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3 September 2013

Your Ref: COR 1413/11
Our Ref: 172164

Coroner Vandersteen
Coroners Court of Victoria
Level 11, 222 Exhibition Street
MELBOURNE VIC 3000

Dear Coroner Vandersteen,

Findings and Recommendations in the matter of William Malcolm Warner

I refer to your Findings and Recommendations, published in relation to the death of William Warner, and sent to WorkSafe in a letter dated 16 May 2013.

You have endorsed the following recommendations that were made and provided by Victoria Police in their inquest brief:

- compulsory 'Arboriculture for Beginners' training for operators and work site managers/supervisors, in the tree removal industry;
- compulsory training in tree removal with excavators or heavy machinery for operators and work site managers/supervisors; and
- that the recommendations be developed and adopted by WorkSafe and any other stakeholder.

WorkSafe recognises that there is a risk when tree removal is performed with plant that is not designed for this purpose and as such has undertaken preventative and enforcement work to educate people involved in tree removal. Whilst all employers have a duty under section 21(2)(e) of the *Occupational Health and Safety Act 2004* to provide information, instruction and training to employees and WorkSafe has a role in providing advice and assistance in relation to this duty, without a legislative requirement to do so WorkSafe does not have a role to mandate compulsory training.

WorkSafe has published a Plant Code of Practice that addresses many of the risks associated with selecting plant that is fit for purpose, as was the risk in this case. WorkSafe has also developed the Industry Standard for Safety in Forestry Operations – Harvesting and Haulage (attached) that addresses the risks associated with tree removal.

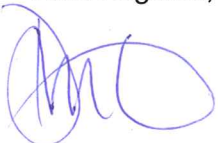
WorkSafe remains concerned about the number of injuries and fatalities associated with work in the tree removal industry. It will continue to develop programs in the future with the aim of reducing those numbers and addressing safety issues facing the industry.

WorkSafe will continue to raise awareness in relation to the risks associated with tree removal and will do so by:

- writing to the relevant TAFE curriculum maintenance managers to recommend that the relevant course be updated / modified to provide preliminary guidance / warning on the inappropriate use of plant; and
- promotion of existing guidance to relevant stakeholders for inclusion in advice to their members.

Thank you for bringing your Recommendation to WorkSafe's attention. Please do not hesitate to contact Amanda Upton, Lead Lawyer, Fatalities on 9461 1560 or amanda_upton@worksafe.vic.gov.au if you wish to discuss this matter.

Kind Regards,



Denise Cosgrove
Chief Executive
Victorian WorkCover Authority

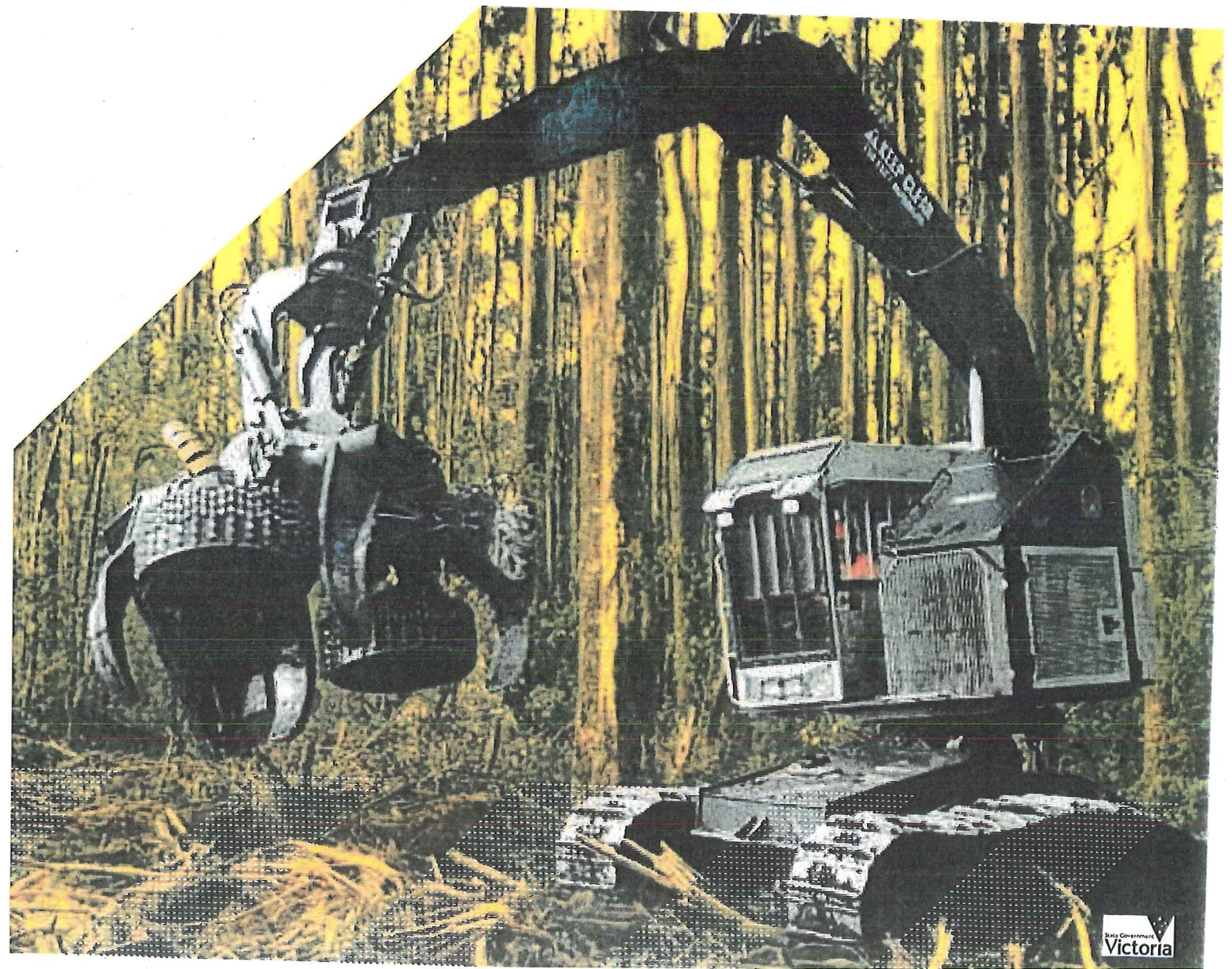
July 2007



Industry Standard

Safety in Forestry Operations

Harvesting and Haulage



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WorkSafe Victoria is a trading name of the Victorian WorkCover Authority.

The information presented in this guidance material is intended for general use only. It should not be viewed as a definitive guide to the law, and should be read in conjunction with the *Occupational Health and Safety Act 2004*. Whilst every effort has been made to ensure the accuracy and completeness of this publication, the advice contained herein may not apply in every circumstance. Accordingly, WorkSafe cannot be held responsible, and extends no warranties as to:

- the suitability of the information for any particular purpose;
- actions taken by third parties as a result of information contained in this publication.

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1.

Introduction

This Industry Standard provides practical advice about working safely in Victorian forests.

The particular focus in this Industry Standard is on the operations undertaken to harvest trees and move them to a processing plant, railhead or export facility. However, many of the hazards identified are relevant to any worker in Victoria's diverse forest environments. These include workers in the traditional hardwood sector which continues to be the major source of serious injuries; the softwood plantation sector; the emerging hardwood plantation sector; farm forestry; and single operator post, sleeper and firewood cutting operations.

Workers in harvesting and haulage experience a high proportion of fatalities for their relatively small-sized workforce. Fatalities have resulted from hand felling tasks, loading logs onto trucks and choker setting in a cable logging operation.

This Industry Standard was jointly funded by WorkSafe Victoria, VicForests, the Department of Sustainability and Environment, and Hancock Victorian Plantations. It involved extensive consultation with key stakeholder groups, with the oversight of WorkSafe's tripartite Forest Industry OHS Stakeholder Forum.

WorkSafe is working towards this Industry Standard becoming a Compliance Code or Codes, either in whole or in part. In addition, WorkSafe will continue to develop short, discrete compliance solutions which directly refer to a particular activity.

The Standard describes categories of people involved in the industry and aligns the roles of these people with the various duties described in the *Occupational Health and Safety Act 2004*. It provides practical examples of how to comply with a duty.

The Standard is not intended to be a set of safe operating procedures but, instead, a reference document against which duty holders can benchmark their current procedures and assess whether their current systems of work are appropriate. It is based on current knowledge and work practices within the industry. Other methods or solutions are not intended to be excluded, provided they meet the requirements of providing a safe workplace.

Advice on the general design, maintenance and operation of equipment used in the forest industry can be found in the documents referenced within this publication.

2.

Overview of the Standard

This standard provides guidance on how to manage the risks of forestry operations and comply with the *Occupational Health and Safety Act 2004* ('OHS Act 2004').

2.1 Who does the Industry Standard apply to?

Under the OHS Act 2004, the following people have responsibilities for safety in forestry operations.

- Employers
- Contractors
- Managers and controllers of workplaces
- Employees
- Self-employed workers, and
- Designers, manufacturers and suppliers.

'Employers' may include land owners or managers, forest owners or managers, contractors, subcontractors and customers such as sawmills or paper mills.

2.2 What is covered in the Industry Standard?

The Standard covers the specific hazards associated with harvesting, extraction, infield processing, loading and transport operations. Advice is also given on the common hazards found in all forest operations.

2.3 What approach to OHS is taken in the Standard?

The OHS legislation and modern health and safety practice is based on identifying hazards, assessing risks and then controlling any risks. This guidance uses the same approach by recommending ways of managing each aspect and providing practical examples.

2.4 What is the status of the Industry Standard?

This Standard aims to assist people in the forest industry to understand and meet their OHS legislative responsibilities.

The requirements of the OHS Act 2004 and regulations must be met in order to achieve compliance. In some cases the legal requirement will be specified in detail (e.g. incident reporting); in others the safety objective will be defined but will allow different ways of meeting the requirement (e.g. noise exposure level, which can be reduced in several ways).

The guidance in this Industry Standard reflects the underlying OHS legislative duties of people in the industry (e.g. employers, employees, contractors) and the 'state of knowledge' about managing OHS in forest operations.

The focus is on known and effective risk controls, providing information that will assist duty holders (e.g. land owners, employers, employees) to make decisions that will provide the highest level of protection so far as is reasonably practicable.

This Industry Standard is not a Compliance Code under the OHS Act 2004. (Refer to the Glossary for a definition of a Compliance Code.)

In general, the guidance in the Standard should be followed, unless a risk assessment demonstrates that the circumstances require an alternative approach that can achieve an equivalent level of health and safety.

Where terms such as 'must', 'do not' and 'never' are used, this indicates that the evidence and industry practice demonstrates there is only one safe way to manage the risk. Such references are mainly found in the 'High-risk forestry activity' sections. Otherwise, any reference to 'must' is related to a mandatory requirement under the OHS Act 2004 and regulations.

2.5 Symbols used throughout this Industry Standard

In this Industry Standard a number of techniques are used to identify how compliance can be achieved. These techniques, illustrated below, identify effective ways of eliminating and reducing risks in forest operations.



Alerting you to common hazards and risk controls

The Standard identifies common hazards for particular stages of forest operations that have to be controlled by suitable risk controls. In each case a combination of the listed controls are required to eliminate or reduce the risk.

The listed risk controls are based on the current state of knowledge about how to best reduce risk. Operators are expected to apply all the relevant controls where common hazards are present.

Alerting you to high-risk forestry activity

The Standard sets out a number of high-risk forest activities that have been identified on the basis of the high-risk nature of the particular activity. The hazards for each activity are listed in detail, along with the risk controls that are essential in eliminating or reducing risks. In some cases risk factors are listed where individual work situations vary. Any risk assessment needs to include these risk factors.

High-risk forestry activity

Traffic light tables: alerting you to preferred risk solutions

Traffic light tables are used in this Standard to indicate which practices are high-risk and what the preferred risk controls are. Reduced risk solutions are indicated where an interim arrangement is necessary or if the preferred solution is assessed as not reasonably practicable in an individual situation.

High risk

Reduced risk solution

Preferred solution

Work practices review process: alerting you to the need to take actions or review risk control measures and OHS system

The following symbols are used to indicate how the work practices or management system of a forest operator may be audited. The symbols highlight the need to plan and respond to changing circumstances in the forest environment.

A WorkSafe inspector may ask you questions about your work practices in order to establish compliance with OHS legislation.

Planning	Actions to select suitable equipment, employees, contractors and the provision of training and information
Procedures	Safe work procedures based on risk management techniques such as a Job Safety Analysis
Responses	Risk assessments to decide on a course of action, investigations to establish what went wrong and fixing the problem
Checks	Inspections and audits to check that risk control measures are appropriate and are working effectively

3.

OHS responsibilities in the supply chain

The forest operations supply chain involves longer term and operational planning as well as the specific timber harvesting and haulage activities that end in product being delivered to customers.

Successful management of OHS risks requires everyone in the supply chain to play their part. Everyone's broad responsibilities are described in the OHS Act 2004.

3.1 Responsibilities under the OHS Act 2004

Planning to reduce risks can only be undertaken when each person with OHS responsibilities does all that is 'reasonably practicable' to meet them.

The level and nature of responsibilities is related to the extent of control a person exercises over activities that impact on OHS and what is reasonably practicable. This means that what has to be done is based on what is known, or should be known, about the hazards and risks and how much control is exercised over the activity that creates the hazards and risks.

The most frequently referred to duty in the Industry Standard is the employer duty. Under s. 21 of the OHS Act 2004 an employer has a broad duty or responsibility to provide and maintain, so far as is reasonably practicable, a safe and healthy working environment for its employees.

3.2 What does 'reasonably practicable' mean?

When determining what is reasonably practicable, a duty holder must have regard to the following:

- The likelihood of hazards and risks eventuating
- The degree of harm that would result if the hazard or risk eventuated
- What is known, or ought reasonably be known, about hazards and risks and ways of eliminating or reducing them
- The availability and suitability of ways to eliminate or reduce hazards and risks, and
- The cost of eliminating or reducing hazards and risks.

Reasonably practicable also takes into account the state of knowledge about the risk and the availability and suitability of ways of eliminating or reducing it. There is much available information on hazards and risks that will assist duty holders to establish what is reasonably practicable (e.g. WorkSafe guidance, industry guidance).

When taking into account the cost of eliminating hazards or risks, this does not mean risks should only be controlled if you can afford it, but rather that risks must be controlled unless the cost is grossly disproportionate to the benefits of risk reduction.

All the elements of 'reasonably practicable' have to be considered together in order to make decisions.

The OHS responsibilities of the major parties in the supply chain are described in the following pages.

3.1.1 Owners or managers of land or forests

Owners or managers of land or forests could include state government agencies, private plantation companies, or individual tree farmers. They may own the freehold title to the land or lease the land. They may have been provided with rights to harvest trees or be authorised to harvest on the land through other legal arrangements.

Where owners or managers of land or forests directly engage employees for work, they hold all the responsibilities of an employer set out in Section 21 of the OHS Act 2004.

Where owners or managers of land or forests engage contractors to undertake work on their land they owe the same employer responsibilities under Section 21, but this is qualified by the extent of control the employer exercises over the activity.

Where the land or forest manager or owner does not employ staff directly but allows others to work on their land, they may assume the duties of a person who manages or controls a workplace (Section 26). This duty is also qualified by the extent of control the employer exercises over the activity.

In any situation an employer also holds a duty to ensure that others (e.g. visitors, the general public) are not exposed to risks arising from forestry operations.

3.1.2 Contractors

Contractors who directly engage employees hold all the responsibilities of an employer set out in Section 21 of the OHS Act 2004.

Contractors who engage subcontractors to undertake work have the same employer responsibilities under Section 21 but this is qualified by the extent of control the employer exercises over the activity.

3.1.3 Log customers

Log customers may include sawmills, pulp and paper mills and export facilities.

Where log customers directly engage employees for work, they hold all the responsibilities of an employer set out in Section 21 of the OHS Act 2004.

Where log customers engage contractors to undertake work to harvest or haul logs, they owe the same employer responsibilities under Section 21 but this is qualified by the extent of control the employer exercises over the activity.

Where log customers do not employ staff or engage contractors, but receive logs at their facility, they may assume the duties of a person who manages or controls a workplace (Section 26). This duty is qualified by the extent of control the employer exercises over the activity.

3.1.4 Self-employed people

Self-employed people must not take unnecessary risks and have a duty to ensure that others (e.g. visitors, the general public) are not exposed to risks arising from forestry operations.

3.1.5 Designers, manufacturers and suppliers of plant or substances

Designers, manufacturers and suppliers of plant or substances used in forestry operations have a duty to ensure that, so far as is reasonably practicable, the plant or substance has been designed to the required standards and tested for safe use.

They also have a duty to identify hazards associated with the plant (addressing operation, inspection and maintenance) and ensuring that risk control measures are implemented for these hazards.

These identified hazards and corresponding risk control measures may be communicated to the end user via operational and maintenance documentation.

The effectiveness of these risk control measures and the plant suitability for the intended use should be considered when selecting plant.

3.1.6 Employees

Employees have a duty to employers and to others to take reasonable care and not put themselves or others at risk by their actions or omissions. Under the OHS Act 2004, employees have a duty to cooperate with the measures that an employer has developed to eliminate or reduce risks.

In the forestry environment the most important of these procedures is the requirement to stay within safe work areas (e.g. two tree lengths, designated safe spot for truck driver, designated safe place for choker setters and chasers) and not enter anyone else's work area without following the workplace procedure set out for the specific activity.

3.

OHS responsibilities in the supply chain

Typical responsibilities at the planning stage

Controllers of land

- Ensure roads are appropriately built and maintained
- Provide information on known hazards

Land owners or forest managers/ principal contractors or owners who engage contractors

- Select contractors who meet OHS requirements
- Enable safe access to work area
- Pass on information about known hazards to contractors
- Conduct a job safety analysis in consultation with contractors
- Decide on the appropriate harvesting method
- Allocate coupes and schedules according to contractor skill and equipment
- Ensure work can be safely conducted in the allocated time
- Establish emergency procedures
- Develop traffic management plan
- Ensure compatible communications equipment for all contractors
- Monitor and supervise contractors to ensure safe systems of work

Employers and contractors

- Select subcontractors who meet OHS requirements
- Provide suitably maintained plant
- Obtain licences and certificates
- Conduct Job Safety analysis in consultation with workers
- Ensure only trained and competent workers are used
- Supervise work practices
- Establish consultation arrangements
- Obtain safety information about coupe/work area
- Confirm communication and emergency procedures
- Confirm safe work procedures
- Provide suitable personal protective equipment

Designers, manufacturers, suppliers

- Supply plant or substances that reduce risks
- Provide users with information about safe use of plant or substances
- Provide users with any updated information about OHS issues that have been brought to their attention

Self-employed people

- Ensure signs are in place to warn the public about work underway
- Use equipment that is suitable for the task
- Ensure compatible communication equipment

Employees

- Demonstrate understanding of safe work procedures
- Not put themselves or others at risk (e.g. stay in safe work area)

3.2 OHS responsibilities: longer term planning to coupe planning

Forest environments are dynamic and sometimes unpredictable but all management decisions related to forestry operations must consider OHS needs and the potential to reduce risks.

3.2.1 Longer term harvest plans

Over a 3–5 year period, decisions about areas to be included in forest harvesting plans can have an impact on OHS. On public land this could include the development of wood utilisation or timber release plans. Plantation managers may also have longer term strategic harvesting plans.

The decision-making process during this time frame should address:

- Recognition of higher risk forest types (e.g. fire, snow, wind or insect damage)
- The suitability of road networks to access coupes
- The availability of equipment and contractors capable of harvesting the areas of forests identified in plans
- Potential conflicts between environmental requirements and safe work practices
- Potential impacts of silvicultural or management requirements on safe work practices.

3.2.2 Annual plans

Annual harvesting plans generally provide more detailed information about coupes including location, road access and timing of harvesting.

At this stage of the planning process, forest managers need to consider appropriate harvesting methods for specific coupes, and the selection and availability of contractors with suitable equipment and operator skills. Where practical, forest managers should allocate coupes to a contractor after the contractor has had the opportunity to inspect the coupe to ensure they have suitable equipment and people to undertake the harvesting operation.

People responsible for allocated cutting areas have a duty to consult with harvesting and haulage contractors during the planning process. Issues to be addressed include:

- Road closures
- The control of hazards identified on land adjacent to the harvesting coupe
- Controls for known hazards in trees or patches of vegetation marked for retention
- Factors such as slope or yield that will impede the rate of production
- The suitability of the available machinery considering factors such as slope, tree size and soil type
- The most appropriate method for harvesting timber (mechanical felling should be considered in preference to hand felling)
- Competency of particular operators
- First aid and other emergency plans.

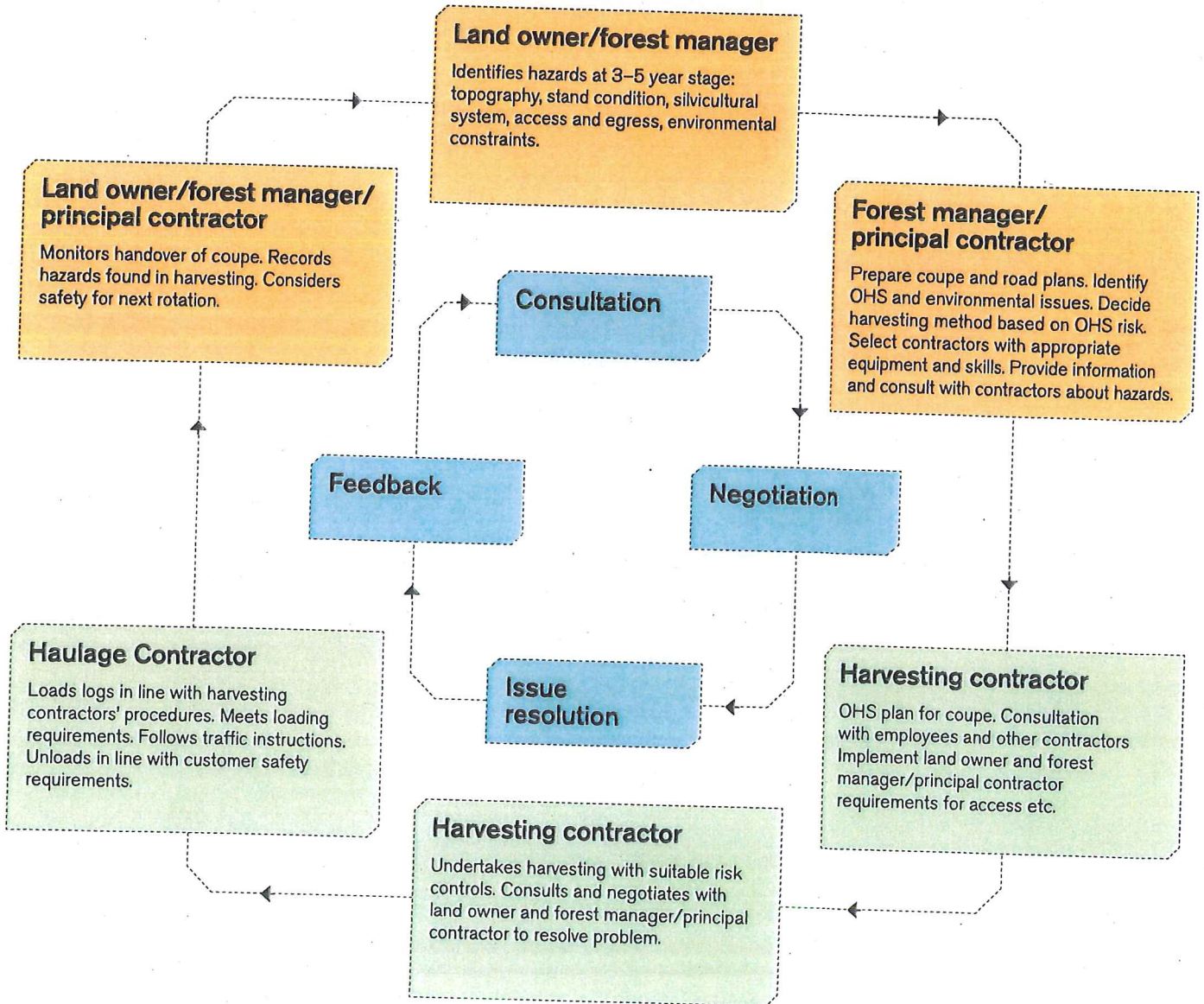
3.

OHS responsibilities in the supply chain

3.2.3 Operational (Forest coupe plan/timber harvesting plan) plans

The plans for the way a forest is to be harvested can contribute significantly to the safety of a harvesting operation. Maps and hazard reduction plans, which are generated as the coupe is handed over to the harvesting contractor, are important tools to ensure that accountability for the management of particular hazards is clearly addressed.

Responsibilities for safe forestry operations



At the planning stage, the land or forest manager/principal contractor (or the person who controls or manages the workplace) who has engaged the contractors for timber harvesting and haulage, needs to provide information about the coupe that may impact on safety. This includes:

- Information on the physical terrain including the slope and soil type
- Information about the environmental and silvicultural objectives
- Identifying the location of known dangerous trees and other hazards such as mine shafts, wells and erosion
- Preferred location of log extraction tracks and log landings
- Location and design of log extraction roads
- Location of modified harvesting zones for environmental protection (e.g. habitat retention, riparian buffers and filters).

Consultation between the land owner or forest manager/principal contractor at this stage is important to reduce problems before work commences. This is best achieved by both parties 'walking the ground' together, allowing contractors to select retained trees and landing locations to reduce OHS risks associated with silvicultural and environmental prescriptions.

During the coupe inspection, the contractor should consider the following:

- The adequacy of landings, log dumps and roads, considering the type of mobile and fixed plant, the type and size of trucks and the size and number of log grades to be processed and stored
- The impact of weather conditions and delays, the adequacy of artificial lighting if operating at night, and any seasonal considerations (e.g. fire)
- Development of an initial plan to reduce risks involved with entering and leaving the coupe (e.g. likelihood of falling timber across or near roads, siting of log landings and visitor induction area)
- Assessment of how the nature of the coupe will affect work flows (e.g. falling → extraction → log preparation → loading → transport).

The land owner or forest manager/principal contractor and the harvesting contractor should identify and resolve any potential conflicts between OHS and environmental management requirements at this stage. The land owner or forest manager/principal contractor and the harvesting contractor should consult with subcontractors (e.g. log truck drivers) and employees to discuss relevant issues and provide information on the system of work so that everyone involved in the forestry operation is prepared for the nature of work to be undertaken.

3.2.4 Building OHS into the next harvesting cycle

OHS consideration in the planting and replanting stages of the forest cycle can help reduce potential hazards associated with operations undertaken later in a rotation. It is often easier to do this when there are no trees on the site.

At planting and replanting stages you need to:

- Ensure the method of planting does not increase difficulties associated with future harvesting
- Consider whether existing landings and roads should be retained for future harvesting
- Identify and permanently record on maps particular hazards associated with an area of land e.g. mine shafts or land slips.

4.

A systematic approach to managing risks

A systematic approach to OHS management is necessary to adequately manage the hazards and changing circumstances of forestry operations. The core of a systematic approach is a risk management process, an employee consultation process, and communication with other parties involved in the forestry workplace.

4.1 Risk management process

OHS risk management is a process for identifying hazards in a workplace and eliminating or reducing as far as reasonably practicable the risks associated with those hazards.

The purpose of this Industry Standard is to outline the recommended approaches to most of these hazards, however the dynamic nature of forestry operations requires a continuing process of managing risks.

The most commonly used OHS risk management approach has four steps. At each step, consultation with employees is essential for risk management to be effective.

Step 1 Hazard identification	Find out what hazards are present in the workplace. Many workplace hazards are well-known and can be immediately tackled by well-established ways of eliminating or reducing them.
Step 2 Risk assessment	Understand the nature and the level of the risk before taking action. Determine what could happen and why.
Step 3 Risk control	Fix the problem. Risk controls are evaluated and chosen to achieve the highest level of protection (as far as is reasonably practicable). In practice, a number of risk controls may be required to reduce risk.
Step 4 Check controls	Make sure the controls are working. Effective risk management requires not only that risks be controlled but that they are checked to see if they are operating effectively and that circumstances have remained constant.

The nature of the forestry industry means that specific risk assessments and monitoring of risk control measures may be required on a regular basis to deal with changes in daily working conditions.

The following circumstances require risk management to ensure that timber harvesting and haulage is undertaken safely:

- Planning and contracting for timber harvesting
- Undertaking a new activity
- Purchasing and using new equipment, substances and processes
- Adjusting to day-to-day changes
- Resolving issues
- Responding to incidents
- Planning for new legislation
- Justifying an alternative to recommended practices.

4.

A systematic approach to managing risks

4.2 How much risk do you have to manage?

The harvesting and haulage of logs from either planted or naturally regenerated forests exposes operators to different risks depending on the industry sector. This Industry Standard aims to provide guidance on common hazards and particularly on high-risk forest activities. The application of the standard to your operations will depend on the level of risk you have to manage. The profile below illustrates the differences in risk that may apply to your operation.

Forestry operations risk profile

Higher risk	Medium risk	Lower risk
Workers operating equipment they have not been trained or assessed to operate	Workers that have had some training but not necessarily current or applicable to the equipment they are operating. Informal assessment done by leading hand or other	Workers have been trained and assessed to a National Industry Skills Standard in the equipment they are operating
Workers with no protective canopy	Workers outside a protective canopy some of the time	Workers under a protective canopy
Activity on steep slopes	Some activity on steep slopes	Activity is on flat ground
Trees to be felled are large, hardwood species	Trees to be felled are a mix of small and large species	Trees to be felled are smaller softwood species
Working alone without emergency contact means and procedures	Working alone with agreed emergency contact means and procedures	Working alone but within same area as others and in constant communication
Landings are small and limited by environmental requirements	Landings are adequate for the operation	Landings are larger and usually by the roadside
Falling done by hand with skill-based ability to control direction of fall	Mainly mechanical falling with hand falling only used as required	Falling done mechanically with ability to control direction of fall
Working at night with poor visibility in work area	Working at night where 'active' work area is clearly visible to all operators	Working at night where whole work area is clearly visible to all operators
Work area separation distance not maintained	Work area separation distance maintained most of the time	Work area separation distance maintained

The more activities in the red zone, the greater the importance of your risk management system. With each of these risks, an assessment of the harvesting and haulage conditions will need to be undertaken to identify the approach that eliminates or reduces risks in the high risk zone, and make sure activity is in the medium or lower risk zones.

4.3 Consultation with employees

The primary objective of consultation is to improve the way OHS is being managed to achieve safer, healthier workplaces. Meaningful and effective consultation involves drawing on the knowledge, skills and ideas of workers and encouraging their involvement in their workplace health and safety system.

Consultation should take place whenever there is a decision that may impact on health and safety in forestry operations. Consultation at the planning stage can reduce problems on the job.

Under Part 4 of the OHS Act 2004 there is a duty for employers to consult with employees (and with the employees of any contractor engaged) on OHS matters. The Act states that employers must consult (so far as is reasonably practicable) on matters including:

- Identifying hazards and assessing risks
- Decisions on:
 - Prevention measures
 - Workplace facilities (e.g. hygiene, first aid)
 - Consultation and issue resolution arrangements
 - Information and training
 - Health monitoring
 - Proposed changes that may affect OHS.

This duty to consult also extends to any contractor engaged and any employees of the contractor. However, it only extends to matters that the employer has control over.

Forest workers must be consulted in the process of identifying hazards related to the work they do. Similarly, consultation with workers and their representatives about the best measures to reduce risks ensures that all the likely issues are considered. If incidents occur, workers and OHS representatives should be involved in investigations to help determine the causes and suggest ways of preventing a recurrence.

Consultation may be achieved through formal processes such as elected OHS representatives and OHS committees or through other workplace meetings or forums in which OHS issues can be discussed.

The OHS Act 2004 provides that consultation must involve sharing information with employees, giving employees a reasonable opportunity to express their views, and taking those views into account (Section 36).

The OHS Act 2004 allows a group of employees (a designated work group) to elect a health and safety representative (HSR). The benefit of an HSR is that they provide a point of contact for individual employees with issues to raise, and enable the employer to receive input and provide feedback directly.

4.4 Communicating with other workplace parties

Where forest operations involve several contractors sharing the same or adjacent work areas, or interacting with employees of the land or forest manager, it is important to have a common approach to managing OHS.

In the case of consultation with workers in this scenario, it may be more efficient and effective to agree on an overall consultation process that includes all the workers. This might include agreeing on elected HSRs to cover a shared workplace, or a common OHS committee or other process to manage health and safety issues that arise in the shared workplace.

Any risk assessments covering common activities or areas should be checked before beginning work to ensure a common and agreed method of controlling risks.

Where a common safe work procedure is agreed, all employees should be advised of the approach to be taken. Where practicable, a joint risk assessment of any new or site-specific hazards should be undertaken by all parties.

Where radio communication is used, common frequencies should be promoted. On forest roads, other road users should be alerted to the presence of log truck traffic. Truck drivers should notify other roads users of their location in reference to kilometre markers via a predetermined UHF radio channel. The UHF frequencies should be listed on warning signs.

All parties should agree on a common set of procedures including:

- Issue resolution processes
- Emergency communication protocols
- Evacuation protocols
- First aid arrangements.

All parties should agree on a common incident reporting system in addition to the requirements of meeting their specific legislative reporting obligations. This should cover both hazard reporting and incident reporting.

5.

Essential OHS requirements

Everyone involved in the forestry operations supply chain—landowners and managers as well as harvesting and haulage contractors—should have a basic OHS system in place.

While there are differences in the risks and issues for harvesting and haulage in native forest as opposed to plantation environments, there are also many essential elements that should be included in a basic OHS system.

In this section look out for these elements that trigger you to take actions and review your work practices.

Planning	actions to select suitable equipment, employees, contractors and the provision of training and information
Procedures	safe work procedures based on risk management techniques such as a Job Safety Analysis
Responses	risk assessments to decide on a course of action, investigations to establish what went wrong and fixing the problem
Checks	inspections and audits to check that risk control measures are appropriate and are working effectively

5.1 Essential procedures: safe work areas

In forestry operations, the risk of death or serious injury increases dramatically when operators are not effectively separated into safe work areas. Separating activities that could create risks for others is the most basic safety measure that everyone must understand.

A work area is the area of a coupe/site in which individual operators work. This work area is normally dominated by one activity such as manual felling or skidding. However, the nature of forestry operations means there will often be several operators working in adjacent work areas. In the case of the log landing there may be several operators in the one work area.

The greatest danger a person working in the forest faces is being struck by logs, trees or pieces of machinery as a result of activities in another work area.

A work area is made into a safe work area by separating work activities. Separation can be achieved in a number of ways:

Physical barrier: for example, a machine canopy or a parked (not operating) machine placed between ground-based workers and other working machines

Distance: the common separation distance is two tree lengths of any tree being felled or snigged

Time: risks are reduced by scheduling different parts of the process at different times. For example, log landing construction is completed ahead of the interaction with other activities.

5.

Essential OHS requirements

Common examples of a safe work area

Activity	Operator(s)	Typical safe work area
Manual falling	Faller/skidder operator	<ul style="list-style-type: none"> Separation distance of two tree lengths (distance) Entry by either operator into safe work area only by agreed protocol such as radio communication
Mechanical falling	Harvester operator/ forwarder	<ul style="list-style-type: none"> Separation distance of two tree lengths (distance) Separation by scheduling of work (time) Entry by either operator into safe work area only by agreed protocol such as radio communication
Log processing	Loader/skidder/ log grader	<ul style="list-style-type: none"> Separation distance of boom length plus half log length (distance) Separation by barrier such as parked equipment (physical) Entry by either operator into safe work area only by agreed protocol such as radio communication
Loading of log trucks	Loader/truck driver	<ul style="list-style-type: none"> Truck driver in line of sight of loader operator and in designated safe area with separation distance of boom length plus half log length (distance) or Truck driver at least 20 metres to the front or back of the truck (distance) or Truck driver in cabin (physical) Entry by either operator into safe work area only by agreed protocol such as radio communication
Cable logging: hooking up	Choker setter/ yarder operator	<ul style="list-style-type: none"> Choker setter in the logged-off area, behind and to the side of the turn (distance) and/or Distance as above plus further protection such as hip high stumps, higher ground, or stationary equipment (physical) Entry back into work area only when signalled by yarder operator
Cable logging: unhooking at landing	Chaser	<ul style="list-style-type: none"> Designated area in line of sight of yarder operator (distance) and/or behind yarder (physical) Entry back to work area only when signalled by yarder operator after logs landed

5.2 Essential procedures: risk assessment of ground conditions

Because of the changing nature of forestry operations and operating conditions, there are always a number of hazards that have to be continuously managed. One common hazard relates to machine stability under different ground conditions.

Risk assessments undertaken in the coupe should focus on the stability of the machine and the use of the machine within its design and manufacturer's specifications. The following factors should be considered in any risk assessment:

- Uphill or downhill operation
- Length of slope
- Magnitude of slope
- Size and arrangement of trees or logs relative to the weight of the machine
- Ground conditions such as broken ground, stumps, holes and rock
- Operator experience and skill level
- Weather conditions.

5.3 Training, skill development, competency and licensing

An employer must ensure that all workers have the necessary skills to carry out their job safely. For workers undertaking high-risk forestry activities, a good first step is to ensure that they have been assessed as competent against a relevant Unit of Competency by an accredited assessor.

While this is a good first step, it should not be the only thing an employer does to make sure the worker has the necessary skills to carry out their job. Units of Competency are developed as national benchmarks and, as such, are generalised documents that may not be suitable for providing definitive evidence that an employee has the appropriate skills for a specific work function (e.g. operating a particular piece of equipment in a particular area of forest).

For operations in State Forests the *Sustainable Forest (Timber Harvesting) Regulations 2006* (regulated by the government agency responsible for managing environmental sustainability for Victoria) make it an offence to:

- Carry out activities for which a Timber Harvesting Operator's Licence (THOL) may be issued
- Employ an unlicensed timber harvesting operator
- Direct the holder of a THOL to contravene their licence conditions or the Regulations.

There are three classes of THOL: an operator's licence, a temporary operator's licence (valid for 3 months) and a trainee operator's licence. Each operator's licence specifies one or more prescribed licence activities. The list of prescribed licence activities are specified in section 15 of this publication and can be used, together with the national Unit of Competency, as evidence when determining an applicant's eligibility to hold a licence.

Essential OHS requirements

A THOL is valid for three years. Once the licence has been expired for 12 months it is not renewable. All applications for a new licence must be accompanied by written evidence of competency in the relevant activity.

There is no requirement to hold a THOL to undertake harvesting or haulage operations outside state forests, however the list of Units of Competency specified in chapter 15 are recommended minimum requirements for any operator undertaking the identified activities in plantations. Relevant Units of Competency for other high-risk forestry activities are also identified (e.g. specific Fire Salvage training module developed for Victoria).

Units of Competency generally do not describe ways of doing things to reduce or eliminate the chance of injury. Assessors are therefore encouraged to refer to this Industry Standard when deciding if an operator is competent to undertake a particular operation. In order to facilitate and standardise this process, the use of standard industry endorsed training materials, assessment tools and assessment procedures is encouraged.

It is also important for employers to consider the context of any previous assessments that an employee may have undertaken. A certificate of competency held by a forwarder operator who operates exclusively on flat sandy sites is the same as that held by a forwarder operator working in steep mountainous terrain, but the skill levels required to do their job safely may be different.

With this in mind, employers should ask the person who undertakes an assessment of competency to provide them with information about the context of any assessment undertaken. The description of the context could include the type of machine that was used during the assessment, the size of trees being handled, and relevant information about the location of the assessment (e.g. slope and/or soil type).

The employer should provide the new employee with training on specific plant in the environment in which they are likely to operate. It is also good practice to arrange refresher training as necessary, and independent assessments of competency for existing operators who undertake high-risk tasks.

Planning	Do all workers and contractors have the required licences?
Procedures	Has training been provided on first aid and emergency procedures?
Responses	Have all workers been provided training on use of specific plant and safe work procedures?
Checks	Have records of training been kept?

5.4 Induction

Any worker undertaking forestry operations work should be provided with an induction to familiarise them with the forestry operations and safe work procedures. An induction is in addition to any activity-specific training requirements. The induction should cover, as a minimum:

- Forestry hazards
- Emergency procedures
- Communication system and radio frequency
- First aid and amenities
- Fatigue management
- Enterprise safe operating or work procedures
- Hazard reporting
- Incident reporting, injury register and the process for making a compensation claim
- Issue resolution processes
- Consultation arrangements
- Consequences of employees or subcontractors failing to follow OHS instructions
- Sites being used for the first time
- Operations being done for the first time.

5.5 Ongoing supply of information and supervision

Toolbox talks, provision of updated information and refresher training where appropriate can ensure safe work practices are maintained. The monitoring of techniques and practices is important in maintaining standards. For example, periodic inspection of the stumps of a manual faller may indicate poor techniques that create risks for the faller and others in the coupe.

Forest operations present particular challenges in maintaining effective supervision of work. Hazards can arise unexpectedly and many activities are away from the direct sight of the crew supervisor. However, effective supervision is essential in maintaining a safe and healthy work environment.

If standard procedures are not followed by an employee, appropriate action should be taken to ensure they understand they have done the wrong thing and, where necessary, outline the consequences of not following safe work procedures.

5.6 Communications

Forestry operations are conducted in an environment in which communication is not always easy. Noise, terrain, lack of line of sight, poor visibility and remote locations all create problems for communication. Effective verbal briefings of operators and frequent interaction between workers can reduce stress and assist proactive hazard management.

Effective communication practices include:

- Radio communications between all workers in the coupe, as well as visitors to the site
- Agreed whistle or hand signals in operations such as cable logging
- Effective emergency communication systems.

Planning	Have radio communications been tested in the work location?
Procedures	Are safe work areas and separation distances well understood by all workers and contractors?
Responses	Is there a risk assessment procedure where work areas are entered by others?
Checks	Are checks of communication systems regularly made?

5.7 Equipment selection and use

When equipment is purchased it is important to ensure that designers, manufacturers and suppliers have met their responsibilities. The equipment should be supplied to end users with the hazards identified and risk control measures implemented for these hazards. Maintenance and operational documentation must be supplied; for example, the operator user manual and inspection and maintenance schedule from the manufacturer.

During the planning stage, the equipment to be used should be checked to ensure that it is suitable for its intended use and that it has been inspected and maintained to the manufacturer's specifications.

Forest machines such as harvesters, skidders and forwarders have common design and operational issues that should be considered. These include:

- Plant compliance with Australian or overseas design standards
- Plant suitability for intended terrain and use
- Compatibility and design standard compliance of attachments for plant
- Ergonomic features such as cab access, working posture, cab visibility, noise and vibration
- Operator protective structures such as Roll Over Protection Structures (ROPS) and Falling Object Protection Structures (FOPS) (compliant with appropriate standards)
- Operator cab protection such as reinforced cabin glazing
- Guarding of hazardous plant components.

Improper selection of plant can create significant hazards such as plant instability or operators being crushed due to the lack of sufficient ROPS/FOPS.

To meet OHS requirements, the preferred solution may be to source a purpose-built machine designed for forestry operations with features such as increased ground clearance, wider track, heavier duty components, improved serviceability (less downtime), and a reinforced operator cabin (compliant with the relevant Standards).

On occasion it may only be possible to source a machine that is designed for generic application, such as an earth moving excavator, which is not ideally suited for forest operations. However, use of this machine may be an acceptable solution given that these deficiencies are identified as hazards (by whoever selects the machine), and risk control measures are implemented.

For example:

- Install sufficient ROPS/FOPS and cabin protection using a suitably qualified and competent person
- Restrict operational area for use of the plant and mark in the coupe plan
- Define operational slope limit for the intended use of the plant
- Ensure operators are trained and competent in the use of the plant for the specific environment (such as, operational experience in steep terrain).

Ultimately, selection of plant depends upon things like the intended use, operational environment, budget, and availability of plant. It is the responsibility of those who select the plant to determine the relevant information to be provided to a supplier so that both parties can make a well-informed decision on the plant suitability.

Once plant is selected, it is the responsibility of the employer in control of the plant and the operators of plant to ensure that it is used within the designer/manufacture operational parameters, and/or site specific restricted operational parameters.

Planning	Can selected forest machinery operate within the manufacturer's specifications in the coupe?
Procedures	<ul style="list-style-type: none"> ▪ Has the supplier been informed of the plant's intended use and operational environment? ▪ Does the plant comply with the relevant design standards? ▪ Does the plant have sufficient operational, inspection and maintenance instructions? ▪ Is there a pre-start operational check, inspection and a maintenance schedule?
Responses	<ul style="list-style-type: none"> ▪ Is a risk assessment undertaken if operating conditions change significantly (e.g. weather)? ▪ Is the designer/manufacture being informed of additional hazards identified during operation or maintenance?
Checks	Is machinery inspected and maintained regularly in accordance with designer/manufacture specifications?

5.8 Operator protective structures

Forest machines must be fitted with operator protective structures, designed to the appropriate standard, that eliminate or reduce (as far as is reasonably practicable) the risk of operator injury due to:

- Rollover and consequent cabin impact damage
- Objects including trees and branches falling on or over the cabin
- Objects penetrating the cabin space, such as chain shot
- Hazardous noise.

Where there is a risk of roll over or tip over, seatbelts must be provided and worn by all operators of self-propelled mobile mechanical plant to prevent the risk of the operator being thrown from the cabin. Plant operator protective structures must be evaluated against the relevant identified hazards to determine if they provide sufficient control of risk.

For example, if chain-shot penetration into the operator cabin is an identified hazard, the windscreen must be assessed in order to determine if it provides sufficient protection. However, this is only one way to aid in controlling the risk involved. Scheduled chain inspection/maintenance in accordance with manufacturer's specifications and safe work procedures should be used in combination with cabin protection to control the risk.

It is recommended that a supplier with a detailed understanding of Australian Standard AS/NZS 2343:1997, Bullet-Resistant Panels and Elements, be consulted to determine windscreen suitability, and solutions available for specific hazards. The estimated mass and velocity of chain-shot can be evaluated against ballistic data to identify the required level of windscreen protection.

Additional requirements:

- Operator protective structures must have a minimum of two exits, allowing for exit after a rollover.
- Where a door is fitted to the machine, the door must be closed during operations.
- Where damage has been sustained (e.g. deformed structural member), the plant should be assessed by the original designer or other suitably qualified and experienced personnel (e.g. mechanical or structural engineer).
- Where a protective structure has been damaged and its effectiveness is compromised, the employer in control of the plant must take all practicable steps to repair or replace the structure with one that complies with an appropriate design standard.
- If the suitability of a protective structure is uncertain, a duty holder should engage the services of suitably qualified personnel to assess the design against the criteria set out in this Industry Standard (e.g. verify compliance with design standards AS 2294.1 Supplement 1 – 2003). Information indicating the suitability of the structure should be marked on an identification plate, and should include:
 - The name and address of the manufacturer
 - The structure's type and serial number
 - The serial number, make and model of the plant that the structure is designed to fit
 - The maximum machine mass, for which the ROPS/FOPS was designed
 - The relevant design standard for which the structure complies
 - Other such information as deemed appropriate (for example, installation date, repair, or replacement information).

5.

Essential OHS requirements

Operator protective structures that should be supplied with machines used in forestry operations

Protective structure	Machine type			
	Hydraulic excavators	Purpose built forestry equipment	Earth moving machinery	Yarder
Roll Over Protection Structure: ISO 8082 or AS 2294.2		✓	✓	
Falling Object Protection Structure: ISO 8083 or AS 2294.3		✓	✓	✓
Operator Protective Guards and Structures: AS4988	✓			
ISO 8084 or AS 2294.1 Supp 1	✓	✓	✓	✓

5.9 Emergency procedures

Planning for forestry operations needs to include the possibility of emergencies and the need for rapid evacuation of the work crew. Planning for emergencies should include:

- Testing communication systems within the site and to external contacts
- Establishing an Emergency Meeting Point, making sure it is known to all workers and can be simply communicated to the emergency services (e.g. a signposted location or road intersection)
- Listing of phone contacts in case of emergency—these contact details should be stored at multiple designated locations
- Checking first aid equipment and capabilities are adequate. Location of the equipment should be clearly identified and the name of the first aider should be known by all workers in the coupe (see 5.14)
- Ensuring adequate transport will be available if evacuation is required
- Confirming emergency procedures for working alone and 'report in' protocols
- Briefing all contractors, workers and visitors who will be working on site, on the emergency procedures.

Planning	Are all people working on the coupe aware of the emergency procedures?
Procedures	Does everyone have a list of emergency contact numbers?
Responses	Is there an immediate and direct means of communication with emergency services?
Checks	Have the evacuation procedures been checked?

Essential OHS requirements

5.10 Coupe invasions

Powers have been provided to government agencies and police under the *Safety on Public Land Act 2004* to remove people who invade prescribed logging coupes. Contractors should be made aware of the requirements to:

- Cease harvesting activity
- Secure the site and equipment
- Request people leave if safe to do so
- Contact the relevant authorities
- Collect any relevant information
- Inspect the site and equipment to ensure persons are not at risk before recommencing work.

5.11 Incident reporting

Incidents resulting in injury or the potential for serious injury must be reported to WorkSafe Victoria if they are within the scope of Part 5 of the OHS Act 2004. Where incidents are required to be reported, there is also a requirement to preserve the scene of an incident until investigations are complete.

Apart from any statutory requirements, prompt reporting of incidents enables the opportunity to review what went wrong. A simple reporting form and procedure should be used, and appropriate records kept. Once reported, incidents should be investigated and immediate action taken to prevent a future repeat of the incident.

Planning	Is there an agreed incident reporting procedure for all contractors working in the same area?
Procedures	Do workers know what should be done if they need to report unsafe situations or incidents?
Responses	Is this a reportable incident that may require preservation of the scene?
Checks	Is there an incident and injury recording register?

5.

Essential OHS requirements

5.12 Personal protective equipment (PPE)

PPE should only be used where other methods of controlling the risk are not reasonably practicable. Normally PPE should be used in conjunction with other methods of reducing risk, rather than being the only level of protection.

The effectiveness of PPE is highly dependent on individual work practices and therefore requires constant supervision and maintenance.

In some circumstances, the design of the plant and machinery will reduce the hazard and remove the requirement for workers to wear PPE. However, where PPE is required, selection, fit and upkeep of PPE is important, and consultation with the operators who have to wear the PPE is essential to get the best results. The PPE needs to be maintained and replaced if it is damaged or ineffective (e.g. damaged or worn soles on safety footwear may cause slippage and should be replaced).

Respiratory protection may also be required where workers are exposed to atmospheric contaminants above the mandated exposure level. **AS/NZS1716** is the relevant standard for these matters.

PPE that should be supplied for workers in forestry operations

PPE	Person			
	Everyone (e.g. visitors, managers)	Chainsaw operator	Machine operator (e.g. harvester, forwarder, truck driver)	Ground worker (e.g. offsider, choker setter, log grader)
High visibility clothing AS/NZS 4602	✓	✓	✓	✓
Safety helmet AS/NZS 1801	✓	✓	✓	✓
Safety footwear AS/NZS 2210	✓	✓	✓	✓
Hearing protection AS/NZS 1270	✓	✓	✓	✓
Eye protection AS/NZS 1336 and 1337		✓		
Safety gloves AS/NZS 2161		✓	✓	✓
Leg protection AS/NZS 4453		✓		

5.13 Amenities

Provision of workplace amenities can help reduce illness and disease which may result from the absence of appropriate hygiene facilities. The amenities required will vary according to the nature of the work, the number of workers and the location of the worksite. An assessment of needs should be done, but as a minimum amenities should include:

- *Drinking water*
An adequate supply of clean drinking water should be provided and be readily accessible for all employees. Individual water bottles or a water bag or dispenser may be used.
- *Hand washing facilities*
Access to suitable hand washing facilities should be provided to enable employees to maintain standards of personal hygiene.
- *Sanitation*
Suitable sanitary facilities should be provided and standards should be maintained. Crews camping out should have toilet facilities provided.
- *Shelter*
Forest workers should be provided with reasonable access to shelter if weather conditions make work unsafe; for example, high winds, lightning, rain or hot weather. The shelter should be located away from work areas and hazardous trees and provide adequate seating and protection from the elements. Heating should be provided where practicable.

5.14 First aid

First aid provides initial medical attention to a person suffering an injury or illness. The factors to be considered when working out a suitable first aid arrangement include:

- Type of work performed (e.g. tree felling, skidder operation)
- Types of injury/illness likely to be sustained (e.g. cuts, fractures, amputations, stings, bites)
- Number and distribution of employees
- Size and layout of work area (e.g. size of coupe)
- Location of work area (e.g. distance and time to nearest medical centre).

The first aid arrangements will require suitable kits and training of personnel to provide immediate first aid. Kits should be accessible on the worksite and kept in vehicles or in otherwise agreed locations.

A trained first aider must be available within the working area. Where there is only one trained first aider in a crew this should not be a faller. Level 2 accreditation is recommended as the minimum and, where possible, all workers should have basic first aid knowledge in case the trained first aider is not immediately available.

5.

Essential OHS requirements

For work crews undertaking typical forest operations work, recommended first aid kit contents are shown below. An individual needs assessment for the crew should be undertaken in accordance with WorkSafe guidance. More compact and limited personal kits are recommended for people working away from other members of a work crew. First aid contents need to be maintained by a person nominated for this task.

<p>Cuts, sprains and breaks</p> <ul style="list-style-type: none"> 6 x tubes saline solution 1 x adhesive dressing strips 50s 1 x adhesive strapping tape 75mm 3 x 75mm gauze swabs 2 x wound dressing no. 13 – 20cm x 30 cm 2 x wound dressing no. 15 – 10cm x 10cm 1 x dressing wound no. 14 8 x triangular bandage 110cm – cotton 2 x crepe bandage 10cm 1 x constrictive bandage 50mm x 1m <p>Burns</p> <ul style="list-style-type: none"> 3 x non-adhesive dressing – 10cm x 10cm 	<p>Eye module</p> <ul style="list-style-type: none"> 4 x eye pads 1 x eye wash cup 1 x hypo-allergenic tape – 2.5mm x 9m <p>Other items</p> <ul style="list-style-type: none"> 12 x safety pins 1 x scissors – blunt/sharp 6 x splinter probes – disposable 5 x disposable latex gloves 1 x resuscitation mask 1 x thermal emergency blanket 1 x resealed plastic bag – medium size sting relief spray or ointment first aid instruction information note pad with pencil clearly labelled water resistant and dust proof container
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Planning	Have workers' known allergies been accounted for in the first aid arrangements?
Procedures	Are there trained first aiders accessible in the work location?
Responses	Can workers easily communicate the need for first aid help?
Checks	Have the contents of kits been checked and restocked if necessary?

6.

Coupe access and preparation

6.1 Roads

From an OHS point of view, the following matters should be considered during road planning:

- Road intersections, sight distance, speed of road traffic
- Passing bays during construction
- Type of equipment (e.g. axle loads)
- Likely traffic levels
- Traffic flow and direction
- Pavement strength
- Seasonal factors
- Evacuation routes and procedures
- Known hazards such as hazardous trees.

In the construction stage a contractor involved with these works should:

- Check the initial road construction plan and take action to remove hazards from road, bridge and log landing construction areas
- Remove all hazardous trees within 1.5 tree's length distance from the construction area
- Where road lines are not harvested prior to road construction, make sure any trees felled or pushed are clear of any standing trees
- Mark or tape any dangerous areas or trees.

During any future maintenance or when harvesting operations are adjacent to roads used by other people, the land owner or forest manager/principal contractor must ensure that there is signage warning of the tree felling activities and establish traffic control where necessary. Traffic management should be conducted in accordance with the *Road Management Act 2004* and permits to alter traffic flows must be obtained as required.

6.2 Log landings

The design and preparation of log landings should make the work area as safe as possible by reducing the risk from surrounding trees and the interaction of workers and machinery. The following design factors must be taken into account:

- Location on an area as flat as reasonably practicable to allow for water run off
- Clearance from any power lines
- Ensure hazardous trees are felled within 1.5 tree lengths of the landing
- A safe designated location for truck drivers during loading operations
- A suitable location for a rest area and a place to park vehicles
- Suitable separation distances between major activities such as loading, stacking, measuring and entry of snigging tracks
- Suitable space for parking mobile plant, for truck entry and exit and for turning and manoeuvring trucks
- Suitable space for undertaking machine inspection and maintenance
- Space for the number of products to be loaded and the volumes of wood to be handled
- Space for storing fuel (dangerous goods).

For cable logging, the design of the landing will depend on the system used but generally the following guidance is recommended:

- The landing needs to allow for separate working areas for each landing activity (e.g. processing, loading), adequate space for storage of logging debris and logs, and space for vehicles and amenities.
- Unless the terrain makes it impossible, the landing chute must be long enough to land a whole tree or, at the minimum, two thirds of the tree length.
- Where the yarding is uphill the landing chute must be flat or slope backwards to the yarder.
- The outer edge of the landing chute and any other area subject to disturbance by moving cables or machines must be free from overburden, cast material, rocks or stumps.

6.3 Safety signage

The display of safety signs where harvesting operations are underway is part of the system of controls to protect both forest operators and other people (e.g. members of the public) using the roads or tracks in the area.

Safety signs must be clearly legible and placed in positions which will give adequate warning of the operations to any persons approaching.

As a minimum, signs must be placed at each entrance to a coupe and at the entrance to an area of intense activity like a landing, in order to:

- Exclude unauthorised people
- Notify authorised people about
 - the PPE required, and
 - how to communicate with the harvesting crew
- Provide visitors with directions to an appropriate location and, if necessary, contact details of the appropriate personnel in the crew (e.g. harvesting team leader).

Where tree felling is in progress the triangular 'Tree Felling in Operation' sign should be displayed prominently. It is a requirement to display this sign at all entry points to a coupe.

Other signage could include:

- 'Road closed' signage
- Traffic control signage
- 'Log trucks entering' signage
- UHF frequency and other communications signage.

Guidance on appropriate signage can be found in the following Australian Standards:

AS 1319 Safety signs for the occupational environment

AS 1743 Road Signs – Specifications

AS 1742.1-2003 Manual of uniform traffic control devices – General introduction and index of signs.

6.4 Visitor control

It is a requirement under the OHS Act 2004 to protect not only employees but also persons who may be affected by the undertaking. This highlights the need to have arrangement for managing visitors to the work area and road traffic on roads adjacent to harvesting operations.

Signage is required to indicate forestry operations are underway and induction procedures are in place to ensure visitors are under the effective control of the site supervisor.

The site supervisor is responsible for making sure visitors understand and comply with the conditions of the work area. This includes understanding and complying with safe work procedures and wearing the required personal protective equipment.

Where traffic flow is likely to be affected on a public road, warning signs, gates or other traffic management devices must be used in reference to *Road Management Act 2004*.



7.

Timber harvesting

Safe harvesting of timber by either manual or mechanical methods depends both on hazard elimination or risk reduction actions at the planning stage before work commences, to provide the highest level of protection for the worker.

The changing nature of the forest environment requires operators to identify hazards and adopt safe work practices as required. Risk assessments of work areas and individual trees are required on an ongoing basis to ensure that risk control measures are still appropriate.

7.1 Hazardous trees

Hazardous trees are defined not only by the overhead hazards (i.e. hung-up trees, widow makers) but also by their characteristics and location. Safely falling these hazardous trees requires all risk factors to be identified and appropriate methods (whether manual or mechanical) **selected to provide the highest level of protection for the faller.**

Damage to trees caused by recent fires, wind, snow or insects may mean that all trees in an area are hazardous.

High-risk forestry activity

Falling hazardous trees

Hazards associated with falling hazardous trees:

Identify these features of hazardous trees:

- Widow makers (branches hanging in the tree's crown)
- Excessive rot content in the tree, including dry sides, scars or hollows
- Burn out of the tree butt
- Burnt out limb, which may cause it to fall
- Another tree lodged in the tree
- Tree trunk with substantial damage
- Defective tree located less than two times its length away from the tree to be felled
- Storm or snow damaged tree
- Tree's root system likely to uproot due to its location (slope, wet area)
- Trees with exposed root systems
- Trees with excessive lean

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Common Hazards


Common Hazards

Hazards associated with falling hazardous trees (continued):

Identify these features of hazardous trees (continued):

- Trees larger than the capacity of the falling machine
- Thick undergrowth located at the tree base which cannot be cleared
- Interlocking limbs
- Location which restricts feller's safe movements (boulders, steep banks, road fill etc.)
- Inadequate condition of wood fibre to ensure safe directional control of the falling tree
- Dead trees
- Trees with burnt out sections
- Burning trees.

These factors can be exacerbated by high winds, periods of drought, recent isolation or dead limbs drying out.


Risk Controls

The recommended process for falling hazardous trees:

1. Identify hazardous trees by referring to features in previous checklist

2. Prohibit work near the hazardous tree

If the tree is assessed as being too high risk to fall:

Clearly identify the tree without placing yourself at risk, e.g. mark the hazardous tree with a 'K' using log marking paint, tape the area of the coupe using reflective tape, or record the location on the coupe plan.

Then, ensure only personnel protected by a canopy work in the hazardous zone. The hazardous zone is:

- 1.5 tree lengths from the hazardous tree, or
- 2 crown widths when broken limbs are hung up in trees.

3. Selection of mechanical equipment to remove hazardous trees

If the hazardous tree is assessed as being high risk, first consider using mechanical equipment as the preferred falling method:

- Use a harvester, dozer, excavator or skidder with a complying protective structure to remove the tree.
- Use a person who has current experience and holds a licence to use blasting explosives (UBE licence issued by WorkSafe) to remove the tree

Note: Do not fall sound green trees into a hazardous tree to remove it.

Continued next page >

7.

Timber harvesting



The recommended process for falling hazardous trees (continued):

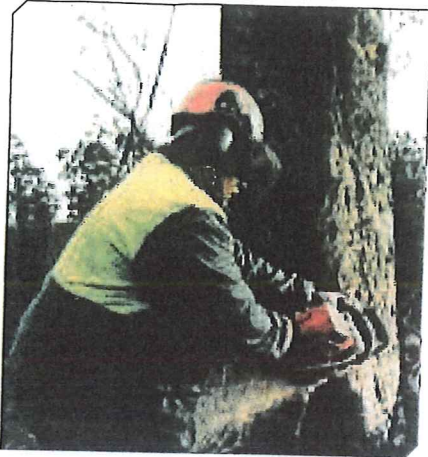
4. Manual falling identified as an alternative safe falling method

Where the risk is assessed as being manageable by manual falling techniques, the system of work must have the minimum risk control measures:

- The falling should only be done by a faller assessed as competent against the Unit of Competency FPIHAR3212A Harvest trees manually (advanced) and with current industry experience.
- Maintain the separation distance of 2 tree lengths from other workers.
- Use a recognised safe felling method (refer AS2727). It is permissible for a hand faller to place preliminary cuts in the tree prior to another machine pushing the tree. If widow makers or brittle tops have been identified, the faller must work under a protective structure.
- Ensure the area around the base of the tree is scrubbed mechanically and suitable escape routes are in place.
- Radio communications must be maintained between all operators.

Specific fire salvage risks

High risk	Reduced risk solution	Preferred solution
<p>Manual falling of fire damaged trees:</p> <ul style="list-style-type: none"> ▪ Limbs falling ▪ Burnt out butts ▪ Interlocked limbs. <p>Where it is observed that brown leaves have fallen from limbs, this will trigger the need to reassess an alternative felling method</p>	<ul style="list-style-type: none"> ▪ Manual falling for hazardous trees (see item no. 4 in the previous table) ▪ Daily harvesting contractor pre-start check to ensure no limbs are falling before manual harvesting starts ▪ Regular risk assessments conducted by principal contractor and harvesting contractor/manual faller to monitor controls and confirm the state of trees as the timber dries out during the harvesting operation ▪ Cease manual falling before limbs start falling 	<p>Mechanical harvesting for hazardous trees (see no. 3 in the previous table)</p>



Common Hazards

Risk Controls

7.2 Manual falling

Manual falling is undertaken in an environment in which there are a number of common hazards.

In addition to these common hazards, safe manual falling requires the application of specific risk controls depending on the circumstance of the work area.

Many of the hazards that affect hand fallers are also hazards for others working in the forest, particularly anyone working outside of a protective canopy.

High-risk forestry activity

Manual falling

Hazards associated with manual falling:

- Unsuitable ground conditions and slope
- Falling objects such as limbs, dry stags, dead and brittle tops and widow makers
- Standing vegetation in the intended direction of fall
- Being struck by butt of tree
- Kickback or recoil from chainsaw
- Hazardous trees as set out in section 7.1
- Weather conditions including heat, wind and cold
- Fatigue

The recommended process for manual falling:

1. Assess trees as safe to fall

- Identify all hazardous trees (refer to section 7.1).
- Use mechanical assistance for trees with excessive lean, where practicable.
- Ongoing check for hazards (especially overhead) and changing conditions.
- Cease operation in high winds.

2. Maintain suitable separation distances from other operators

- Maintain the separation distance of 2 tree lengths.
- On steep ground where there is a risk of felled trees sliding downhill after falling, ensure no one is working below the tree faller.
- Maintain radio communication with other forest workers.
- Use signage where work area is close to roads.

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 Risk Controls

The recommended process for manual falling (continued):

3. Ensure adequate escape routes

- Where escape routes are impeded by undergrowth, remove material around the base of the tree using the blade of a dozer or skidder, prior to falling.
- The 45-degree escape route should extend to an area at least 6 metres away from the stump (see diagram on next page).

4. Reduce risks from elevated hazards

- Fall trees into an open area—no standing woody vegetation in the direction of fall—and ensure that falling trees do not strike or brush other standing vegetation as they fall.
- Avoid using wedges where there is a chance that limbs may be dislodged.
- Where the tree is assessed as hazardous, apply practices described in section 7.1 'Hazardous trees'.
- Consistently apply appropriate falling methods (refer to AS 2727).

5. Use chainsaw safely

- Follow practices in AS 2727 Chainsaws – Guide to safe working practices (see diagrams opposite).
- Maintain safety features of chainsaw including hand guard and chain brake.
- Carry fallers belt, wedges, axe and chainsaw fuel and oil in an approved manner.
- Use suitable, maintained personal protective equipment—wear a hard hat with hearing protection, visor, high visibility clothing, safety footwear and leg protection.

7.

Timber harvesting

