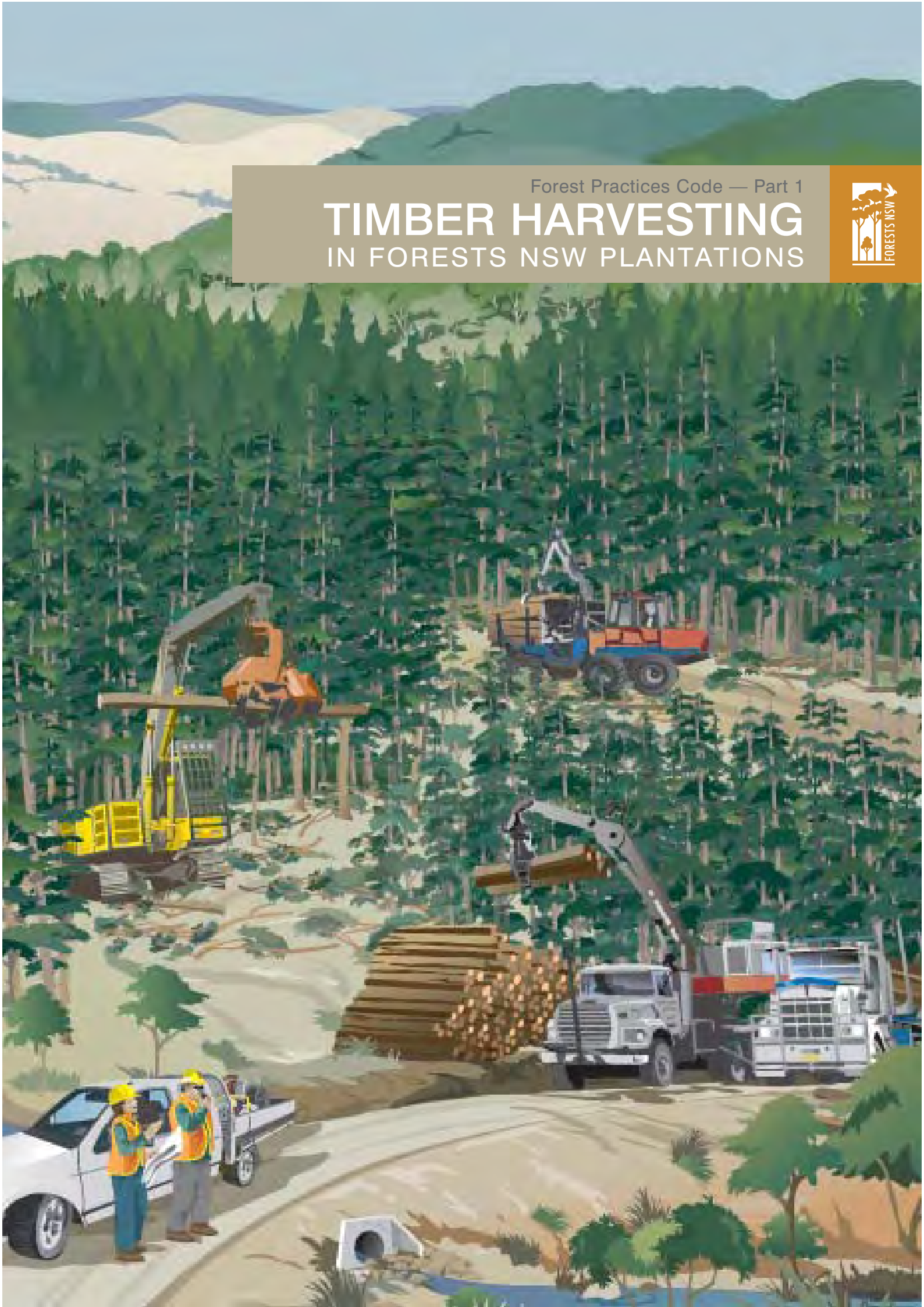


Forest Practices Code — Part 1

TIMBER HARVESTING IN FORESTS NSW PLANTATIONS



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The information contained in this publication is based on knowledge and understanding at the time of writing (November 2005). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

Introduction



Forests NSW manages 260,000 hectares of exotic and native plantations across the State. This code of practice will help ensure that harvesting and haulage operations achieve the highest possible levels of safety while protecting the forest and maximising the value of the crop.

This code replaces the 1995 version and is the result of extensive public consultation between Forests NSW, State Government departments, contractors and other forest industry practitioners. This is the first part of the Forests NSW Forest Practices Code — the other three parts address harvesting in native forests, establishment and maintenance of plantations, and roads and trails.

Who is the code for?

- Operator, contractor and timber licensees and mill operators
- Forests NSW staff who manage and supervise harvest, haulage and purchasing operations
- Anyone interested in plantation management

How should the code be used?

The rules in this code apply to all timber plantation harvesting and haulage operations managed by Forests NSW. The code is backed by legislation that gives Forests NSW the power to prosecute breaches, primarily through the Forestry Act. Forests NSW encourages the adoption of these standards on privately owned forests and land.

Will the code change?

Yes, because legislation covering forest management is evolving. The code will also respond to new needs and advances in forest research. As a result, the code may be amended to reflect changes to legislation, Forests NSW administrative procedures or external licensing requirements. Contractors will be notified of any changes.

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Safety and Resources



1 INFORMATION AND AUDITS

1.1 Safety and operational information

Forests NSW provides extensive resources to ensure safe, efficient timber harvesting and haulage operations. Regular workplace contact between contractors and Forests NSW is maintained through the Forests NSW Supervising Forestry Officer (SFO), who oversees harvesting operations. Forests NSW also provides safety and operational information on a website that includes:

- Forests Practices Code, Part 1, Timber Harvesting in Forests NSW Plantations
- Contractor Safety Pack
- Forests NSW Safety Standards Manual
- Forests NSW Safety Management System
- Operational and safety guideline



1.2 Work plans

Harvest plan

Forests NSW prepares a harvest plan which is the central document containing all other plans for the harvest area (for contents, see Harvesting).

Site safety plan

The site safety plan is prepared by the contractor and attached to the harvest plan (for contents, see Safety).

Traffic management

Arrangements for managing traffic are prepared by Forests NSW and attached to the site safety plan (for contents, see Safety). A traffic control plan—which complies with RTA requirements—may be included.

1.3 Audits

Every two weeks, Forests NSW audits harvesting contractors (harvesting inspection reports) and reports on compliance with safety and other requirements contained in contracts or licences, Forest Practices Codes and legislation. The frequency can be changed by the Regional Manager.

FNSW operational managers and safety management service providers conduct health and safety audits at least every three months at harvesting and haulage worksites. Results are reported to the operational manager, who reviews the proposed remedial action and ensures the action is implemented. A copy of the audit is given to the contractor.

2 SAFETY

2.1 Safety obligations

Forests NSW, principal licensees, contractors and their employees all share the responsibility for maintaining a rigorous health and safety culture. Contractors are responsible for personnel, visitor, site and operational safety within their areas of operation. Contractors must develop, implement and maintain their own documented safety management system (SMS). Forests NSW will supervise the work of contractors and their operators to ensure that they comply with their own SMS and Forests NSW safety requirements.

A safety management system must include:

- Company health and safety policy
- Roles and responsibilities of contractor employees
- Supervision, training, skills and competencies
- H&S committee and/or toolbox talks
- Risk management processes and safe systems of work
- Site safety plans
- Employee induction procedures
- Incident recording, investigation and reporting
- Measuring, monitoring and auditing systems
- Injured worker management
- Personal protective equipment
- Management of visitors, non-permanent employees and sub-contractors
- Management and maintenance of vehicles, plant and equipment
- Management of hazardous substances

Employees of contractors must comply with safety directions given by their supervisor. In potentially dangerous situations, operators must act immediately to avoid harm. If danger cannot be avoided, work stops and the supervisor is notified.

2.2 Site safety plan

For each harvest plan area, harvesting and haulage contractors prepare site safety plans based on information provided by Forests NSW as part of the harvest plan for the site. The contractor develops, in consultation with employees and Forests NSW (SFO), a site safety plan that includes:

- The name of the site supervisor
- First-aid arrangements
- Hazards and control strategies
- A medical evacuation emergency plan
- Communication systems
- Traffic control measures
- Arrangements for working alone

Other safe systems of work or conditions may be

agreed at on-site safety meetings (toolbox talks), or at formal safety meetings, and are attached to the site safety plan. A copy of the site safety plan is kept at each worksite.

Traffic management

The traffic management section of the site safety plan can include:

- School bus routes and times
- Local traffic use
- Grazing
- Potential damage to roads
- Congestion from harvesting traffic
- Considerations for neighbours e.g. noise, dust
- Safety considerations e.g. one-way roads, corners
- Safety e.g. falling trees next to the road
- Operational considerations e.g. working at night, weather
- B-double gazetals and associated road closures
- Concurrent use of roads by other activities (including forestry operations)
- Concurrent forestry operations

2.3 Personal protective equipment

Contractors must ensure that their employees wear PPE that meets Australian Standards:

- Hard hat (AS 1801-1997, AS 1800-1998)
- Heavy-duty footwear with firm ankle support
- Hearing protection where noise levels generally exceed 85dB(A) e.g. chainsaws, skidders, tractors, mobile chippers and post-peelers, some forwarders and processors (AS 1270-1999, AS/NZS 1269.0)
- High-visibility outer clothing (AS/NZS 4602-1999)
- Chainsaw operators must wear approved cut-resistant leg protection, trousers or chaps (AS/NZS 4453.3-1997)

Contractors must also ensure that employees are taught to use each PPE item. PPE must be maintained, and replaced when worn.

2.4 Reporting accidents and injuries

Significant work injuries must be reported immediately to the site supervisor and the SFO. A written investigation report is submitted by the contractor within 10 days to the Regional Manager and the SFO. WorkCover must be advised if the injured person cannot carry out usual duties for seven or more consecutive days. WorkCover must be notified immediately of any serious incident or injury.

Refer to Forests NSW Contractor Safety Pack for reporting, recording and management requirements for workplace injuries.

The Regional Manager must be notified immediately if a fatal accident or serious incident occurs in a State forest. The Forests NSW Health and Safety Manager investigates fatalities in harvesting operations. The accident site must be left undisturbed until cleared by WorkCover and Forests NSW. Licensees must independently report a fatality or serious incident involving an employee to WorkCover without delay.

FOR FURTHER INFORMATION:

- FNSW Safety Standard 2.2.1 Mandatory PPE
- FNSW Safety Standard 2.2.4 PPE: hearing protection
- FNSW Safety Standard 2.3.8 Harvesting site validation
- FNSW Contractor Safety Pack
- FNSW Safety Management System
- www.workcover.nsw.gov.au



Toolbox safety talk

Harvesting



3 HARVEST PLANS

3.1 Guidelines for use

Forests NSW provides harvest plans which contain site-specific instructions for each operation. Where possible, licensees are consulted when harvest plans are prepared. Queries should be raised with the SFO. Licensees must not alter harvest plans — amendments are approved by the Regional Manager (or delegate). Forests NSW supplies copies of the harvest plan; licensees must replace lost or damaged plans.

Harvesting cannot start without a harvest plan that has been approved by the Regional Manager. Before work begins, the SFO conducts an on-site induction of the harvest plan for licensees and operators. Licensee representatives must sign the plan to show they understand the contents, and keep a copy on-site during operations. Failure to comply with the harvest plan is a breach of this code and must be reported to the SFO.

3.2 Contents

Harvest plans usually contain:

- Site safety plan (developed by contractor)
- Operational map
 - Harvest area boundaries
 - Topographical features: contours, drainage features, landmarks
 - Seasonal harvesting capability: dry, intermediate, wet
 - Drainage feature protection areas, including known extraction/snig track crossings
 - Roads
 - Suitable and unsuitable sites for log landings, stockpiles, loading bays or log dumps

- Special prescription areas, exclusion zones or modified harvesting areas
- Secondary stockpile areas and designated long forwarder routes (where applicable)
- Site-specific instructions
 - Whether an area is licensed under an Environmental Protection Licence
 - Silvicultural prescriptions and yield estimates
 - Tree marking and tracking specifications
 - Soil erosion and water pollution protection measures
 - Cultural heritage, flora and fauna and landscape values
 - Product specifications and accounting
- Acknowledgment and approval
 - Contractor, employer and SFO acknowledgment
 - Regional Manager approval
- Amendments

4 OPERATIONS

4.1 Moving operations

When moving harvesting operations, the licensee must have approval from the SFO before:

- Starting operations in a new harvest plan area
- Moving operations from one area of seasonal harvesting capability to another area within a harvest plan
- Moving operations from one harvest plan area to another

The SFO will approve the request when current work is complete. A request can only be approved if it complies with operational plans.



4.2 Damage to trees

Operators must avoid damaging retained trees. The SFO must be informed if a tree has been damaged enough to warrant removal.

4.3 Access to the harvest area

Gates must be closed immediately if opened for access to or within the harvest area. The harvest area must remain accessible to people with legal right of way, subject to safety considerations.

5 TREE SELECTION, MARKING AND TRACKING



5.1 Tree selection and marking

The harvest plan specifies whether trees are selected for removal by the operator or by Forests NSW. When Forests NSW marks stands of trees for retention or removal, the harvest plan shows the colours and symbols. For hardwood plantations, refer to the Forests NSW Native Forests Tree Marking Code. All nominated trees must be removed unless they fail to meet minimum specifications.

For manual operations, marking is visible from all sides of the tree; for mechanical operations, trees are marked facing extraction tracks. Only an SFO can alter or cancel a mark on a tree.

5.2 Tracking

5.2.1 Tracking patterns

Tracking patterns must:

- Maximise the use of gravel roads and gravel loading bays
- Allow access to all trees in a stand
- Minimise side slope, soil disturbance and crossing of drainage features
- Minimise damage to retained trees

A general tracking pattern follows the planted row ('row tracking'). Cross, feeder (a track that follows the ridge) and herringbone pattern tracks are used when there is excessive side slope or when wood needs to be moved to a gravel road.

Operators should use running tracks when moving logging machinery between areas without encroaching on gravel roads, and when moving between tracks and loading bays. Running tracks should be parallel to roads.

When FNSW selects trees for tracking, the harvest plan shows the symbol that indicates the point where a track ends because of a drainage feature. Tracking marks must be visible from either direction on the track.

5.2.2 Track width

Tracks should:

- Be straight with parallel edges to reduce the number of turns a machine makes and therefore minimise damage to the retained stand
- Widen at junctions to minimise damage to trees when machines are turned around

- Be approximately five metres wide (4.5 metres minimum). Width can vary where tracks follow planting rows

Track width is measured from tree-edge to tree-edge. Cross tracks and running tracks are at least 5.5 metres wide.

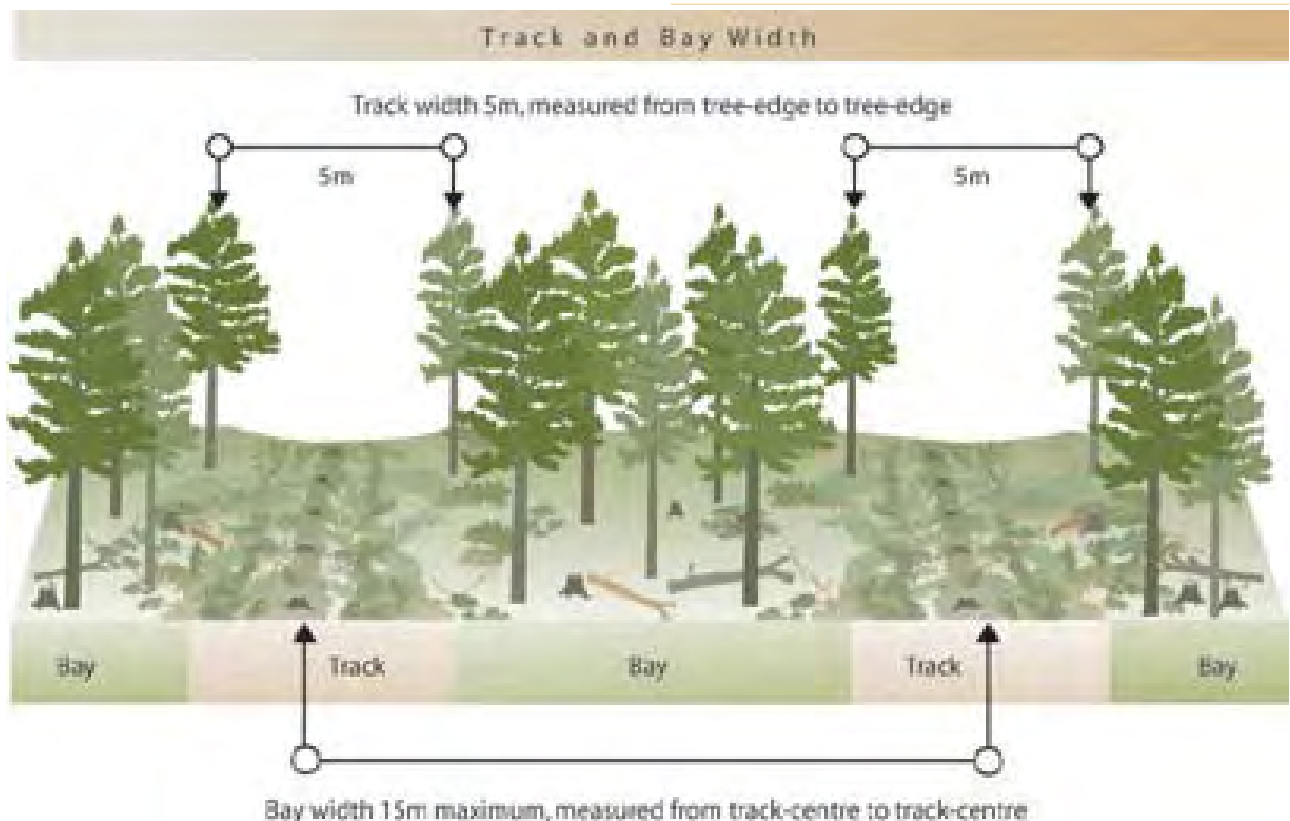
5.2.3 Track spacing

Bay width is measured from track centre to track centre. Tracks must be wide enough to allow access to all trees in a bay. Maximum bay width is 15 metres. Track spacing may vary when tracks converge near intersections, to suit bay widths between windrows and to avoid obstacles — for example, a rocky outcrop.

5.2.4 Track grade

The limiting slope for harvesting is determined by the harvesting system, ground conditions and documented safe systems of work. Tracks must be safe for use by all harvesting machinery. Maximum slope guidelines for ground-based harvesting machinery:

Uphill extraction	18°
Downhill extraction	22°



5.2.5 Track side slope

Side slope should be minimised to ensure operator safety and limit damage to retained trees when timber is moved to the roadside. Side slope is measured at right angles to the track direction. Side slope guide:

Wet weather harvesting	3°
Dry weather harvesting	5°
Where a track exceeds 10°	2°

5.3 Operator selection

When the contractor is responsible for tree selection and tracking, selection must comply with Forests NSW criteria. The harvest plan contains site-specific instructions for operator selection — for example, target retained basal area.

Forests NSW may assess the quality of tree selection by establishing assessment plots.

If an operator consistently fails to meet minimum tree selection or tracking requirements, the operator may be required to attend an accredited course. Forests NSW may also ask for a map of the general tracking pattern, showing drainage feature crossings and indicating general extraction track direction.

6 TREE FELLING



6.1 Active areas

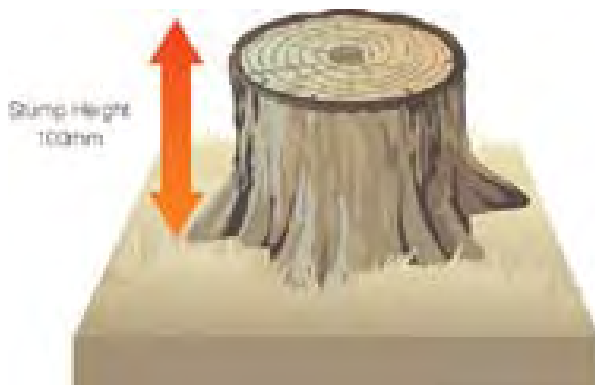
The tree feller controls the active tree-felling zone and is the only person who can authorise entry. A licensed tree feller can refuse to fell a tree if the work is beyond their level of competence. Forests NSW employees working in active harvesting areas must comply with the contractor's site safety plan.



6.2 Felling

Licensees must ensure that trees are felled to:

- Minimise damage to the felled tree and to retained trees
- Avoid hang-ups
- Assist processing and extraction
- Minimise disturbance caused by extraction
- Minimise the impact on drainage features



A tree felled in error must be reported to the SFO, who may nominate a substitute tree to be retained. Stump height must be minimised, depending on the machinery being used. Maximum stump height is 100 millimetres or any other standard set by Forests NSW.

6.3 Damage to infrastructure

Structures and improvements such as roads, fences or tracks (including table drains or drainage structures) must not be damaged when felling unless permitted by the SFO or the harvest plan. If a tree is felled, the tree must be removed and damage repaired immediately.



6.4 Hang-ups

Work stops in an active tree-felling zone until hang-ups are made safe. If there is a delay, the tree is flagged so it is clearly visible.



6.5 Pre-bunching

When pre-bunching trees or logs, operators must:

- Avoid damaging retained trees
- Place stacks so they do not bind against retained trees during extraction
- Limit the size of stacks to avoid damaging the residual stand during extraction
- Keep ropes clear of retained trees during winching operations

7 CABLE HARVESTING

7.1 Timber extraction (graphic overleaf)

Use the following techniques to minimise the environmental effects of log scouring:

- Increase log clearance (lift) and tail spar height
- Use intermediate supports
- Decrease the payload
- Minimise the use of highlead and other lift systems

Operators must minimise downhill yarding in very steep conditions to avoid concentrated water flow. Additional sediment controls may be advised by the SFO or prescribed in the harvest plan.

Refer to the drainage requirements in section 9.3. Where the grade of a log scour exceeds 35°, maximum spacing between drainage structures is 10 metres. Drainage feature protection areas are only harvested when soil is dry and there is enough

Cable harvesting



lift to minimise ground disturbance.

8 PROCESSING

8.1 Integrated operations

Licensees must ensure that products are processed in accordance with harvest and delivery plan specifications and in a way that maximises the value of each log.

8.2 In-forest chipping and post-peeling

Disposing of by-products

If by-products — such as limbs, in-field chipper bark, whitewood or peelings — can be sold, the material is removed from the forest within four weeks of production. The maximum accumulation at each landing is 200m³. The harvest plan shows where by-products are to be stockpiled.

If by-products cannot be sold, they are:

1. Distributed along extraction tracks, no deeper than 300mm; the maximum depth of branch slash and by-products is 600mm.
2. Distributed evenly throughout the forest, along and between extraction tracks. The maximum combined depth of branch slash and by-products is 100mm. Do not damage retained stems.

Do not spread by-products and slash within 10 metres of a drainage feature protection area.

9 EXTRACTION

9.1 Log movement

Logs must be moved from the forest to the roadside in time to maintain log quality and optimise seasonal conditions. Always use walkover extraction techniques in preference to snig track construction. Where skidding is necessary,





Branch slash on forest floor

the leading edge of the log is elevated before skidding starts.

9.2 Track construction

Tracks are located on elevated ground, such as

ridges, and topsoil disturbance must be minimised. Earthworks are only created on snig or extraction tracks if specified in the harvest plan or approved by the SFO.

9.3 Track drainage

Soil erosion from tracks is minimised by:

- Retaining groundcover and using slash and leaf litter. Place slash evenly across the track to divert water
- Using natural cross-fall drainage

Drainage structures must be constructed if concentrated water flow occurs for distances exceeding those in the table.

Constructed drainage

Drainage structures are built of materials that will remain stable until groundcover can grow and prevent erosion. Do not use flammable materials if a post-harvest or pre-establishment burn is planned (unless specified in the harvest plan). Run-off must be diverted to stable areas or into a structure that can filter run-off water and trap sediment. Do not divert water directly into rivers, drainage lines or onto roads or loading bays.

Table 9.3 Drainage spacing

Slope (degrees)	Spacing (m)	Slope (degrees)	Spacing (m)	Slope (degrees)	Spacing (m)
1°	250m	11°	55m	21°	28m
2°	200m	12°	50m	22°	26m
3°	150m	13°	45m	23°	24m
4°	125m	14°	40m	24°	22m
5°	100m	15°	40m	25°	20m
6°	90m	16°	38m	26°	19m
7°	80m	17°	36m	26°	18m
8°	70m	18°	34m	28°	17m
9°	65m	19°	32m	29°	16m
10°	60m	*20°	30m	30°	15m

*Note: If operating under an Environmental Protection Licence, the drainage structure spacing for a 20° slope is 25 metres.

9.4 Timing

Tracks must be drained progressively to prevent concentrated water flow beyond the distances specified in table 9.3. Drainage must be completed within two days unless soil conditions prevent construction. If a track is temporarily discontinued for more than five days, drainage must be constructed unless the soil is saturated.

10 MEASURING, RECORDING AND REMOVING TIMBER

10.1 Measuring and recording timber

Timber and timber products are measured and recorded according to the code of procedure for that operation. The code specifies measurements and other identification to be used.

10.2 Delivery dockets

Truck drivers and other designated operators must complete delivery dockets (or equivalent) before

removing the load from the area. Electronic delivery dockets are equivalent to paper delivery dockets for accounting and audit purposes. When a contractor or operator is engaged directly by a timber licensee, the licensee must ensure that the code of procedure is followed.

When delivery dockets (or equivalent) are used, they must be available for inspection by SFOs and other authorised officials (RTA inspectors, police).

FOR FURTHER INFORMATION:

- FNSW Safety Standard 1.3.1 Manual tree felling
- FNSW Safety Standard 1.3.2 Tree-felling zones
- FNSW Safety Standard 1.3.3 Working in active harvesting areas
- FNSW guidance note Cable Harvesting in Plantations



Environmental Protection



11 HARVESTING NEAR DRAINAGE FEATURES

11.1 Specifications for drainage feature protection areas (DFPAs)

DFPAs are required adjacent to wetlands, rivers, drainage lines and drainage depressions. The type of drainage feature determines the width of the DFPA. The width may vary if the Environmental Protection Licence has been activated. Operators are responsible for identifying drainage features in the field and applying the appropriate-width DFPA.

DFPAs contain two zones — a buffer zone and a five-metre zone.

11.1.1 The buffer zone

The buffer zone is an area of modified harvesting on either side of a drainage feature. Trees may be harvested if the operator is satisfied that the top 200mm of soil is dry enough to avoid erosion to the drainage feature. Machinery operating in the buffer zone must:

- Not create water channels
- Minimise soil exposure by using slash, litter and other groundcover; and by using walkover extraction techniques where possible

- Prevent skewing of machinery tracks
- Elevate the leading edge of the log when skidding

11.1.2 The five-metre zone

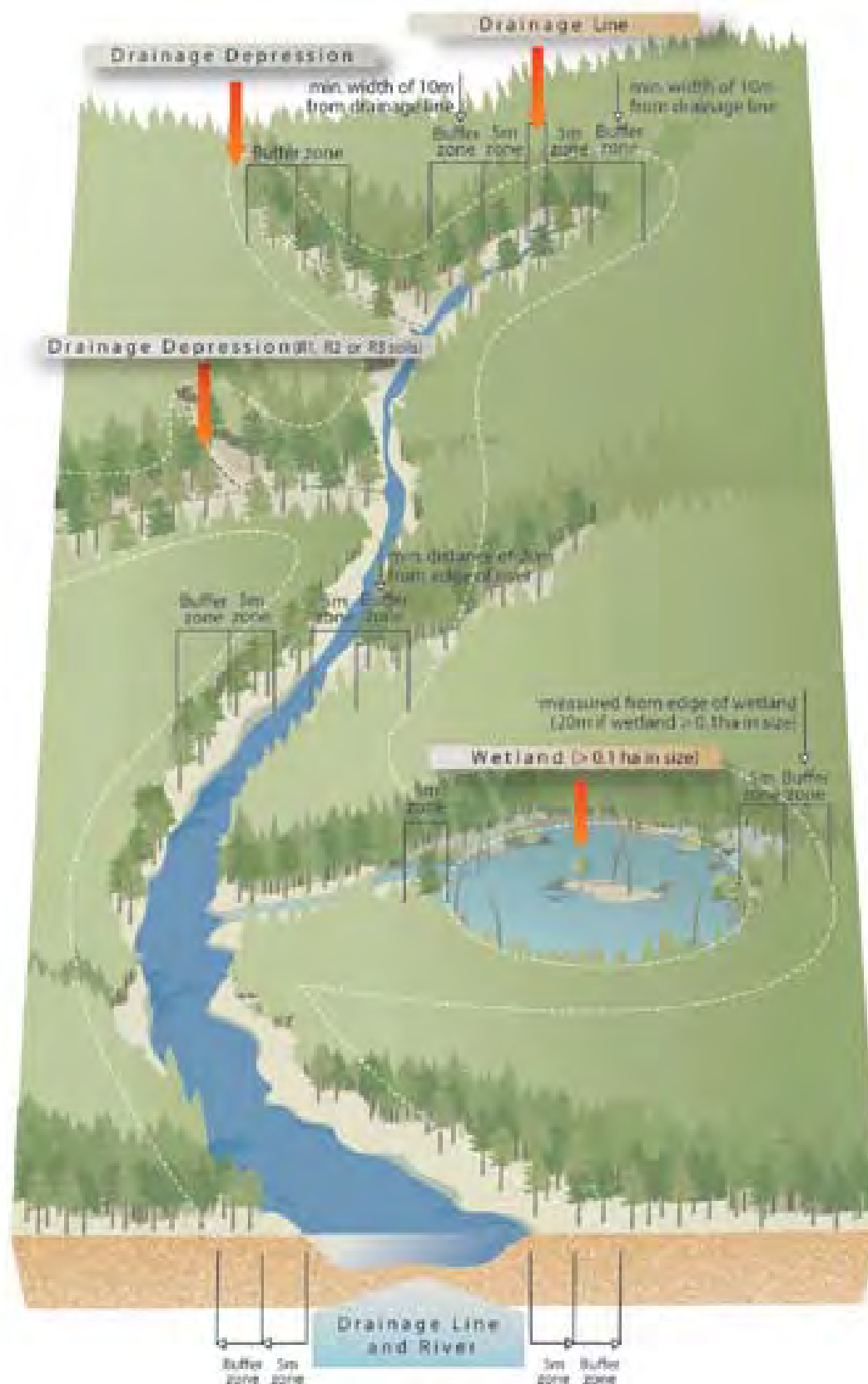
An area of extra protection located next to wetlands, rivers, drainage lines and drainage depressions located in R4 soils. No processing or extraction machinery is allowed in this zone, except where crossing or if entering the zone will cause less environmental damage than using another route that would avoid the five-metre zone. This must be documented in the harvest plan and the following procedures followed:

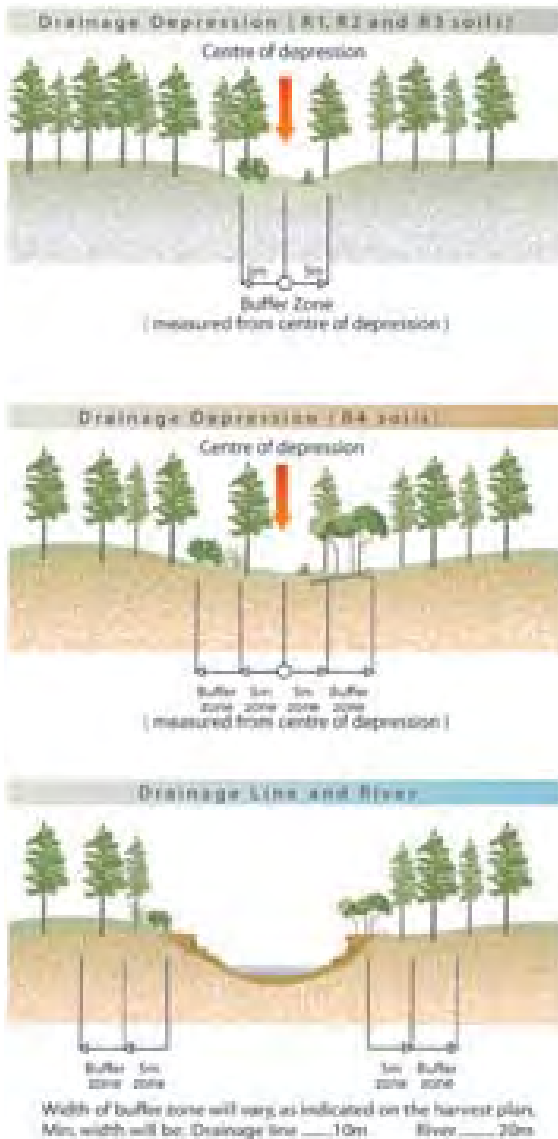
- Only felling machinery is allowed
- Machinery must not operate if soil is saturated
- Where necessary, trees can be felled into rivers and drainage lines. Crowns, logs and substantial debris (greater than 100mm in diameter and/or three metres long) must be removed with minimal disturbance to the bed and banks, unless removal would result in more damage. Tree matter can only be left with approval from the SFO.

Table 11.1 Drainage feature protection areas (measured along the ground)

	Soil regolith	Drainage feature protection area	
		5m zone	buffer zone
Depression	1, 2, 3	None	5
Depression	4	Yes	10
Drainage line	All	Yes	10
River	All	Yes	20
Wetland	All	Yes	20

Drainage feature protection areas





11.2 Operating inside a DFPA

11.2.1 Rivers and wetlands

Harvesting is prohibited in a wetland or river DFPA. However, one-off harvesting may be approved if the area forms part of an existing plantation (refer to harvest plan). If one-off harvesting is approved, the conditions relating to the five-metre and buffer zones apply. Where the Environmental Protection Licence has been activated and a hardwood plantation is being harvested, section 11.3 is implemented instead of section 11.1.2.

11.2.2 Drainage lines and drainage depressions in R4 soils

Harvesting can occur in the buffer zone of a drainage line and depression located in R4 soil if it meets the provisions of section 11.1.1. Harvesting, processing and extraction machinery is prohibited in the five-metre zone, except for approved crossings

or if entering the five-metre zone would cause less environmental damage than using another route (refer to the harvest plan). Where the Environmental Protection Licence is activated and a hardwood plantation is being harvested, section 11.3 is implemented instead of section 11.1.2.

11.2.3 Drainage depressions in R1, R2, and R3 soils

Harvesting can occur in the buffer strip of drainage depressions in these soil regolith types. In addition to the general conditions that relate to buffer zones, there is no snagging along drainage depressions and no earthworks allowed, except for the construction of an approved crossing (refer to section 11.4).

11.3 Environmental Protection Licence (EPL)

The following conditions are requirements of the EPL that Forests NSW holds with the Department of Environment and Conservation. The harvest plan indicates whether the EPL is activated.

Width of a DFPA

The width of a DFPA may be greater than the distances in Table 11.1 and will depend on stream ordering. Specifications are in the harvest plan.

Operations in hardwood plantations

Where Forests NSW has activated the EPL and approval has been given to enter the DFPA of a river or drainage line in a hardwood plantation:

- Machinery must not enter a DFPA except when constructing or using an extraction or snig track crossing
- Plantations inside a DFPA may be thinned if trees can be directed out of the DFPA
- When a tree is felled out of a DFPA, any furrow resulting from tree removal is diverted at the edge of the DFPA to an undisturbed area or a stable surface capable of handling concentrated water flow
- Trees must not be felled into a DFPA. If a tree is felled, it must be left in the DFPA

- Clearfelling within a DFPA is prohibited. Thinning may occur to a minimum canopy cover of 50 per cent, spread evenly through the area. Trees to be thinned are marked by the SFO

11.4 Drainage feature crossings

Forests NSW must approve the location and type of drainage line and river crossing and mark the sites in the field before construction begins.

Harvesting and extraction machinery can only be driven through a dry drainage depression or over an approved crossing. Extraction and snig tracks must not cross wetlands or be within the DFPA of a wetland.

The SFO approves the exact location of temporary crossings before work begins. Temporary crossings are free-draining and are removed within five days after harvesting, with minimum disturbance to the bed and banks of the drainage line, unless removal would cause more disturbance. Crossing approaches are also drained within this time. Crossings can only be left in place if approved by the SFO.

11.5 Reporting pollution

Licensees or Forests NSW employees who detect water pollution which could cause environmental harm must report the incident immediately to the SFO or Regional Manager.

12 ENVIRONMENTAL PROTECTION — GENERAL

12.1 Storing and handling fuels and other hazardous materials

The contractor must ensure that safe practices are used when fuel and hazardous material is received, stored and handled. The contractor is also responsible for inspections, maintenance, spill management and record keeping.

Fuel and hazardous material must be stored and handled in compliance with legislation, chemical labels and material safety data sheets. Plant, equipment, substances and materials at harvesting

sites must be handled and stored in a way that prevents water pollution.

Spills must be cleaned immediately and the cleaning materials disposed of safely. The SFO must be advised of spills. Waste material must be kept clear of areas where fuel is stored or decanted.

Controls must be put in place to stop potential spills from reaching a protected works, DFPA or property boundary. Controls could include using natural ground slope, diversion channels, kerbs or bunds. Storage areas must be kept separate from protected works, DFPAs or property boundaries by at least 15 metres or as prescribed by the SFO or the harvest plan.

12.2 Servicing and repairs

Licensees must ensure that equipment servicing and repairs do not cause water pollution. Oil, fuel or fluids must not be discharged from machinery in a forest. Under no circumstances should these substances enter a DFPA.

12.3 Waste disposal

Waste includes tyres, drums, wire rope, oil, fluids, and litter. Licensees must ensure that worksites are cleared of waste at the end of each working day and that oil and fluids are removed using environmentally responsible methods. Any remaining waste must be removed from the forest and disposed of seven days after operations have finished.

12.4 Noxious weed control

Licensees and operators must take precautions to stop the introduction or spread of noxious weeds. The SFO may ask that machinery, equipment and vehicles be cleaned before leaving an area of potential contamination. Cleaning must not be done near rivers and drainage lines.

12.5 Forest diseases, pests and hygiene

Licensees and operators must clean harvesting equipment and log trucks of soil and by-products before inter-plantation zone and inter-state

transfers. Exemptions are made by the Regional Manager. These hygiene measures also apply when equipment and trucks are moved from a declared risk area to another operation. Other disease and pest control measures must also be implemented — for example, Sirex and Dothistroma measures.

13 FLORA, FAUNA AND CULTURAL HERITAGE MANAGEMENT

13.1 Flora and fauna

The harvest plan contains site-specific conditions for managing flora and fauna. If a licensee becomes aware of special-value flora or fauna that may be affected by harvesting, work stops and the SFO or Regional Manager is notified. For operations that could impact on unique and special wildlife values, Forests NSW must notify the relevant State Government department and determine whether operations can proceed and whether conditions apply. Forests NSW must also implement a recovery plan.

13.2 Cultural heritage

Site-specific conditions for managing cultural heritage during harvesting are in the harvest plan. Contractors and operators must not knowingly disturb Aboriginal sites, artefacts or cultural heritage items. The SFO or Regional Manager must be notified if a licensee becomes aware of an Aboriginal site or artefact, or any other significant site or item of cultural heritage. The area is buffered by the SFO and excluded from operations unless a consent to disturb the relic is obtained.

14 WET WEATHER CONTROLS

14.1 Application

Wet weather controls apply to harvesting and haulage operations and are designed to minimise soil disturbance, turbid water and damage to roads and tracks. The controls comprise automatic

closures (without notification) and notified closures (partial or total). The harvest plan may specify additional controls.

14.2 Automatic closures

There is no prior notification of automatic closures — contractors and operators apply automatic closures according to conditions. Automatic closures may be supplemented by notified closures. If an operator is unsure whether resuming work will cause damage, the SFO must be consulted.

14.2.1 Ground-based harvesting

An automatic closure applies to the operation of loaded forwarders and skidders when water is running in extraction tracks. Harvesting in DFPAs can continue if the top 200mm of soil is dry enough to avoid soil erosion. Mechanical felling and processing equipment can be used in wet conditions if the machines are supported by slash and soil disturbance is minimal.

14.2.2 Cable yarding

Cable yarding can continue if machinery is stable on landings and subject to notified closure requirements.

14.2.3 Forwarders

An automatic closure applies to the use of natural surface roads for forwarding when there is runoff from the road. When forwarding between bitumen or gravel roads and log stockpiles has been approved, work can continue in wet conditions subject to section 18.1, providing forwarders are not fitted with chains, tracks or variants that could damage the road. Rutting must be within allowable limits (refer section 14.4) and must not allow water to bypass road drainage structures.

Loaded forwarders can only build roadside stockpiles in wet weather by unloading at the end or rear of stockpiles. Exemptions are made by the SFO. Forwarders must not unload at the front of the stockpile next to the road, except when they are operating on specified long forwarder routes to secondary stockpiles with SFO approval.

Forwarders must not damage the drainage structure when travelling from the road verge to the table

drain. Subject to section 14.4, forwarders can carry slash from the forest to loading sites during automatic closures when extra slash is needed to meet the conditions above.

14.2.4 Loading and use of loading sites

An automatic closure applies to the use of mobile-wheeled loaders and tracked loaders when there is runoff from the landing surface. Forwarders, excavators and truck-mounted loaders can be used as stationary loaders in wet conditions, subject to notified closure requirements and maximum allowable soil disturbance limits. Slash must be distributed to minimise rutting.

When being loaded from a verge or road junction, haulage vehicles must park on the road pavement to avoid damaging drainage structures. Loading sites may be closed by an SFO if traffic or activities are damaging the site or extraction routes.

14.2.5 Haulage

An automatic closure applies to the use of natural surface roads for haulage when there is runoff from the road. Haulage over bitumen and gravel roads can continue during wet conditions, subject to notified closure requirements and as specified in the road/loading bay classification system within the harvest plan.

14.3 Notified closures

Notified closures apply when prolonged wet conditions mean that re-starting work after an automatic closure could cause significant soil disturbance or damage to roads, and extra time is required for drying and drainage. Notified closures may be partial or total.

Partial closure: Declared by the Regional Manager or SFO for specific operations or parts of operations when extra drying time is needed.

Total closure: Declared by the Regional Manager when conditions are extremely adverse. All work stops.

Where practical, the Regional Manager informs licensees when wet weather restrictions have been imposed or lifted:

On week days — during office hours

On weekends or public holidays — by 3pm on the previous work day

Or as arranged locally to meet special circumstances.

Licensees must notify operators. However, the Regional Manager or SFO may notify an operator if substantial rain or other factors prevent normal communication. Formal notification to the supervisor follows as soon as possible. Licensees must ensure that closures are complied with.

Harvesting, haulage and loading

When making notified closures, Forests NSW will (in consultation with licensees where possible), assess whether resuming operations could breach the standard for maximum allowable soil disturbance taking into account:

- Performance of machine types
- Availability of slash
- Soil type
- Whether continuing work could result in excessive damage to stockpiles, landings and loading bays, or the road
- Other factors that could affect performance

The Regional Manager will lift notified closures promptly. Work resumes when the Regional Manager advises that a closure has been lifted.

14.4 Maximum allowable soil disturbance

Subject to automatic and notified closure conditions, harvesting machinery may operate in wet conditions provided damage is minimised and is within the following limits:

- Along road verges, rutting does not exceed 150mm below the natural surface over any 10-metre section of track
- Within 30 metres of a dump, and on major extraction tracks, rutting does not exceed 250mm below the natural surface over any 10-metre section of track

- Within compartments, rutting does not exceed 100mm below the natural surface over any 10-metre section of track
- Along roads, rutting does not exceed 150mm for any distance exceeding 20 metres

Harvesting machine operators should consider other harvesting options — for example, moving to more stable ground if continuing to use an extraction track could exceed the limits.

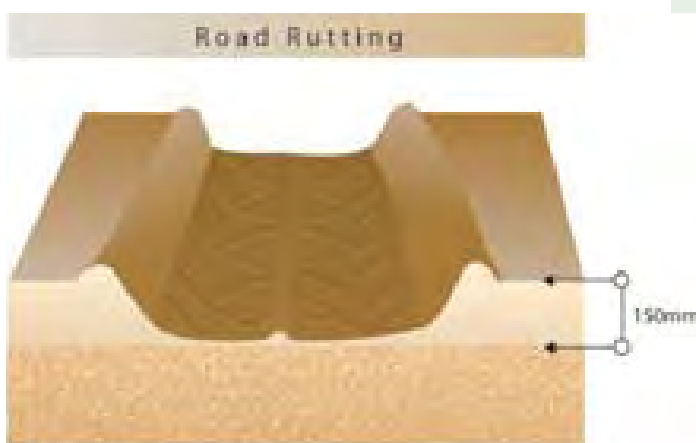
If the Regional Manager approves ground disturbance beyond these limits, restoration and drainage works will be specified.

If rutting from previous harvesting is greater than these limits, work can proceed providing the depth of rutting remains the same. Work is also subject to automatic and notified closure requirements.

14.5 Haulage

Log haulage must not result in undue damage to the road. If damage is unavoidable, the SFO must be notified. Road haulage stops if rutting could exceed 150mm for more than 20 metres. Hauling is prohibited over a damaged section of road (including rutting deeper than 150mm).

The SFO can approve the use of log extraction equipment to assist haulage vehicles over gravel roads provided rutting meets the requirements in section 14.4. Equipment must be fitted with suitable tyres.



14.6 Seasonal stockpiling

Licensees must stockpile timber so mills and processing plants can operate in adverse weather. Stockpiles should be built in areas classified for dry or intermediate operation and contain a minimum one week's supply.

Principal licensees, contractors and Forests NSW will cooperate to ensure that stockpiles do not accumulate in the forest if haulage to mills could cause severe damage to roads and the environment because of wet weather or other seasonal closures.

When wet weather areas are in short supply, licensees must take extra measures to maintain log supplies. This could include developing improved wet weather harvesting systems, increasing stockpiles or reducing wet weather log requirements.

FOR FURTHER INFORMATION:

- FNSW Safety Standard 1.2.7 Hazardous substances: handling, storage, disposal and PPE
- FNSW Safety Standard 1.2.8 Dangerous goods: transport, storage and handling
- WorkCover Guide: Risk Management at Work 2001
- National Code of Practice: Control of Workplace Hazardous Substances
- Chemical labels and material safety data sheets, Dangerous Goods (General) Regulation 1999, Environmentally Hazardous Chemicals Act 1985, Environmentally Hazardous Chemicals Regulation 1999, Pesticides Act 1999, Pesticides Regulation 1995, Pesticides Amendment (Records) Regulation 2001.

Fire



15 FIRE PRECAUTIONS

15.1 Duties of licensees

Licensees must report unauthorised fires immediately to a Forests NSW officer and take action to extinguish the fire or prevent the fire spreading. Licensees may be required to work with Forests NSW staff to control a fire. Licensees and contractors must ensure that operators comply with fire safety standards in this code.

15.2 Danger periods

Statutory bush fire danger period

Applies between October 1 and March 31 unless varied by the Commissioner of the Rural Fire Service to meet seasonal fire weather conditions.

Plantation fire threat period

May be declared by the Regional Manager when extra restrictions are necessary. Start and end dates are notified in writing.

15.3 Operating in a plantation fire threat period

Daily inspections

Operators must inspect (and clean if required) machinery, fire-fighting equipment and the active harvesting area to ensure it is fire-safe before leaving the worksite each day. Operators must remain on-site for at least 15 minutes after work stops on any phase of an operation to ensure that the area is fire-safe.

Fire-fighting equipment

Licensees must provide fire-fighting equipment. Forests NSW may specify other requirements in regional standing instructions.

Pre-season inspections

Before the fire threat period is declared, machinery and fire-fighting equipment supplied and operated

by licensees must be made available for inspection by Forests NSW to ensure compliance with safety standards. Equipment must be maintained throughout the fire season.

Compliance stickers



Licensees may only operate machinery and equipment that complies with fire safety standards and carries a current Forests NSW compliance sticker (see illustration) unless otherwise required by the Regional Manager.

Harvesting restrictions

The Regional Manager may restrict harvesting operations, particularly on days of extreme fire danger, during a total fire ban or during a fire. Restrictions may also be imposed depending on prevailing or forecast fire danger ratings.

Smoking

Smoking is permitted in areas that have been cleared of flammable material. Smoking is banned in the open on total fire ban or colour code red days.



15.4 Machinery and equipment

Machinery must be operated and maintained to minimise the risk of the machinery catching fire or starting a fire. Vehicles and machinery can only be operated when:

- Secure, spark-free exhausts are fitted
- The fuel, electrical and braking systems and combustion chambers, manifolds, exhaust pipes and expansion chambers are in good condition (includes firmly anchored fuel tanks and fuel lines)
- There is no surplus oil, dust impregnated with oil, or organic matter
- The exhaust system of stationary equipment is directed away from flammable material

Defective machinery must be withdrawn from use until the fault has been repaired. Catalytic converters on vehicles using unleaded petrol must not come into contact with dry, flammable material.

15.5 Preventing sparks and flames

Equipment that could cause sparks or flames — such as welding or oxyacetylene equipment or angle grinders — can only be used on ground that has been cleared of flammable material or vegetation for a minimum of 1.5 metres. Do not use on total fire ban and colour code red days.

This equipment is also banned when the use of chainsaws and mechanical harvesters is prohibited in a plantation fire threat period. The SFO may grant an exemption subject to precautions such as the use of fire-fighting equipment.

15.6 Lighting fires

Fires for heating, cooking, boiling water or similar purposes can only be lit in a fireplace that has been approved by an SFO. The ground within two metres of the fire must be cleared of flammable material and vegetation. Do not light a fire within 4.5 metres of a bark heap, log, stump or tree. The same conditions apply to portable propane gas stoves.

All fires must be extinguished when being left unattended, even temporarily. Fires are prohibited during a bush fire danger period, plantation fire threat period and on total fire ban days.

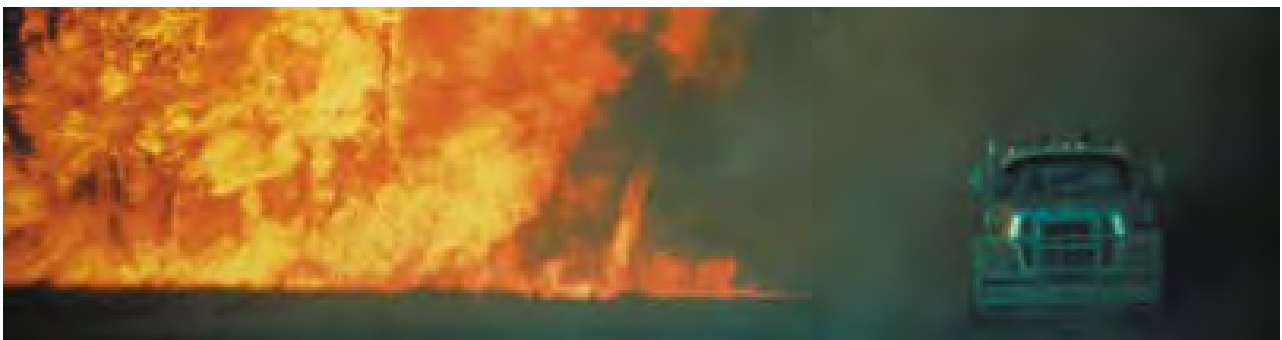
15.7 Suspension of work in dangerous conditions

Harvesting may be suspended with or without prior notice if a fire is burning in a plantation or if a plantation is threatened by an approaching fire. The Regional Manager will approve the resumption of work.

15.8 Restrictions on cable harvesting

The following conditions supplement the conditions above and sections 16.7 and 16.8:

- Do not fell trees more than two weeks before yarding
- Haulback systems should be avoided on orange days (refer tables 16.7, 16.8). If operations are necessary, mineral earth barriers of 1.5 metres around blocks must be maintained and inspected regularly. Keep ropes clear of debris
- Maintain a mineral earth barrier around the yarder



16 FIRE RESTRICTIONS

16.1 Work restrictions

This section applies to conifer plantations. For hardwood plantations, Category I requirements apply plus any Category II and III requirements, as specified by the Regional Manager. Licensees may apply to the Regional Manager for formal approval to continue harvesting or haulage operations beyond the work restrictions outlined in sections 16.7 and 16.8. Approval is in writing and may include additional precautions.

16.2 Calculation and notification of fire danger index

Forests NSW will calculate the fire danger index (FDI). Indexes in this code refer to those determined from the Mark V Forest Fire Danger Meter. To determine harvesting restrictions, a forecast of maximum FDI for plantation areas is made each working day. Licensees will be notified before 10am. Licensees will be advised by 5pm on the previous business day of weekend and public holiday restrictions (based on the weather forecast). Licensees must notify operators. When possible, notice of expected finish times for restrictions will be given.

When harvest or haulage operations are suspended due to fire risk, the operation may resume at midnight when the FDI moderates to 14 or as otherwise advised by Forests NSW.

When harvest or hauling is suspended due to fire risk, the operation may resume at midnight, when the FDI moderates to 14 or as otherwise advised by Forests NSW.

16.3 Category I fire preparedness

Category I requirements apply to all harvest and haulage operations during the plantation fire threat period:

- a) Each worksite (e.g. log landing, personnel transport, vehicle park, field maintenance site) must have available:
 - i) One knapsack, minimum capacity 15 litres, filled with water containing wetting agent, or an approved water-based fire extinguisher
 - ii) One dry chemical fire extinguisher
 - iii) At least one rakehoe

Equipment must be kept at the landing closest to the operation, in working condition and available for immediate use. If Category II fire preparedness requirements are met, requirement (i) above is redundant.

- b) Each manual feller (or chokerman in cable harvesting operations) must place the following within 40 metres of the worksite:
 - i) One knapsack, minimum capacity 15 litres, filled with water containing wetting agent, or an approved water-based fire extinguisher or any other means of rapidly extinguishing a class A fire (approved by the Regional Manager)
 - ii) One rakehoe



- c) Each mechanical unit used in harvesting, processing, and loading must be equipped with:
 - i) One knapsack, minimum capacity 15 litres, filled with water containing wetting agent, or an approved water-based fire extinguisher
 - ii) One dry chemical fire extinguisher
 - iii) One rakehoe, mounted in a secure and accessible position

16.4 Category II fire preparedness



Mobile water unit

These requirements apply to harvesting operations during a plantation fire threat period and are extra to Category I requirements. Operations must be conducted in approved locations, such as sheltered sites away from western boundaries and wind-exposed sites. Each worksite must have immediately available:

- a) A two-way radio that is in contact with the radio base or a mobile telephone where reception is adequate. The radio base must be contactable by telephone.
- b) A serviceable mobile water unit with:
 - i) Minimum capacity 400 litres
 - ii) Full tank when harvesting machines are operating
 - iii) Pump unit with 2.2 kilowatts (3hp) minimum

- capacity
- iv) 60 metres of hose (minimum)
- v) Fill and outlet hoses attached to the pump and nozzle with Storz fittings that meet Forests NSW specifications
- vi) Nozzle capable of delivering a fog spray and jet stream
- vii) Fully fuelled pump motor
- viii) Wetting agent (to be added where necessary)
- ix) For trailer-mounted units, a 4WD towing vehicle must be on site; the unit must have ground clearance for a forest track

- c) Two operators trained to use fire-fighting

equipment and follow fire procedures.

Sections 16.7 and 16.8 specify operations where Category II requirements must be met.

16.5 Category III requirements: clearfall operations

The following requirements apply in addition to Category I and II requirements during the plantation fire threat period:

- a) Machines are fitted with serviceable automatic fire suppression equipment
- b) Operations are located in low fire-risk areas (determined by the SFO)
- c) Operations are prohibited where significant amounts of slash have been cured for more than one week

Sections 16.7 and 16.8 specify operations where Category III requirements must be met.

16.6 Fire extinguishers

An approved water-based fire extinguisher is a stored-pressure water-style fire extinguisher of at least nine litres capacity, fully pressurised ready for use (must comply with AS 1841 Part 2-1997). A dry chemical-type fire extinguisher must have minimum

1.25kg capacity (AS 1845 Part 5-1997).

16.7 Work restrictions: harvesting and haulage on weekdays

Note: Daylight saving — time assumes Eastern Standard Time except when daylight saving is in force.

Colour Code (based on forecast FDI)	The time or the actual FDI when work restrictions apply	Work restrictions:				
		Chainsaws/ mechanical harvesters	Thinning	Clearfall	Cable	Haulage
Yellow (forecast FDI 14 or less)	Nil unless otherwise advised.	Category I requirements to be met.				
Orange (forecast FDI 15-29)	Before 1pm	The SFO to be notified of harvesting operations planned to continue beyond that time.				
	Actual FDI = 20 or 1pm	1. The use of chainsaws and mechanical harvesters with exposed exhausts stops at 1pm. 2. Chainsaws working on approved landings and with Category II requirements may continue to work beyond 1pm provided the actual FDI is less than 30.	Work may continue beyond 1pm if Category II requirements are met.	Work may only continue beyond an FDI 20/1pm if both Category II and III requirements are met.		1. Haulage from a clearfall may continue past an FDI 20 only if Category II requirements are met. 2. Where the FDI is 20 or more, only approved loading sites (clear of flammable debris) and only those loading and haulage vehicles with vertical exhausts may continue.
	Actual FDI = 24				Cable yarding stops.	
	Actual FDI = 30	All harvesting and haulage operations must stop.				
Red (forecast FDI 30+)		All Orange restrictions to be met, plus:				
	Actual FDI = 30 or 1pm (whichever is earlier)	All harvesting and haulage operations must stop.				

Includes falling, processing, extraction, loading and haulage.

16.8 Work restrictions: harvesting and haulage on weekends and public holidays

Includes falling, processing, extraction, loading and haulage.

Colour Code (based on forecast FDI)	The time and/or the actual FDI when work restrictions apply	Work restrictions:		
		Thinning	Harvesting (clearfall and cable)	Haulage
Yellow (forecast FDI 14 or less)	4pm the preceding day	The SFO to be notified of proposed operations.		
		Formal approval to be given by the SFO before operations start.		
		Minimum Category II restrictions to complied with at all times.		
Orange (forecast FDI 15-29)		All Yellow restrictions required plus:		
	Actual FDI = 15 or 1pm (whichever occurs first)	The use of chainsaws and mechanical harvesters in thinning operations must stop.	All aspects of clearfall operations (including cable yarding) must stop at 1pm or when the FDI = 15.	Haulage may continue past FDI 15 and/or 1pm if Category II requirements are met.
	Actual FDI = 20	All harvesting and haulage operations must stop.		
Red(forecast FDI 30+)		All Yellow and Orange requirements must be met, plus:		
	Actual FDI = 20 or 1pm (whichever occurs first)	All harvesting and haulage operations must stop.		

16.9 Operating beyond work restriction limits

Approval to operate beyond the limits in sections 16.7 and 16.8 can only be given after a risk assessment process that takes into account the factors below. Category I, II and III requirements always apply when FDI limits are exceeded.

FDI limits for harvesting and haulage operations:

Actual FDI = 40:

harvesting and haulage must stop on weekdays

Actual FDI = 30:

harvesting and haulage must stop on weekends

Licensee responsibilities

Licensees must provide all extra fire-fighting plant and personnel specified in the approval, unless negotiated with Forests NSW. For weekend work, licensees must seek approval no later than midday on the preceding Friday; for public holidays, the deadline is midday on the preceding day. Licensees must stockpile enough timber to allow mills and processing plants to operate during adverse fire weather.

Operating guidelines

Low fire risk areas must be nominated by licensees and inspected or approved by the SFO before Regional Manager approval. Factors to consider when selecting worksites:

- Areas with minimum fine fuel accumulation
- Loading sites with maximum mineral earth
- Worksite must be immediately accessible to Category II fire-fighting plant. If not, the distance from road to worksite must not exceed 50 metres (maximum length of effective fire hose)
- Worksite must have a machine capable of constructing a mineral earth firebreak
- Only rubber-tyred machines may operate
- Cables and chains are prohibited, except saw chains on mechanical harvesters
- Trucks must have Category I equipment as per mechanical units (refer to 16.3)
- If haulage occurs in isolation of other operations, each truck driver must have an offsider to satisfy 16.4 (c). Note: an isolated loading site must meet Category II requirements

16.10 Summer heat testing for chainsaws

Chainsaws are tested at the start of the plantation fire threat period and at random times until the period ends. The chainsaw must be warmed-up before the test. If the chainsaw is being used when the SFO arrives, the test can begin. Otherwise, the chainsaw must be run at full working power for 30 seconds, making a series of cuts into green wood which is at least 150mm in diameter.

Carbon test

In either case above, a series of cuts must then be made into a piece of wood (as above) for 30 seconds while white blotting paper is held in the exhaust gas stream. If carbon particles show on the paper, the muffler must be cleaned and the test repeated.

Temperature test

A Thermocron or similar Crayon 320°C is used to make a spot on the muffler close to the point of exhaust emission. The Crayon spot will retain its original colour for two seconds if the temperature does not exceed 320°C. If the spot changes colour at once, the chainsaw fails the test.

A pass sticker is placed on a chainsaw that is not emitting carbon from the muffler and is operating with a skin temperature off the muffler below 320°C. The most common cause for failure is dirty mufflers or lean fuel mixture. Saws may be retested after failing.

Roads



17 LOG STOCKPILES, LANDINGS, LOADING BAYS AND LOG DUMPS

17.1 Safety and operational requirements

When formulating harvest plans and site safety plans, harvesting planners, SFOs and harvest and haulage representatives must jointly review, on site, safety and operational requirements for people working on log landings and dumps. This includes the communication systems that will be used during operations.



Timber must be removed from loading bays and stockpiles in time to maintain log quality and optimise seasonal conditions.

17.2 Location

When locating a stockpile, take into account the loading and haulage equipment to be used, and road grade and width. Disturbance to roads and drainage structures must be minimised. If road damage is unavoidable, notify the SFO immediately.

Log stockpiles and byproducts must not block drainage structures.

Loading bays and log dumps that require earthworks must be located outside drainage feature protection areas. Do not locate in retained native vegetation.

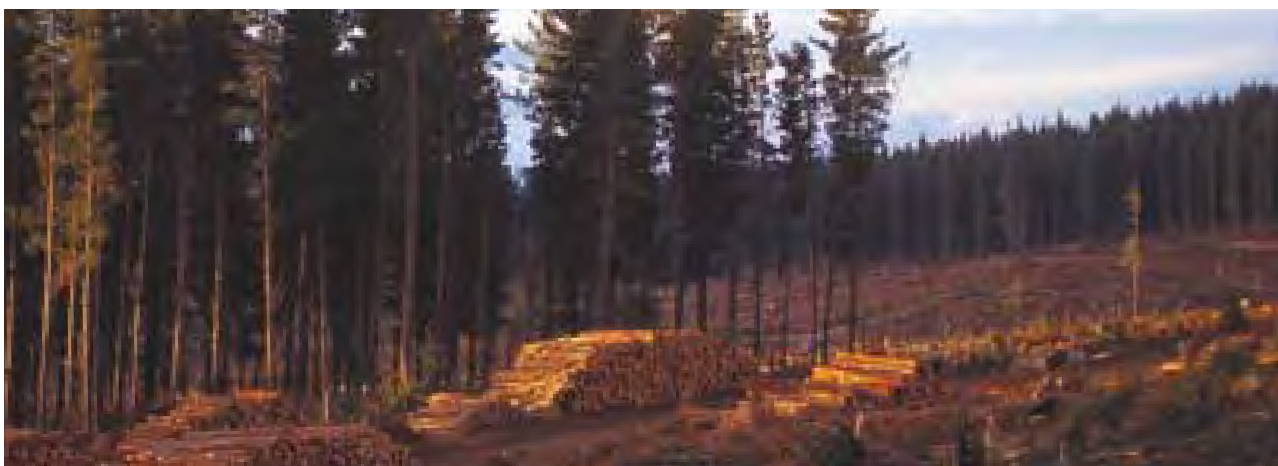
Do not accumulate logs on sealed or gravelled roads or gravelled loading bays unless approved by an SFO. Stacks must not be built against retained trees.

17.3 Draining loading bays and log dumps

Runoff must be dispersed onto stable surfaces and not discharged directly into drainage features or extraction and snig tracks. Keep water discharge points away from bare soil. Drainage structures must be kept in working order.

17.4 Cleaning roads and loading sites

Debris which could cause a safety hazard or block the flow of water must be removed from the road and from road drainage structures at the end of each day. The SFO can authorise an exemption.



18 ROADS — GENERAL

18.1 Machinery on roads and verges

Extraction vehicles, felling and processing machines, and loaded skidding and forwarding vehicles must not use gravelled, sealed or natural surface roads unless specified in the harvest plan, approved by the SFO, or permitted under section 18.3. Machinery with tracks or chains must not be used on roads. Loading equipment with tracks or chains can only be used on roads if approved by the SFO.

Machinery and vehicles can be used on verges if:

- Travelling from the verge across a table drain does not damage the drainage structure
- Road drainage is maintained
- Exposed mineral earth is covered with slash after loading from stockpiles has finished

Refer to section 14.2 for operating conditions in wet weather.

18.2 Maintaining road drainage structures and other road infrastructure

Drainage structures must be kept in working order during operations. Any damage must be reported to the SFO as soon as possible. If water flows on a road surface for distances greater than in the table below, due to failure or damage of a road drainage structure, the SFO must be notified so the damage can be repaired. Licensees may be charged for the cost of repairs.

18.3 Forwarders (loading and clean-up)

Forwarders can be used on roads to load trucks or to travel loaded between loading sites while cleaning-up, subject to the following:

- Chains or tracks are not fitted
- Wood is carried from the loading site, not the bush. Avoid double handling of wood
- Maximum load height is level with the top of the standard 'pins'
- If it appears that the forwarder may damage the road, work must stop until the SFO has been consulted

Table 18.2 Road drainage spacing

Slope (degrees)	Spacing (m)	Slope (degrees)	Spacing (m)	Slope (degrees)	Spacing (m)
1°	250m	11°	55m	21°	28m
2°	200m	12°	50m	22°	26m
3°	150m	13°	45m	23°	24m
4°	125m	14°	40m	24°	22m
5°	100m	15°	40m	25°	20m
6°	90m	16°	38m	26°	19m
7°	80m	17°	36m	26°	18m
8°	70m	18°	34m	28°	17m
9°	65m	19°	32m	29°	16m
10°	60m	*20°	30m	30°	15m

*Note: If operating under an Environment Protection Licence, the drainage structure spacing for a 20° slope is 25 metres.

19 ROAD HAULAGE

19.1 Maintaining forest roads

Contractors and operators are responsible for repairing excessive damage caused by breaches of this code (as determined by Forests NSW). Licensees must report any breaches of road traffic rules to the SFO.

19.2 Securing loads

Truck drivers must restrain loads in accordance with the WorkCover Safety in Forest Harvesting Operations Code of Practice, RTA guidelines (including the Heavy Vehicle Driver's Handbook) and the company's documented safe work procedures.

19.3 Dusting during dry conditions

The SFO may limit or stop regular travel on natural surface roads by haulage vehicles and other harvesting equipment. Road drainage structures must be kept in working order to minimise dirty runoff from dusted roads. Extra sediment control may also be required.

20 WARNING SIGNS

20.1 General requirements

The need for warning signs may be specified in harvest plans. Unless otherwise agreed in harvest plans, licensees are responsible for supplying, placing and maintaining warning signs. Signs must conform to AS 1319 and other Forests NSW and legislative requirements. If directed by the Regional Manager, the contractor will provide extra traffic control.

Signs must be mounted securely, be clearly visible and not create a hazard for other road users. Signs are placed at least 200 metres from the workplace on sealed roads and major roads, and at least 100 metres from the workplace on all other roads, or as specified in the harvest plan.



20.2 Tree felling

Recommended sign: Danger tree harvesting operations in progress. Authorised persons only. Radio ch

Signs are erected on all road and track entry points to the active harvesting area before work starts. Signs indicate the active harvesting area boundaries.

Do not place signs on major roads or non-Forests NSW roads. Where a major road or non-Forests NSW road crosses the area, signs are placed on all side roads. The harvest plan may indicate where these signs cannot be used.

20.3 Felling near tracks or roads

Recommended sign: No entry. Road closed to all traffic

The sign is used:

- On roads and tracks next to an active tree felling zone
- When there is an imminent hazard to road users, such as machines on the road
- In emergencies such as vehicle accidents

Place the sign at entrances to the active tree felling zone before falling starts. A barrier — such as safety tape or a vehicle — is also used to stop vehicles from entering.

Signs and barriers must give traffic safe warning that a road is closed. When a road or track is used frequently, lookout people must stand by the barriers when trees are being felled. A documented risk assessment must be carried out to determine the need for lookouts. Warning signs or barriers can only be crossed with approval from the tree feller or activity controller.

Signs and barriers must be removed when hazardous work is completed. Barriers must be able to be moved quickly in an emergency.

Stop/go traffic control is used when a road cannot be closed or when an active tree felling zone is next to a shire road, Roads and Traffic Authority road, sealed road, or major Forests NSW road (sealed or gravelled).

Forests NSW provides stop/go control and detour management on shire and RTA roads. The harvesting contractor provides stop/go control and detour management on all other roads. Traffic controllers must be RTA accredited. Other arrangements may be negotiated with the Regional Manager if they are based on a documented risk assessment process and written into harvest plans or haulage operations plans.

20.4 Logging machinery on roads

Recommended sign: Warning log machinery on road. Radio ch

The sign is placed on both sides of the following activities:

- Building a log stack by forwarder (erected by the harvesting contractor)
- Loading trucks (loader operator)
- Idle or active use of harvesting or haulage equipment on the road (harvesting or haulage contractor)

This sign is not required for truck transit.

20.5 Haulage — general

Recommended sign: Warning log trucks entering ... metres

The sign is erected and maintained by the haulage contractor at major road intersections (outlined in the harvest plan) or as instructed by the SFO before operations begin.

20.6 Haulage — B-doubles

Recommended sign: Road closed — access permitted only to holders of a written Forests NSW authority — UHF ch ...

The sign is erected and maintained at workplace entry points following a risk assessment process. Procedures are outlined in the harvest plan.

B-doubles can only be used on roads, other than gazetted B-double or council-approved routes, when the road is closed to the public. Roads are only closed with the written authority of the Regional Manager. A copy of the authorisation is kept at the site by attaching a durable copy to the warning sign or to the harvest plan. Only people with written authority can use closed roads.

20.7 RTA, shire and main road warning signs

RTA roads and main roads with a 100km/h speed limit may require extra signs. A similar standard may be adopted for major road intersections along the haulage route (also covering major shire and major Forests NSW roads).

FOR FURTHER INFORMATION:

- RTA manual Traffic Control at Worksites 1998
- Standards Australia Field Guides for Traffic Control at Works on Roads
- RTA, NSW Police Service, shire councils

Administration



21 LEGAL

21.1 Legislation covering timber harvesting

Forestry Act 1916 and Parts 4, 5 of the Forestry Regulation 2004

Administered by Forests NSW, which has power to control the harvesting of timber and products, to control the use of fire, to regulate and control the use of roads and other matters relevant to managing State forests and other Crown-timber lands. A special purpose permit may be required for hauling timber from private land across Forests NSW roads. This code applies to those permits.

National Parks and Wildlife Act 1974

Protects Aboriginal objects or declared Aboriginal places and covers management of protected or threatened flora and fauna on plantations not authorised under the Plantations and Reafforestation Act.

Occupational Health and Safety (OH&S) Act 2000, OH&S Regulation 2001

All work in Forests NSW plantations must comply with the Act and the Regulation. Employers must ensure the health, safety and welfare of people at the workplace.

Code of practice: Safety in Forest Harvesting Operations

A WorkCover code for achieving legislated safety standards which should be followed unless an alternative method achieves the same or better standard.

Plantations and Reafforestation Act 1999

Provides for the approval of plantation development under the provisions of the Plantations and Reafforestation Code, which governs plantation establishment, maintenance and harvesting. Relevant conditions of the code have been incorporated into this code or are included in harvest plans.

Protection of the Environment Operations Act 1997

Provides for licensing of activities that cause air, water and noise pollution. An Environmental Protection Licence is applied to plantation operations that are likely to cause pollution.

Road and road transport legislation

Registration of vehicles and licensing of drivers: Vehicles operating in State forests and Crown timber lands must be registered to comply with roads and road transport legislation and with the provisions in the regulation under this legislation. Drivers must hold a licence for the vehicle being driven.

Load limits:

Vehicles must comply with load limits for public roads and streets, as determined for main roads and highways controlled by the RTA and other public roads controlled by local government.

B-doubles and approved B-double routes:

B-doubles must meet the vehicle and operating conditions specified in the General B-double Notice 2000, under the Road Transport (Mass, Loading and Access) Regulation 1996.

Full registration:

Trucks, truck-mounted loading cranes and personal transport vehicles require full registration.



Conditional registration:

Some timber harvesting vehicles must have conditional registration, issued by the RTA. This includes crawler-tractors, wheeled and tracked feller-bunchers, mobile processors, forwarders, skidders, some log-loading plant and modified agricultural tractors.

Third-party injury insurance:

Under the legislation, all areas inside State forests are considered to be public streets, therefore operators of vehicles and machines that comply with registration or permit requirements are covered by third-party insurance for personal injury.

Rural Fires Act 1997

Provides for the prevention, control and suppression of bush fires and regulates the proclamation of the bush fire danger period in NSW and declaration of total fire bans.

Surveyors Act 1929 and Survey Co-ordination Act 1949

No unauthorised person may deface or interfere with a survey mark — for example, a survey peg, shield tree, or trigonometric marker.

Threatened Species Conservation Act 1995 and Fisheries Management Act 1994 Part 7A

These two Acts apply to plantations which are not authorised under the Plantations and Reafforestation Act. On a plantation that has been authorised under the Plantations and Reafforestation Act, compliance with the Plantations and Reafforestation Code and any conditions of authorisation will provide exemption from provisions in the Threatened Species Conservation Act and the Fisheries Management Act.

Workplace Injury Management and Workers' Compensation Act 1998 and Workers' Compensation Act 1987

Provide for the insurance and rehabilitation of injured workers and prescribe insurer, employer and employee obligations for managing employees who are injured at work. Employers must ensure that employees are adequately covered by workers' compensation.

22 LICENSING AND LICENSEE RESPONSIBILITIES

22.1 Licences, agreements and special purpose permits

Licences and permits are issued before operations start. Commercial harvesting operations require a timber or products licence, or sale agreement, which contain conditions binding on the licensees, customers or parties to the agreement or contract. Nothing in this code affects the conditions attached to a licence or sale agreement.

Forests NSW may regulate the use of forest roads for commercial private use by the issue of a special purpose permit.

Compliance with this code is a condition of every timber, products, contractor and operator licence, sale agreement, and special purpose permit for hauling privately owned timber on forest roads.

22.2 Contractor's licence

Any company that employs operators or supervisors for timber harvesting, and contracts to one or more principal licensees, or contracts to Forests NSW under a merchandising agreement, must hold a contractor's licence. Principal licensees must ensure that contractors have licences before they begin harvesting or haulage operations.

22.3 Workers' compensation and public liability insurance

Principal licensees and contractors must show evidence of workers' compensation and public liability insurance when applying for or renewing licences. Certificates of insurance must be current for the period of the licence.

22.4 Operator's licences

Anyone who is employed or engaged to work in, or supervise, timber harvesting and haulage operations must hold a current operator's licence. The licence specifies the work for which the operator is accredited

and permitted to perform. Subject to section 23.2, operators must only do harvesting work that is specified on the licence. The contractor employing the operator is responsible for ensuring compliance. Licences must be available for inspection by an SFO.

22.5 Changes to operator information

Operators must inform Forests NSW about changes of address or competencies. When Forests NSW amends a licence, the amendment will be mailed to the current postal address.

22.6 Names and addresses of employees and operators

The representative of a contractor must give Forests NSW the names and addresses of harvesting and haulage employees, and notify Forests NSW of new employees or when an employee resigns.

22.7 Supervision

Licensees are responsible for the conduct of their operators and must supervise employees to ensure compliance with:

- This code
- Harvest plans and site safety plans
- Company safety management systems
- Instructions issued by SFOs
- The Plantations and Reafforestation Code
- Legislation, codes of practice and WorkCover guidance notes
- Licences issued by the Department of Environment and Conversation for a harvest plan area

A site supervisor is appointed for each operation.

22.8 Employment conditions for operators

Licensees and contractors must ensure that employees can access industrial awards or enterprise agreements, allowances and conditions. Contractors must also ensure that employees of sub-contractors have access to the same information.

22.9 New equipment and techniques

To ensure that economic and environmental impacts are fully considered, Forests NSW and licensees must consult before the purchase and introduction of any new harvesting or haulage equipment. This also applies to proposals that significantly change operational techniques — for example, replacing forwarder extraction with skidder extraction.

Forests NSW supports the adoption of equipment, systems and technology that:

- Improve safety and environmental management
- Reduce forest management and harvest/haul costs
- Extend harvest access in the plantation
- Optimise log/product supply taking into account seasonal and daily factors

For example, Forests NSW may consider alternative technology using the following criteria:

- Reduces ground pressure and increases traction. Technology that extends the performance of existing equipment is encouraged — flotation tyres, tracks or variants that help achieve environmental objectives and minimise damage to infrastructure
- Reduces time between felling and arrival at the mill
- Reduces the effects of machine movement e.g. soil compaction or rutting
- Creates flexibility in loading e.g. allows vehicles to be loaded without the vehicle being located on the road; reduces disturbance at road edges or around dumps
- Minimises the level of, and reliance on, in-forest log stockpiling. Where stockpiling is maintained, extends the volume based on existing infrastructure (roads and frequency, size and design of loading bays) and environmental requirements
- Extends the grade (slope) on which equipment (including haulage vehicles) can operate safely

23 TRAINING AND ACCREDITATION

23.1 Accreditation for operator's licence

To qualify for an operator's licence, an applicant must be accredited in Forest Soil and Water Protection and Forest Harvesting Operations (comprising modules in health & safety, first-aid, environmental management and cultural heritage management). Forest Soil and Water Protection (or equivalent) is reassessed every five years. Competency or skills standards are also required.

Chainsaws and machinery

Operators of forest machinery and commercial

chainsaw users must be accredited in the appropriate national standard from the Forest and Forest Products Industry training package. Accreditation is reassessed every three years. Dangerous trees can only be felled manually by operators who are accredited to Harvest Trees Manually Advanced Level, Forests and Forest Products Industry Training Package or equivalent. Refer also to CSIRO Chainsaw Operator's Manual.

23.2 Unqualified or partially trained operators

Supervisors must ensure that employees have been instructed in safety precautions before working or using power-driven tools, machines or equipment unsupervised. When an unqualified or partially trained operator is employed, the operator must be supervised by a competent, qualified operator or supervisor while being trained, or pending accreditation.



24 COMPLIANCE AND PERFORMANCE

24.1 Non-compliance

Forests NSW may apply sanctions if this code is breached. Serious offences may result in operations being suspended and licences being cancelled. Forests NSW can prosecute offenders. Sanctions will depend on the circumstances of each case, taking into account the following criteria and any other relevant factors:

- Whether safety is compromised, and to what degree
- Whether the act results in damage to machinery or property
- The extent of environmental damage, including stand damage
- Whether remedial action is possible, and the cost
- Whether the incident was due to poor judgement, accident, unforeseen circumstances, or whether code conditions were disregarded deliberately
- The history of the offender

24.2 Remedial action

If a breach of this code can be corrected without more environmental or other damage, licensees must ensure that remedial actions are satisfactory to Forests NSW. Forests NSW may still undertake one or more of the actions below.

24.3 Dealing with non-compliance

Licensees must be advised by Forests NSW of non-compliance incidents involving their employees. Liaison should be continuous and, where relevant, an agreed follow-up consultation program followed, to avoid repetition of non-compliance issues.

Counselling

Counselling by Forests NSW may be undertaken to ensure that the offender understands what is required. The offender may be given extra instructions to ensure that the compliance issue does not happen again.

Formal verbal warning

A formal verbal warning may be issued by the SFO, and documented and recorded at the regional office. If the incident is serious, the Regional Manager may initiate further legal action as described below.

Warning letter

The Regional Manager may waive any further sanction and issue a warning letter, which does not attract a penalty but may be used as evidence if a person re-offends.

Infringement notice

The Regional Manager may issue an infringement notice and fine the licensee. The fine will vary according to the clause of the Forestry Regulation or the section of the Forestry Act that prescribes the offence. Failure to pay within the due period may lead to further action, including prosecution under the Forestry Act.

Prosecution

The Regional Manager may recommend to Forests NSW that the offender be prosecuted. This is not withstanding any other action that may have been taken.

Licence cancellation

The Regional Manager may cancel a licence. Operations may be stopped while cancellation is considered.

24.4 Training and reaccreditation

A person who acts incompetently may be required to undergo formal re-training, reassessment and re-accreditation.

24.5 Compensation

Forests NSW may seek recovery of costs if damage or remedial action costs are high and paid for by Forests NSW, whether penalty action is being pursued or not. Wherever possible, repairs will be paid for by the responsible parties.

24.6 Stand-down

Immediate stand-down action must be taken by the supervisor or SFO when there is:

- An immediate risk of serious injury or damage
- An injured person requiring treatment
- Unacceptable environmental damage
- Unacceptable stand damage or significant loss of revenue

24.7 Appeals

A licensee who has been penalised may ask for the penalty action to be reviewed. The Branch Director's decision is final. Licensees should make representations to the Forests NSW employee who is responsible for harvesting in the region within 24 hours of a penalty being imposed. Contact with the Regional Manager or the Branch Director should be no later than three working days after the penalty. Licensees can have a third party present during an interview. These provisions do not apply when operations or deliveries are suspended due to non-payment of accounts.

Definitions



Active harvesting area

The section of a harvest plan area where timber is felled, processed and extracted.

Active tree felling zone

An area within two tree lengths of the tree being felled. The distance increases when felling on steep slopes.

Automatic fire suppression

Includes fire suppression systems activated by heat, flame or smoke, or systems that can be immediately activated by an operator.

Batter

An earth slope formed during road construction by using fill or cutting into the hillside.

By-product

Particles of timber and branches smaller than slash, such as in-field chipper bark and whitewood or peelings from in-field chipping operations.

Cable harvesting

A harvesting system used in steep terrain to elevate and extract logs. Components can include a cable hauler (tower and winch assembly), skyline, mainline, haulback line, carriage and a tailhold.

Causeway

A crossing which allows vehicles to ford a drainage feature; surface may be timber, gravel, rock, bitumen, concrete, or a stable natural surface.

Class A fire

A fire that is caused by the combustion of solid materials such as wood, straw, textiles, or coals.

Clearfall — plantation

Harvesting all trees in the harvest plan area, usually at the end of a plantation rotation or life cycle — 30-35 years for exotic conifers and 40-50 years for native conifers and eucalypts.

Code of procedure

Contains instructions on how the quantity and value of timber products is determined for each customer.

Contractor (harvesting and haulage)

A person who is contracted to Forests NSW or to a principal licensee and employs people in harvesting or haulage (includes sub-contractors).

Contractor Safety Pack

Provided by Forests NSW to help contractors meet their safety management obligations.

Dangerous or problem tree

A tree (dead or alive) that poses an unacceptable work risk and requires special expertise to fell.

Delivery plan

Prepared by Forests NSW, indicates the amount of timber to be hauled (delivery) or harvested (cutting), a summary of log specifications, volume and delivery schedules.

Drainage depression

A shallow, open depression that carries runoff during or immediately after heavy rainfall.

Drainage feature

Wetland, drainage line, river, or drainage depression.

Drainage feature protection area (DFPA)

An area where modified harvesting and extraction techniques are used to protect drainage features and immediate area.

Drainage line

A channel that carries water from heavy rainfall. Points of difference from a drainage depression:

- Shows evidence of active erosion or deposition e.g. gravel, pebble, rock or sand bed
- Has an incised channel more than 30cm deep with clearly defined bed and banks

Environmental Protection Licence (EPL)

Issued to Forests NSW by the Department of Environment and Conservation.

Extraction track

A track used to remove timber from the forest.

Fire danger index

A rating of potential fire severity based on recent rainfall, drought factor, relative humidity, air temperature and wind speed. Calculated using the McArthur Forest Fire Danger Meter Mk 5.

Forwarding

The movement of logs fully supported off the ground from felling site to loading site.

Harvesting

Falling, processing and extracting timber from a forest.

Harvesting machinery

Motorised machines or vehicles used in timber harvesting operations.

Harvest plan

Prepared by Forests NSW, contains site-specific information for each harvesting operation.

Harvest plan area

The age class, compartment, or section of forest covered by a harvest plan.

Haulage

Loading logs from the roadside and hauling to a mill.

Haulage route

The route approved by Forests NSW for hauling timber products by the haulage contractor from the harvest plan area to the mill.

Incidents

Serious incident: Results or has the potential to result in a fatality or serious injury to an employee or forest user.

Incident: Causes harm to people in a workplace or buildings and/or equipment.

Near miss: An incident that has the potential to cause a significant injury.

Injuries

Serious injury: For example, when a person is placed on life support, loses consciousness, is trapped in machinery or has major burns.

Significant injury: The person is unable to perform usual duties for seven days or more.

Minor injury: A person requires medical treatment and is unable to perform normal duties for up to six days.

Lost- time injury: An incident that results in an employee taking at least one day/shift off work.

Integrated operations

Harvesting operations where a contractor or operator produces two or more classes of timber or products for one or more principal licensees.

Licensee

The principal licensee engaging the contractor where harvesting is a stumpage sale; or the contractor, where the timber harvesting operation is a delivered sale.

Loading bay

An extension of the road where logs are loaded onto haulage trucks.

Log dump

An area where logs are assembled for processing, sorting and loading (does not include stockpiles).

Log landing

An area in cable harvesting operations where felled trees are accumulated before being processed.

Loading sites

Includes log stockpiles, loading bays, log landings and log dumps.

Log stockpile

An accumulation of logs ready for loading onto trucks.

Merchandising agreement

A contract between Forests NSW and a contractor for the harvesting and/or hauling of timber to a mill.

Operator

A person who is licensed to perform harvesting work on State forests or transport timber products from the forest to a principal licensee's premises.

Principal licensee

The holder of a timber or products licence.

Protected works

Building, yard or water supply reservoir as defined under the Dangerous Goods (General) Regulation 1999.

Pulplog

Logs used for reconstituted products including paper and panel board.

Regolith

Unconsolidated residual or transported material that covers the solid rock on the earth.

River

A third-order stream or greater with permanent water.

Road/loading bay classification system

A system that defines road use and/or loading bays, taking into account seasonal and operating conditions.

Safety management system

Policies, practices and documentation to ensure workplace safety and compliance with NSW legislation for occupational health, safety and rehabilitation.

Safety Standards Manual

A collection of Forests NSW policies and implementation steps that define minimum safety requirements for tasks or areas of work.

Sales agreement

An agreement between Forests NSW and a mill where Forests NSW supplies timber by delivered sale.

Sale, delivered

A log sale to a mill in which Forests NSW engages harvesting and haulage contractors to deliver timber products to the mill.

Sale, stumpage

A log sale to a mill in which the mill engages contractors to harvest and haul the timber to the mill.

Sawlog

Logs suitable for processing into solid timber products.

Secondary stockpile

A stockpile outside the immediate harvest area.

Site supervisor

Contractor's employee who is responsible for implementing health and safety procedures.

Slash

Tree waste left after felling, processing and extraction.

Snigging

Pulling logs, wholly or partly supported on the ground, from the forest to the log landing.

Snig track

A track along which snigging equipment travels.

Soils

R1, R2, R3, and R4 are classes of regolith stability applied to soils:

R1 high-coherence soils with low potential to deliver sediment

R2 low-coherence (when wet) with low potential to deliver sediment

R3 high-coherence soils with high potential to deliver sediment

R4 low-coherence soils (when wet) with a high potential to deliver fine sediment.

Supervising Forest Officer (SFO)

A Forests NSW employee who supervises harvesting and haulage operations.

Special-value flora or fauna

Species that are endangered or extinct, as defined by the Threatened Species Conservation Act or Fisheries Management Act.

Stockpile

An accumulation of processed logs which may be sorted by criteria such as length, quality, and diameter.

Thinning — plantation

Harvesting selected trees. Thinning improves the growing space, quality and volume of retained trees.

Tracking

The process of identifying extraction tracks.

Tree feller

A person employed by a contractor to fall trees manually or mechanically.

Tree selection and marking

Selecting trees for retention or removal and marking them with paint and symbols.

Walkover

Timber extraction or snagging without removing or disturbing the natural groundcover i.e. no snag track construction or blading is required.

Wetland

A vegetated depression with a seasonal or permanent watertable.

Workplace supervisor

A person nominated by a contractor who is responsible for a harvesting crew. May also have health and safety responsibilities (refer site supervisor) and may be a member of a harvesting crew.

Workplace

A permanent place of work that contains buildings or structures such as offices, sheds, depots, garages or workshops.

Worksite

1. A temporary place of work with no fixed structures, such as a forest site or a road.
2. An area of activity within a workplace.
3. For contractors, the area between the active harvesting area, the harvest plan area or the haulage route.

Notes



Forests NSW is a Public Trading Enterprise within the NSW Department of Primary Industries