height) over bark; dbhob
3. Height of the required number of stems (in association with the plot radius) that have the largest dbhob, with intact tops (no broken or dead tops should be used as height trees) in the plot.

Training required

Everyone carrying out field assessment is required to have attended a training session provided by the Plantation Resource Planning team. Refer to [Form FPC191](#), FPC Resource Assessment Training Acknowledgment and FPC Training Register

The training comprises an office briefing of the procedures as well as field reinforcement to ensure that assessors understand and can safely carry out the work to the standard required.

Safety

These procedures should only be carried out if safe to do so

The Contractor must have appropriate Job Safety Analysis (JSA) and Safety Management Plans as well as appropriate communication equipment and systems in place for the following:

- a) Monitoring of restrictions in the work area to ensure compliance with bushfire regulations and to ensure his/her safety and the safety of the staff under his/her responsibility
- b) Communication with FPC staff regarding work progress and movements.

Auditing of Resource Assessment Data

[Refer to Work Instruction 130](#) - Protocol for Resource Assessment Quality Control Audit.

Equipment required

- a) Map with plot locations (provided by FPC)
- b) Where applicable, contact details of Sharefarm land owner (provided by FPC)
- c) GPS with plot coordinates loaded (coordinates provided by FPC)
- d) Data collection device or field sheets
- e) Vertex Hypsometer (with centre pole and cradle)
- f) Diameter tape
- g) Spray paint
- h) Height Stick marked at 1.3m
- i) 10m tape for calibrating Vertex Hypsometer

Note: At least once a month GPS and vertex (for height) should be checked, calibrated and recorded in [Form FPC133 – Inventory equipment calibration](#) Appendix 1. The vertex (for distance) should be calibrated at least once a day.

Where assessments are located in Sharefarm plantations.

Using information provided by the FPC, the Contractor must attempt to contact each Sharefarm land owner / occupier at least two days prior entering the property to advise the of inventory intentions. This is seen also as an opportunity for the Contractor to receive information that may affect access to the property. The Contractor should inform the Authorised Officer prior to entering the property, if the Contractor was unable to contact a Sharefarm land owner / occupier.

Procedure

Plots are to be measured by teams of at least 2 people.

Field plot measurements are to be recorded electronically using templates provided by FPC.

In some cases FPC may allow measurement to be recorded on the [Form FPC141 Post Thinning Inventory Plot Return](#).

The following procedure is to be followed when undertaking field plot measurements.

1) Sample plot location

- a) Using predetermined co-ordinates locate the centre of the plot using a GPS with accuracy of not less than +/- 5m.
- b) Paint a cross on the ground at the location of the plot centre.

If the plot centre is not within the boundary of the plantation (identified as 2m from the centre of the outer most row) then no plot should be established, and a comment recorded as to the reason why there was no plot established. This applies even if part of the plot extends into the plantation area.

Otherwise, a plot should always be established at the provided location.

This applies even if the plot covers an area that is not typical of the stand, e.g. it may include an area comparatively low or no stocking such as a track, extraction row or even an unplanted area within the plantation boundary. Conversely, it may also include an area of comparatively high stocking.

A plot location can only be moved under the following circumstances

- a) If a plot is on the edge of the plantation such that part of the plot area falls outside of the planted area, then the plot can be moved into the plantation such that the entire plot is within the plantation. Capture and record the new plot centre location with the GPS.
- b) If the plot location is heavily affected by blackberries or slash the plot may be moved but only if
 - i) at least 50% of the plot area is affected **AND**
 - ii) the blackberries or slash is at least 50cm high.

The plot can be moved up to 50 m (this is referred to the "50-50-50 rule). If you need to move the plot more than 50 m to be in a safe area a plot should not be established, and the reason should be noted in the comments.



2) Establishing a circular plot

- a) Establish a circular plot with a radius as stated on the provided map.
- b) Starting in the North and moving around the centre pole in a clockwise direction.
Use the hypsometer to determine whether a tree is in or not.
- c) Put a ⊙ on the first tree in the plot at 1.3 m.
For all live trees within the plot radius, paint a dot at 1.3 m such that it faces the centre of the plot.
- d) Refer to Appendix B (or the assessment map provided) for the number of height trees required.
Identify potential height trees by painting a H at the base of the tree.
Height trees are to be selected from the trees with the largest DBHOB with tops intact (ie not broken or dead top). Note these H trees when measuring the DBHOB.

Note:

- i) There may be trees that have numbers on them from a previous measurement – these can be ignored for this measurement, but the number can be noted as a reference.
- ii) The centre point of the stem at breast height (1.3m) determines whether a tree is 'in' or 'out'.
- iii) If a plot is on the edge of the plantation such that part of the plot area falls outside of the planted area, then the plot can be moved into the plantation such that the entire plot is within the plantation. The new plot location is to be captured and recorded with the GPS.
- iv) If the plot falls on sloping land adjustments may need to be made to be sure that the radius is measured horizontally. The "angle" function on the vertex can be used for this.

3) DBHOB

Measure DBHOB (Diameter (mm) at breast height (1.3m)) on the uphill side of the tree and record the measurement to the nearest mm.

- a) If the stem has branches/swellings/scars at breast height then take measurements above and below and average them. Paint white dots at the measurement points.
- b) For stems that fork or have multi-stems below 1.3m, use the DBHOB of the largest stem.
- c) Stems are to be measured and recorded to the nearest mm

4) Tree height

Refer to Appendix B for the number of heights required

If the number of height trees required is “x” then these are chosen from the largest “x+2” diameter trees (with intact top).

For example, plot areas of 0.01ha 1 height tree is required and this should be from the largest 3 diameter trees. For plot areas of 0.08ha 8 height trees are required and this should be from the largest 10 diameter trees.

Locate the height trees.

- a) Measure the selected stems and mark them as height representative on the data capture software or field sheet.
- b) Stems are to be measured and recorded to the nearest 0.1m
- c) If the tree is leaning, make the required adjustments to the total height. This can be done using the angle function on the vertex or with the use of the *Pythagorean equation*:

$$a^2 + b^2 = c^2$$

Note:

- i) Forked stems can be used as height representatives. Record the height of the tallest stem.
- ii) If a tree with a large DBHOB has a broken top or dead top, note this in the comments and measure the next largest tree with an intact top.



Appendix A. FPC 133 Inventory Equipment calibration form

Form FPC 133
Inventory Equipment Calibration
Refer Work Instruction 129


fpc Forest Products Commission

Department: _____	Branch: _____	Section: _____
Name: _____	Signature: _____	Date: _____

Description	Serial number or ID	Variation	Comments	Corrective action
Example: Vertex IV	RAG1	Height 0.2m	Recalibration required	Recalibrated distance at 10 metres, checked height variation 0.0m

Item	Calibration required	Check against standard	Minimum check frequency in use	Maximum acceptable error	Records kept?
DGPS	Yes	Standard survey mark	2 * daily	1.5m horizontal	Yes
GPS	Yes	Standard survey mark	Monthly	5m	Yes
Hypsometer – Distance	Yes	Fibreglass tape	Daily	0.1m over 10m	No
Hypsometer – Height	Yes	Telegraph pole of known height	Monthly	0.1m	Yes
Telescopic Height Poles	Yes	Surveyor's chain	3 Monthly	5mm	Yes
Fibreglass tapes	Yes	Surveyor's chain	3 Monthly	5mm over 20m or 12mm over 50mm	Yes
Metal tapes (DBH)	No	NA	NA	NA	NA
Digital Calipers	Yes	Standard 10mm and 20mm rods	3 Monthly	0.5mm	Yes
Litter Depth Gauge	No	NA	NA	NA	NA
Balances	Yes	Standard weights – 50% balance capacity	Weekly (while in use)	0.3% (1kg = 3gm)	Yes

A survey marker for GPS calibration is located opposite FPC Bunbury office: Easting: 375920.199 Northing: 6308976.273
All equipment is to be checked at the nominated frequencies while in use. Where equipment fails the check and recalibration does not improve to meet the recommended accuracy requirements the equipment should be serviced by an authorised service centre. If it is not possible to rectify the inaccuracy, the equipment should be discarded.

FPC Bunbury flagpole survey heights for hypsometer height calibration

Version control: V02/February 2023
Authority: Strategic Planning Manager
Responsible Officer: Resource Assessment Coordinator
Security classification: Staff in confidence
Uncontrolled when printed

Page 1 of 2



Appendix B: Circular Plot Area to Radius Conversion

Plot Area (ha)	Plot Radius (m)	Number of height trees
0.01	5.64	1
0.02	7.98	2
0.03	9.77	3
0.04	11.28	4
0.05	12.62	5
0.06	13.82	6
0.07	14.93	7
0.08	15.96	8
0.09	16.93	8
0.10	17.84	8
0.11	18.71	8
0.12	19.54	8
0.13	20.34	8
0.14	21.11	8
0.15	21.85	8



WORK INSTRUCTION 220

Protocol for Plantation Permanent Sample Plot Measurement



Introduction

The purpose of this protocol is to provide a standard for Plantation Permanent Sample Plot (PSP) assessment.

The assessment should include measurements of:

1. Stocking (live planted trees, this does not include wildings)
2. Stem diameter at 1.3m (breast height) over bark; DBHOB
3. Height of all stems in the plot.

Training required

Everyone carrying out field assessment is required to have attended a training session provided by the Resource Assessment Planning team. Refer to FPC191, FPC Resource Assessment Training Acknowledgment and FPC Training Register

The training comprises a briefing of the procedures as well as field reinforcement to ensure that assessors understand and can carry out the work to the standard required.

Plots are to be measured by teams of at least 2 people.

Safety

These procedures should only be carried out if safe to do so

The Contractor must have appropriate Job Safety Analysis (JSA) and Safety Management Plans as well as appropriate communication equipment and systems in place for the following:

- a) Monitoring of restrictions in the work area to ensure compliance with bushfire regulations and to ensure his/her safety and the safety of the staff under his/her responsibility.
- b) Communication with FPC staff regarding work progress and movements.

Auditing of Resource Assessment Data

Refer to Work Instruction: Protocol for Resource Assessment Quality Control Audit WI130.

Equipment required

Provided by FPC

- a) Map with plot locations.
- b) Allegro (or similar device compatible with Atlas PSP).
- c) Land Markers (where required).
- d) Where applicable, contact details of Share farm land owner.

Provided by contractor

- a) GPS with plot coordinates loaded (Coordinates provided by FPC).
- b) Vertex Hypsometer with centre pole and cradle.
- c) 10m tape for calibrating Vertex Hypsometer
- d) Diameter tape.
- e) Height Stick marker at 1.3m
- f) Spray paint (white chalk paint). Lumber crayon for younger trees.
- g) Permanent outdoor marker to write on the land marker tops.
- h) Flagging tape, useful for setting up and expanding plots.



WORK INSTRUCTION 220

Protocol for Plantation Permanent Sample Plot Measurement



Note: At least once a month the GPS should be checked and recorded on the calibration form **FPC 133** (Appendix A).

The vertex (for distance) should be calibrated at least once a day.

Records of Calibrations and checks should be sent in once a month.

Where assessments are located in Sharefarm plantations.

Using information provided by the FPC, the Contractor must attempt to contact each Share farm land owner / occupier at least two days prior entering the property to advise the of inventory intentions. This is seen also as an opportunity for the Contractor to receive information that may affect access to the property. The Contractor should inform the Authorised Officer prior to entering the property, if the Contractor was unable to contact a Share farm land owner / occupier.

Plot establishment procedure

Procedure to be followed when establishing PSPs in new locations or re-establishing plots in the same location for subsequent rotations

Using predetermined co-ordinates locate the centre of the plot using a GPS with accuracy of not less than $\pm 5\text{m}$.

Never move a plot centre from the located GPS point.

This applies even if the plot falls in an area that is not typical of the stand, e.g. it may include an area comparatively low or no stocking such as a track, extraction row or even an unplanted area within the plantation boundary. Conversely, it may also include an area of comparatively high stocking. Otherwise, a plot should always be established.

The boundary of the plantation is defined as 2m from the centre of the outer most row.

If Plot centre is less than 30m from plantation boundary the plot location can be move 50m into the plantation from the edge, so that the entirety of the plot is in the boundary for the full lifetime of the rotation, that is, being to the extent of the largest plot area (0.2ha ,25.23m radius). If a plot is moved the new plot location should be recorded.

Mark the plot centre with a Landmarker TM Survey Mark (Figure 1). Only the plastic top should be left above ground level. Write the plot number on the centre marker peg permanent outdoor marker pen. Also, draw an arrow pointing to Tree No. 1 (after you have established where this first tree is)



Figure 1: Example of a suitable marker peg

Newly established or re-established PSPs must contain at least 25 live planted trees (not counting wildings). Increase the plot area by increments of 0.01 ha until the required number of trees is achieved.

Refer to Table 1 for Circular plot Areas to Radius Conversion Table.



WORK INSTRUCTION 220

Protocol for Plantation Permanent Sample Plot Measurement



Plot area (ha)	Radius (m)	Plot area (ha)	Radius (m)
0.01	5.64	0.11	18.71
0.02	7.98	0.12	19.54
0.03	9.77	0.13	20.34
0.04	11.28	0.14	21.11
0.05	12.62	0.15	21.85
0.06	13.82	0.16	22.57
0.07	14.93	0.17	23.26
0.08	15.96	0.18	23.94
0.09	16.93	0.19	24.59
0.10	17.84	0.20	25.23

Table 1: Circular Plot Area to Radius Conversion Table

Mark the boundary trees (Figure 2) to determine which trees are in the plot. This can be done by marking breast height on the boundary trees with permanent white paint or plastic flagging tape.

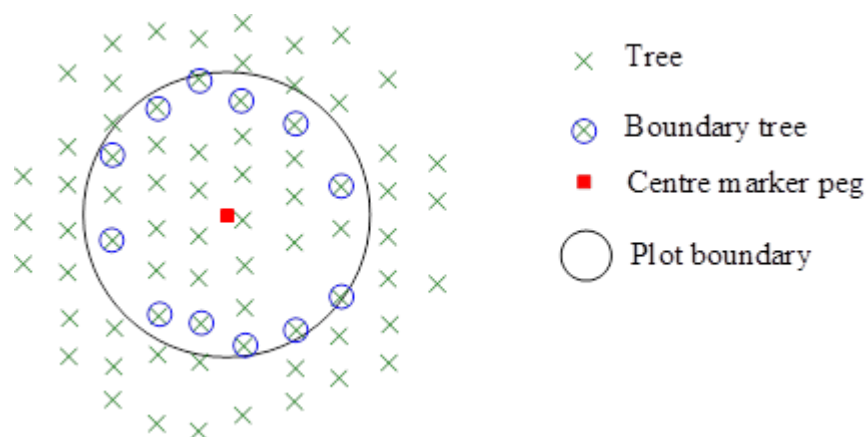


Figure 2: Circular plot marking

Use a vertex hypsometer or other electronic rangefinder to measure the distance of trees from the plot centre. Check close distances with a measuring tape. For example, if the plot radius is 7.98 metres and the rangefinder distance is 7.97 metres then measure the distance of that tree from the plot centre with a tape measure to decide if the tree is in or out of the plot. The measurement is from the plot centre to the horizontal point on the side of the stem representing the distance from the plot centre to the centre of the stem base. Trees are only “in” if at least half the stem base is in the plot area.

On sloping land plot radius is measured horizontally to establish a plot that is circular in plane view. Check that the equipment you are using is set to measure horizontal distance, not slope distance. The angle function on the hypsometer is used to do this.

Marking and numbering trees within a PSP

Each tree in a PSP should be marked at the Point of Measurement (POM) with a horizontal band encircling the stem using white tree-marking paint (or lumbar crayon for younger smaller trees). The POM is breast height (1.3 metres from the ground on the uphill side of the tree) unless the stem has branches/swellings/scars at breast height then 2 POMs should be marked equidistant above and below breast height. If there are 2 POMs, they should both be marked with a horizontal band encircling the stem in the same way as for 1 POM.

Each tree in a plot is numbered as follows.

- Tree number 1 is the southern-most tree that is on the left-hand end of either outer row in the plot (as viewed from the plot centre). See Figure 3

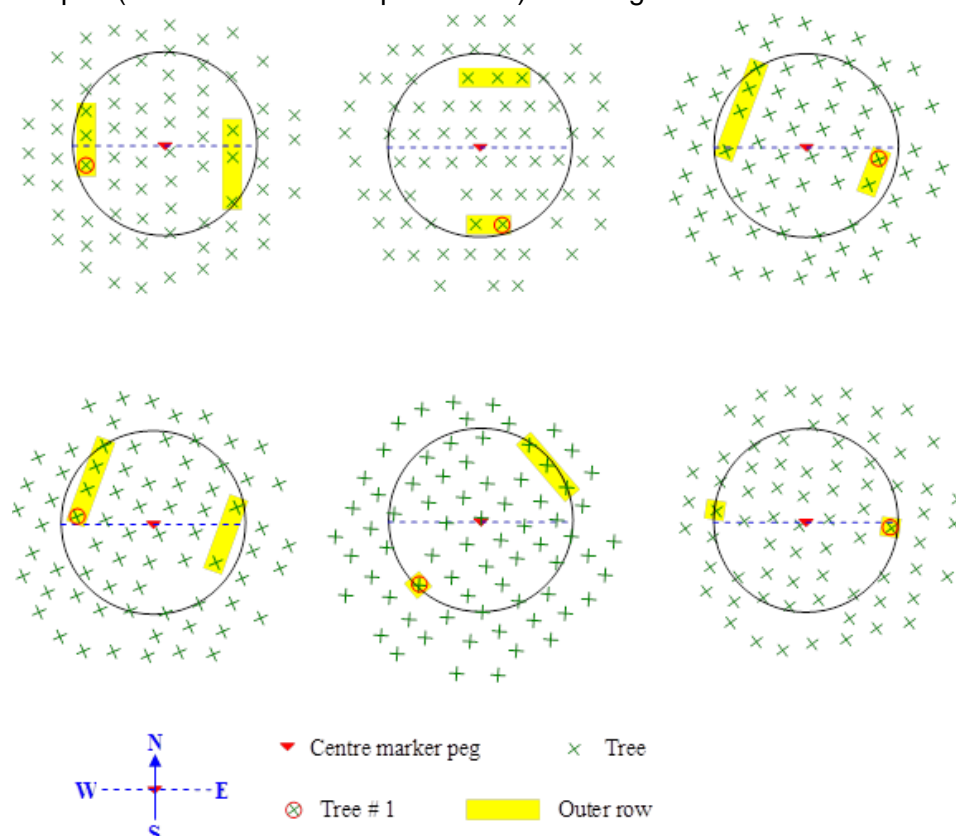


Figure 3. Examples of determining tree number 1.

- Trees are numbered sequentially from Tree Number 1, proceeding up the first row, back and the next, and so on (Refer to appendix B).



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- Trees that fork below 1.3m are to have their stems identified alphabetically.
For example if tree 3 is a fork with 2 stems they will be numbered 3A and 3B.

Paint the numbers on trees with white permanent tree-marking paint or lumber crayon if the trees are small, such that the numbers are:

- facing the direction from which a measurer will approach the tree.
- approximately 0.3 metres above the POM, or above top POM if two POMs:

When plots are remeasured numbers and POMs should be refreshed with paint.

Plot Expansion Procedure

If the trees are younger than 27 years of age and there are less than 15 live trees on re-measurement of a plot, the plot area should be increased to contain at least 25 trees.

Exception to this are if

- where the trees are 27 years of age or older,
- It has been identified that the patch in which a plot is located is imminently due to be Clear Fallen.

Relocate the plot centre (land marker) and increase the plot radius until the required number of trees is achieved. Refer to Table 1 for Circular plot Areas to Radius Conversion Table.
To assist in relocating the plot centre, details of the bearing and distance of the tree closest to the plot centre will be provided.

Numbering the trees and rows in the expanded plot.

It is important that the trees in the original plot retain their row and tree numbers.

Refer to Appendix C for details on numbering the trees in the expanded plot area.

Tree measurements:

Measurements are to be recorded electronically using Ranger/ Allegro (or similar compatible with Atlas PSP software).

The software will display the previous measurement data (unless it is a new plot or to be re-established)

Record:

- Date (this will be automatic if using electronic data capture)
- Plot Radius (if expanding or re-establishing)
- The tree closest to the plot centre and the bearing from the tree to the centre for plots that are being re-established, expanded or where a harvesting operation has removed the original closest tree to the centre. This information will need to be recorded either on paper or a separate spreadsheet.
- Tree and row number for all new trees in the plot.



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- DBHOB in mm (to the nearest mm) of all trees. Where there are 2 POMs the DBHOB is the average of the two.
Trees with forks below 1.3m are to have the DBHOB of each fork recorded separately. The alpha component of a fork tree should be recorded in the Fork field.
Note: If referring to previous plot measurements from paper print outs, previous DBHOB measurements will be reported in cm.
- Height in metres (to the nearest 0.1m) of all live trees. If trees are 27 years of age or older, and after measuring 5 trees it is noticed that the height has not increased by more than 0.5m, no further heights are required to be recorded.
Height should be measured at right angles to the slope and at right angles to the lean.
If the tree is leaning by more than 20 degrees, make the required adjustments to the total height. This can be done using the angle function on the Vertex or using the Pythagorean equation: $a^2 + b^2 = c^2$
- Status of the tree (A: Alive, X: Dead F: Felled W: Wind thrown (tree is on the ground or as good as))
- Anything significantly different about the plot. I.e. Weeds, trees in poor form or pest damage.

For trees with broken or dead tops recorded "N" in the "S" field, meaning that the tree is not suitable as a height representative tree.

Dead Stems:

If a stem was recorded as dead in the last measure, do not remeasure the stem. If the stem was alive at the last measure and is now dead, measure the stem DBHOB only, if possible.

Fieldman Validation warnings:

A warning will appear on the screen if the DBHOB entered is out of tolerance, ie atypically smaller or larger than the last measurement a warning will appear on screen.

Check the value you have entered.

To have the value accepted press ENTER to clear the message and then with the value still showing in the cell press ESC, then arrow out of the field. The warning message will appear again when ascending to the plot menu level (F4) but can be disregarded.

Wildings:

Only measure wildings where they are competing with the plot trees.

Where there is:

- at least half as many wildings as there are planted trees in the plot.
- An average wilding DBHOB of half the average DBHOB of the crop trees.

Record the average DBHOB and number of these wildings in the comments.



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Protocol for Plantation Permanent Sample Plot Measurement



Appendix A. FPC 133 Inventory Equipment calibration form

		INVENTORY EQUIPMENT CALIBRATION	FPC133
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Department: _____	Branch: _____	Section: _____
Name: _____	Signature: _____	Date: _____

Description	Serial number or ID	Variation	Comments	Corrective action
<i>Example: Vertex IV</i>	<i>RAG1</i>	<i>Height 0.2m</i>	<i>Recalibration required</i>	<i>Recalibrated distance at 10 metres, checked height variation 0.0m</i>

Item	Calibration required	Check against standard	Minimum check frequency in use	Maximum acceptable error	Records kept?
DGPS	Yes	Standard survey mark	2 * daily	1.5m horizontal	Yes
GPS	Yes	Standard survey mark	Monthly	5m	Yes
Hypsometer – Distance	Yes	Fibreglass tape	Daily	0.1m over 10m	No
Hypsometer – Height	Yes	Telegraph pole of known height	Monthly	0.1m	Yes
Telescopic Height Poles	Yes	Surveyor's chain	3 Monthly	5mm	Yes
Fibreglass tapes	Yes	Surveyor's chain	3 Monthly	5mm over 20m or 12mm over 50mm	Yes
Metal tapes (DBH)	No	NA	NA	NA	NA
Digital Calipers	Yes	Standard 10mm and 20mm rods	3 Monthly	0.5mm	Yes
Litter Depth Gauge	No	NA	NA	NA	NA
Balances	Yes	Standard weights – 50% balance capacity	Weekly (while in use)	0.3% (1kg = 3gm)	Yes

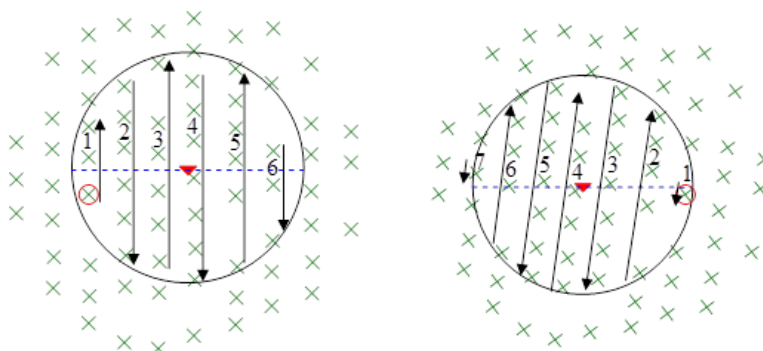
A survey marker for GPS calibration is located opposite FPC Bunbury office: Easting: 375920.199 Northing: 6308976.273
 All equipment is to be checked at the nominated frequencies while in use. Where equipment fails the check and recalibration does not improve to meet the recommended accuracy requirements the equipment should be serviced by an authorised service centre. If it is not possible to rectify the inaccuracy, the equipment should be discarded.

Version control: V01/February 2014
 Authority: Senior Planning Officer
 Custodian: Forest Assessor
 Security classification: Staff in confidence
 Uncontrolled when printed

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Appendix B: Numbering of rows and trees.

Trees are numbered sequentially from tree number 1, proceeding up the first row, back on the second row and so on.



x Tree x Tree # 1 ▼ Centre marker peg

→ 5 → Numbering sequence & row number



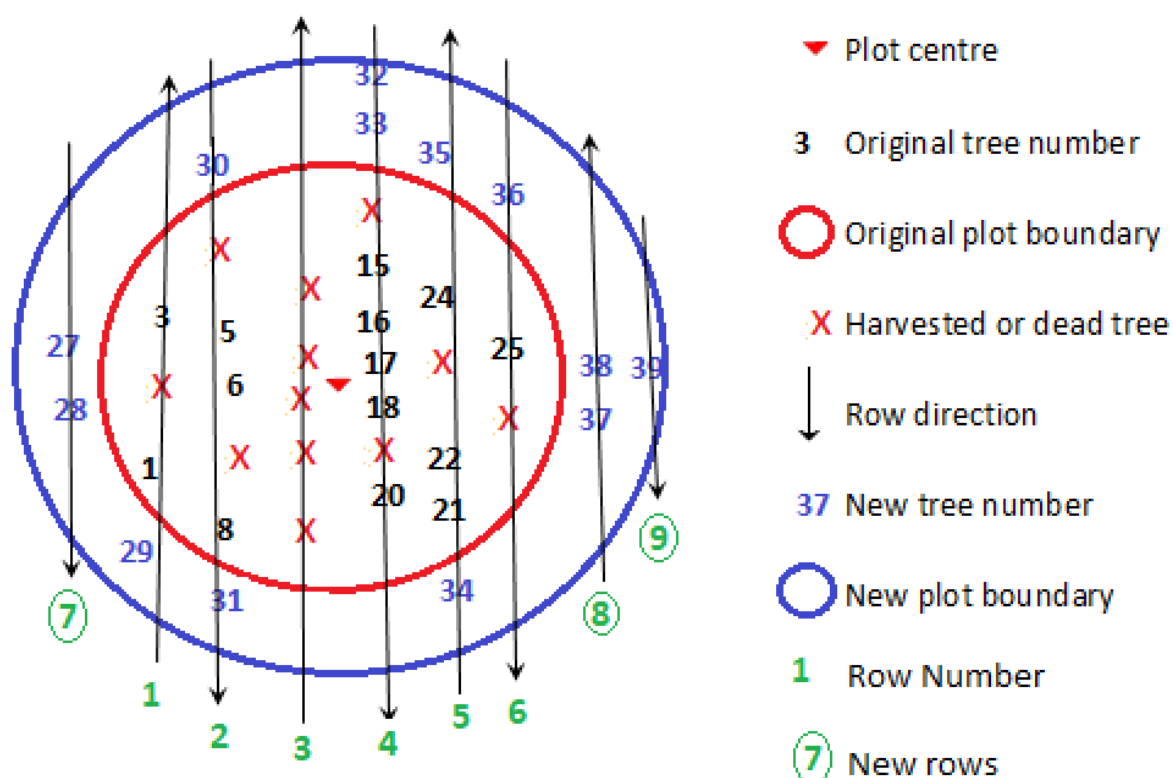
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Appendix C: Numbering the trees and rows in the expanded plot.

- It is important that the trees in the original plot retain their row and tree numbers.
- Number the trees in order of measurement following on from the tree numbers in the original plot. If the highest tree number in the original tree plot was 26 then the first tree in the expanded plot area is tree number 27 (this applies even if tree number 26 has been removed).
- Number the rows following on from the row numbers in the original plot. If there were 6 rows in the original plot, then the first measured row in the expanded plot is row 7 (this applies **whether or not row 6 has been removed**).
- If an extraction row is in the new plot area, this does not count as a row. Only rows with live standing trees should be recorded.



Introduction

The purpose of this Work Instruction is to provide a standard for Assessing the Quality of a Plantation. This Work Instruction is to be used in conjunction with other relevant Inventory work instructions. Please refer to the other relevant work instruction, as indicated by the Resource Assessment Coordinator regarding the basic plot set up and measurements.

Training required.

Everyone carrying out field assessment is required to have attended a training session provided by the Resource Assessment team. Refer to [Form FPC191](#), FPC Resource Assessment Training Acknowledgment and FPC Training Register. The training comprises an office briefing of the procedures as well as field reinforcement to ensure that assessors understand and can safely carry out the work to the standard required.

Safety

These procedures should only be carried out if safe to do so. The Contractor must have appropriate Job Safety Analysis (JSA) and Safety Management Plans as well as appropriate communication equipment and systems in place for the following:

- a) Monitoring of restrictions in the work area to ensure compliance with bushfire regulations and to ensure his/her safety and the safety of the staff under his/her responsibility.
- b) Communication with FPC staff regarding work progress and movements.

Procedure

The following form, custom, and quality fields should be recorded for all trees in the plot that are 100mm DBHOB or larger, to a height such that the diameter is 75mm, unless otherwise stated.

Record using FIRSDC

To follow as well as how to record them in FIRSDC. No specific order is required. Record heights of Forks or Ramicorns, sweep and defects (custom fields) and quality classes from the base of the tree. Descriptions of each of these are:

Forks and large Ramicorns

Record the height a fork or ramicorn starts. That is, below where the main stem starts to divide. More than two forks can be recorded at the same height, but only one point can be recorded per tree. Record Fork height (Fork Ht), diameter percentage (Diam Pct) and Fork Type (Fork or Ram for Ramicorn). Forks are relative to each other so when recording diameter percentage, it should total to 100% Ramicorns are relative to the main stem, so will be recorded as a percentage of the main stem.

Broken/dead tops – record height and record as “U” - unusual height. Record the height to the green and add a tree comment to state that it is either dead or has a broken top.

Quality data can be recorded for each part of the tree including forks, Quality data is not required for Large Ramicorns.

Sweep

This category refers to simple sweeps and wobbles only. If there are short tight sweeps such as dunny seats, hockey sticks, leader replacements, etc., do not include in the assessment of sweep, this should be recorded as a “waste” section.

Classify the maximum amount of sweep the tree has into one of the four categories:

- **L** – Low deviation: up to 20% of the diameter in 3.0m length.
- **H** – High deviation: over 20% of the diameter in 3.0m of length.
- **E** – Extreme deviation is over 200mm in 3.0m length (“waste” section).
- **X** - Not assessed: DBH under 100mm.

Defects

For Stems over 100mm DBHOB record quality data in FIRSDC in addition to what is described in the other relevant work instructions. Note: Stems below 100mm still need to be measured as per other relevant work instruction.

Record defects along the stem to a height where diameter is 75mm.

Record Height of the following defects.

D - Dead Branches 20mm or greater, record heights.

M - Branches or Massive knot whorl. These are recorded when the culmination of all branches in a whorl are greater than, or equal to 85% of the stem diameter at that height. Record heights.

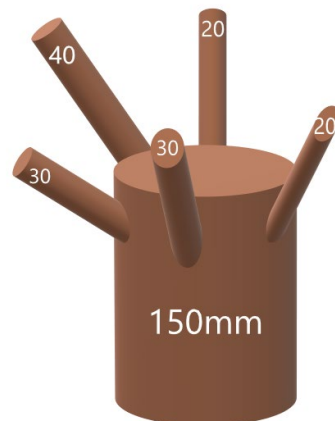


Figure 1: Example of Massive branch whorl to be recorded.

W - “Waste”: Other quality defects such as burls, malformations, massive diameter reductions, “dunny seats” etc.

G - To be used when there is a section of “good wood”, that is, none of the above defects noted.

X - Not assessed: DBH under 100mm

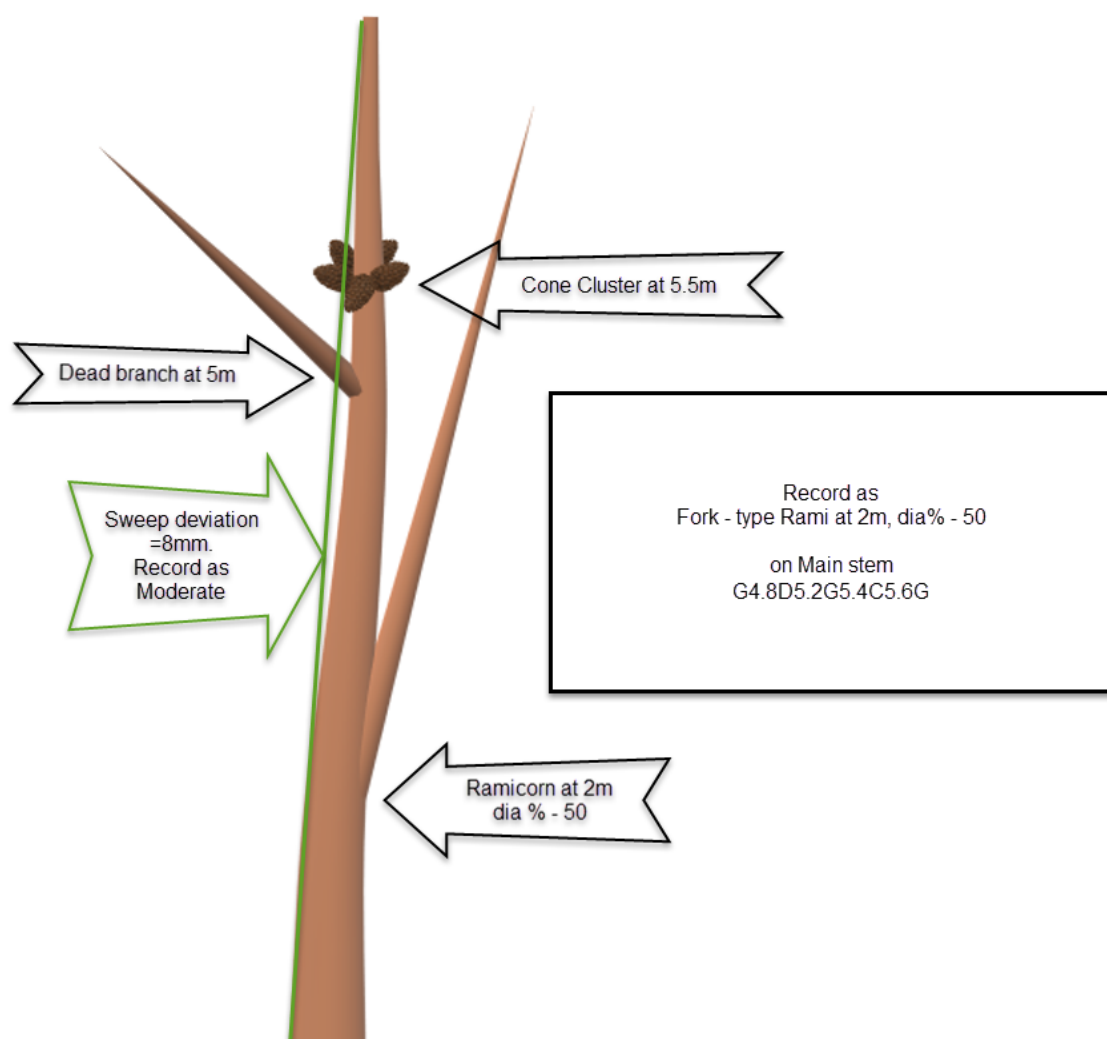


Figure 2: Example of how to record quality, form, and sweep

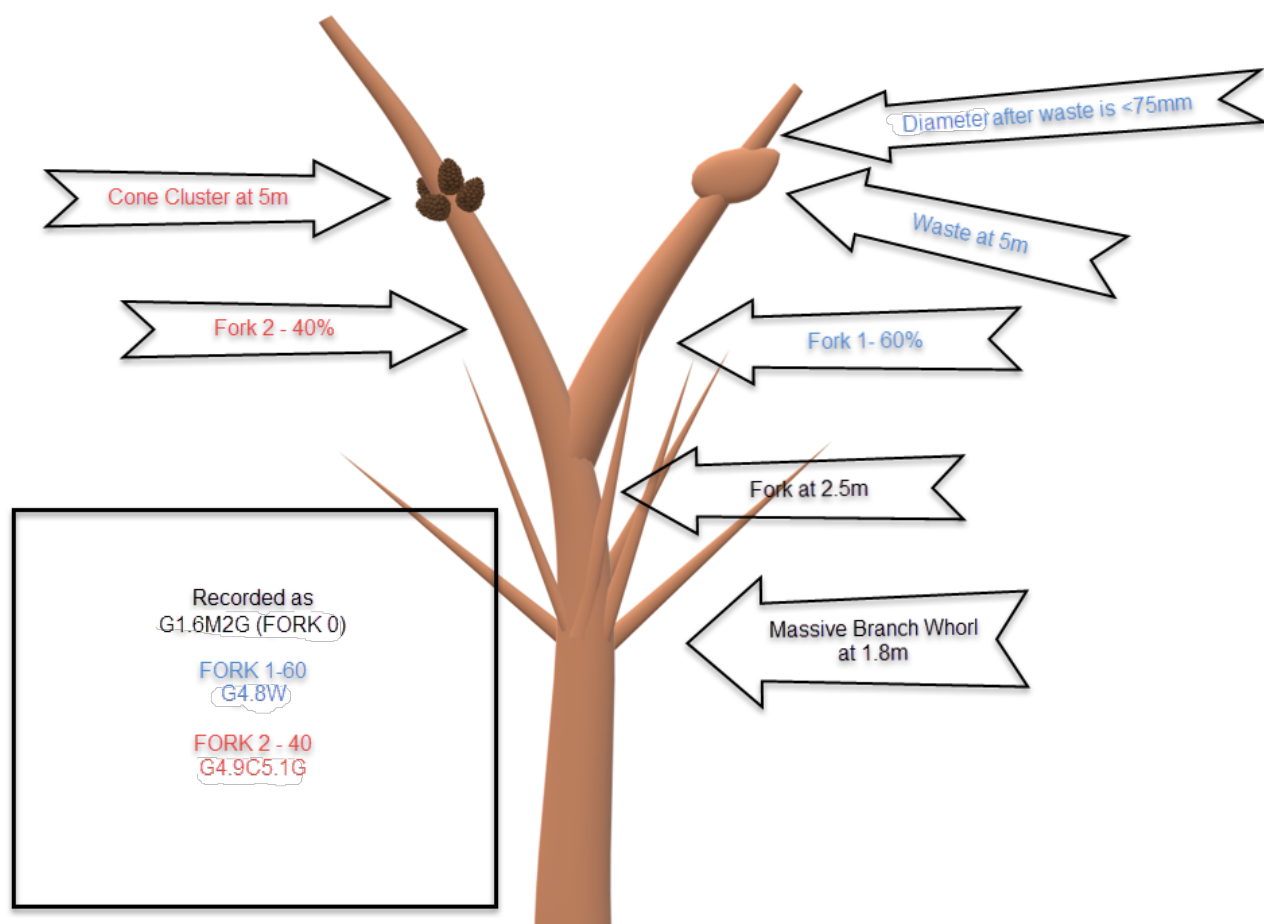


Figure 3: Example of how to record quality and form