

SAFETY

IN FOREST HARVESTING OPERATIONS



CODE OF PRACTICE 2002
WORKCOVER NSW HEALTH AND SAFETY CODE OF PRACTICE

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**Code of Practice:
Safety in Forest Harvesting Operations**



What is an Approved Industry Code of Practice?

This publication *Code of Practice: Safety in Forestry Harvesting Operations* is an approved industry code of practice. An approved industry code of practice is a practical guide to achieving the standard of safety required by the *Occupational Health and Safety Act 2000* (OHS Act) and *OHS Regulation 2001* (OHS Regulation) for a particular area of work. It should be followed unless an alternative course of action has been applied to achieve the same or a better standard of health, safety and welfare in the workplace.

A code of practice is approved by the Minister under Section 43 of the OHS Act. It is designed to be used in conjunction with the OHS Act and OHS Regulation but does not have the same legal force. A person or organisation cannot be prosecuted for failing to comply with an approved industry code of practice.

However, in proceedings under the OHS Act or OHS Regulation, failure to observe a relevant approved industry code of practice can be used as evidence that a person or organisation has contravened or failed to comply with the provisions of the OHS Act or OHS Regulation.

A WorkCover Authority inspector can cite an approved industry code of practice in an improvement or prohibition notice. The notice may direct what measures should be undertaken to remedy an alleged contravention or non-compliance. Failure to comply with a requirement in an improvement or prohibition notice is an offence.

In summary an approved industry Code of Practice:

- ✓ gives practical guidance on how the required standard of health, safety and welfare can be achieved in an area of work
- ✓ should be followed, unless there is an alternative course of action which achieves the same or better standard of health and safety in the workplace
- ✓ can be used in support of the enforcement provisions of the OHS Act
- ✓ can be used as evidence to support a prosecution for failing to comply with or contravening the OHS Act or OHS Regulation.

Preface

This code of practice is to assist people engaged in forest harvesting achieve the highest possible standards of health, safety and welfare in the work they do. Its particular objective is to help people working in forestry operations to apply the risk management and consultation principles contained in the OHS Regulation in their working environment. The Code was developed in close consultation with the forestry industry and has its widespread support.

Using this code of practice

- ***What is the aim of this code of practice?***

The code gives practical advice on how to decide on appropriate measures to eliminate or control the OHS risks caused by forest harvesting operations. In doing this it provides guidance to employers in the forest harvesting industry on implementing the requirements of the OHS Act and the OHS Regulation. It should be read in conjunction with this legislation.
- ***What is this code of practice about?***

The code explains the processes involved in the systematic management of OHS risk and how to apply a risk management approach to the hazards characteristic of forest harvesting. It provides advice on specific hazards associated with the harvesting, extraction, loading, securing, transport and unloading of timber logs. It also provides advice on common hazards that can be found in all forest operations such as noise, manual handling, heat and fatigue. It is intended to help in identifying the hazards, determining how serious the risks from those hazards are, and implementing the most effective means of eliminating or controlling those risks.
- ***Who is this code of practice for?***

The code is mainly for employers, but also for employees and other parties involved in forest harvesting operations. Employers include, but are not limited to, land owners and managers, contractors, owners and operators of saw mills and paper mills, and occupiers and controllers of premises used as a place of work under the OHS Act.
- ***When to use this information***

Use this code of practice to assess the effectiveness of your present arrangements for timber harvesting operations and to check that all sources of risk have been identified and dealt with. If you are setting up a new forest harvesting business, this code of practice can serve as a step-by-step guide to establishing a program to manage the hazards arising from harvesting and related activities.

What do the symbols in the code of practice mean?

The following symbols are used in the text to highlight things you need to take into account and help you work out what to do and the tools you require to do the job.



Assess the risks in your workplace



Consult and communicate with employees



Tools that can help you work out your plan



Legal obligations that must be followed



The process of finding things that cause harm, working out how big a problem they are and then fixing them

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Chapter 1 Establishment

1.1 Title

This is the *Code of Practice for Safety in Forest Harvesting Operations*.

1.2 Purpose

This code of practice provides guidance to prevent injury to persons engaged in the manual or mechanical felling of trees and related activities.

1.3 Scope

This code of practice applies to all locations in NSW where timber is harvested for commercial purposes or commercial firewood gathering is undertaken. This code of practice includes Crown, public and private lands, and covers the activities of manual or mechanical felling of trees, extraction, and the loading, securing, transport and unloading of timber logs.

This code of practice does not cover the amenity tree industry as covered by the *Code of Practice for the Amenity Tree Industry*.

1.4 Authority

This is an industry code of practice approved by the Special Minister of State under section 43 of the *Occupational Health and Safety Act 2000*.

1.5 Commencement

This code commences on 1 January 2003.

1.6 Repeal

This code of practice repeals and replaces the following codes of practice: *Code of Practice, Snigging logs* which was Gazetted on 29 October 1993 and *Code of practice for loading, unloading and securing of logs to log haulage vehicles* which was Gazetted on 14 October 1994.

1.7 Interpretation

Legal requirements

Words such as “must”, “require”, and “mandatory” indicate statutory requirements with which the relevant person, usually the employer, has a legal obligation to comply.

Recommended practices

Words such as “should”, “may” or “consider” indicate courses of action which, while not prescribed by legislation, the code is recommending to the duty holder. The duty holder may choose an alternative method of achieving a safe

system of work, but needs to be able to justify this choice as achieving the same or a better standard of health, safety or welfare.

Chapter 2 Consultation at the workplace

The information in this code of practice should be used when consulting with employees about the hazards encountered in forest harvesting operations and related activities. The OHS Act and the OHS Regulation require employers to consult with employees and take into account their views when making decisions that affect their health, safety and welfare. Involving employees in identifying hazards and solving health and safety problems is an essential step in making your workplace safe and healthy.



Employers are required to consult with employees when taking steps to assess and control workplace risks.

What is meant by consultation?

Consultation involves sharing information with employees, giving them the opportunity to express their views before decisions are made, valuing their views and taking them into account. The purpose of consultation is to ensure that matters that may affect employees' health and safety are addressed effectively and in a meaningful way.

Consultation is based on a recognition that employees' knowledge about the processes and environment of work is an important resource and therefore their input and participation improves decision-making about health and safety matters. Consulting with employees will assist in identifying the hazards that may be present in their workplace, assessing the level of risk these hazards might give rise to and developing safe systems of work accordingly.

Although the responsibility for health and safety decisions rests with the employer, consultation provides support for decision makers in resolving health and safety problems.

When must consultation occur?

Consultation must occur in the following circumstances:

- ✓ When changes that may affect health, safety or welfare are proposed to the:
 - work premises;
 - systems or methods of work; or
 - plant or substances used for work.
- ✓ When risks to health and safety arising from work are assessed.
- ✓ When decisions are made about how to eliminate or control those risks.
- ✓ When introducing or altering the procedures for monitoring those risks.
- ✓ When decisions are made about the adequacy of facilities for employee welfare.
- ✓ When decisions are made about the procedures for consultation.

How to implement consultation

Employers must establish an OHS consultation mechanism and need to consult employees about what the consultation arrangements are going to be.

The legislation provides for OHS committees, OHS representatives or other consultative arrangements, depending on the number of employees involved and what consultative mechanism employees opt for.

Employers must also record the consultation arrangements and publicise them to all existing and new employees.

You should refer to WorkCover's *Code of Practice: Occupational Health and Safety Consultation* for detailed guidance regarding employer obligations related to consultation and how to establish workplace OHS consultative arrangements to achieve this.

What consultation should address

The following are indicative of the sorts of issues consultation should address:

- identifying hazards and assessing risks associated with forest harvesting operations
- providing advice on particular hazards and risks covered in this code
- deciding on how suitable control measures are selected; verifying their appropriate use; and ongoing maintenance
- planning the introduction of new equipment, a new work method or process, or modifying an existing process
- provision of OHS training
- deciding on the adequacy of facilities for the welfare of employees
- communication with contractors and self-employed persons, and their employees, involved in a forestry harvesting operation
- selecting and wearing PPE (personal protective equipment)
- administrative procedures adopted in your workplace (eg including accident reporting, OHS consultative arrangements)
- the role of procedures and various personnel in monitoring and controlling risks
- safe access to and from the work location
- availability and location of suitable first aid facilities
- procedures for the safety of visitors to the work site or other public safety issues
- monitoring and reviewing the implementation of this code of practice and the risk management strategies in place
- how all the above are communicated to relevant employees, employers, supervisors, contractors, visitors, etc.

Chapter 3 Risk Management: Establishing the special needs of your workplace



Employers must identify any foreseeable hazards, assess their risks and take action to eliminate or control them. Employees must be consulted as part of this process.

3.1 Managing risks in the workplace

Under the OHS Regulation all employers must use a “risk management” approach to address workplace health and safety issues. This requires employers to:

- Identify the hazards
- Assess the risks to the health and safety of persons arising from the hazards.
- Use appropriate control measures to eliminate or control the risk.
- Monitor and review the control measures to ensure on-going safety.

These are the key elements of a risk management process and should be done *in consultation* with the people most likely to be affected, such as employees and contractors. Consultation is basic to effective safety management and is required for all workplaces. It makes sense to consult with workers, because these people are likely to be aware of the particular risks at their workplace and may have good ideas about how to eliminate or control them.

Employers should also adopt a systematic approach to managing safety by developing and implementing written policies, documenting safe work procedures, undertaking risk assessments, establishing reporting arrangements, and assigning formal responsibilities for all these functions. A system approach is essential for managing safety effectively and enables employers to demonstrate how they are meeting their duty of care under the OHS Act.

3.2 Identifying the hazards

An employer must identify any foreseeable health or safety hazards, which could harm their employees or other persons in the workplace. The hazards may arise from the work process, the equipment and materials in use, the work environment or the people involved. These hazards may occur particularly when organisations are introducing new equipment or substances, developing or changing work systems, and designing or re-modelling the workplace.

Some ways to identify hazards include:

- A walk-through of the workplace. This is a simple visual check which may be assisted with the use of a site plan or map.
- Looking at the type of work being performed, way work is done and the work practices in use.
- Looking at the type of plant, machinery and equipment used and its condition, as well as the premises and working environment including their layout.
- Consultation with workers is one of the easiest and most effective ways to identify hazards.
- Looking at the workplace records on “near misses”, incidents, accidents and injuries.
- Information supplied by manufacturers and suppliers about the proper use of hazardous substances and plant (for example: Material Safety Data Sheets, product labels and manuals) is also a helpful source of information.
- An outside expert may also help.

You should list the hazards, identifying the form in which each hazard occurs, where it occurs, factors that contribute to the hazard, and the persons likely to be exposed to the hazard. This list is the first step in the development of a safety plan and safe work procedures. It leads to the next stage, which is to assess the level of risk posed by those hazards.

3.3 Assessing the risks

Each identified hazard has the potential to cause harm to health and safety. Risk assessment involves estimating the likelihood of an injury or illness occurring and the likely severity of any injury or illness that may occur. Likelihood and severity combine to produce an estimated level of risk.

Risk assessment must be done in consultation with employees. You should also read any available health and safety information related to each hazard. In making an assessment of the level of risk consider such factors as:

- the kind of injury or illness that the hazards you have identified can cause to an employee or other person in the workplace – for instance loss of control over a log during cross cutting may result in crush injuries, while operating chain saws may result in cuts or manual handling injuries
- the sort of factors that increase the likelihood that such an incident will occur – for instance the unevenness and slipperiness of the terrain and the presence of tree stumps could increase the probabilities of an accident during snagging
- the number of people who might be affected
- the sort of factors that are likely to increase the severity of an injury or illness such as the physical capabilities and condition of the people involved - their age, size, mobility, skill, experience and other factors which might influence their susceptibility to harm - and the magnitude and duration of their exposure to a hazard.

The outcome of a risk assessment is a prioritized list of risks which then provides a basis for you to plan what sorts of prevention measures you need to take. One way to rank or prioritise the risks in your workplace is to use a matrix or table like the one that follows. Make a list of the potential injuries and illnesses that can occur, ranking them from most to least serious - for example "death by crushing due to falling widow makers" to "minor abrasion from contact with moving logs or equipment". Now rate each according to their likelihood of happening and locate the relevant cells of the matrix in which each falls. The most serious risks are the ones that should be dealt with first (designated by the 1 & 2 in the matrix), though all risks must ultimately be addressed.

Assessing the Risk



For each hazard you have identified you could rank it according to the likelihood that it will occur and how serious the result could be. Thus an event that is very likely to occur and could kill or seriously injure someone would be a top (#1) priority. It should be addressed first. One that is unlikely to happen, and would only need minor first aid treatment if it did happen, would be a low (#6) priority, and could be taken care of after more serious risks have been addressed.

How likely is it to hurt someone?	How severely could it hurt someone?			
	Kill or disable	Serious injury or long term illness	Medical treatment and several days off work	Minor first aid treatment
Very likely-could happen any time	1	1	2	3
Likely-could happen sometime	1	2	3	4
Unlikely -could rarely happen	2	3	4	5
Very unlikely-could happen, but probably never will	3	4	5	6

3.4 Eliminate or control the risks

This step involves working out how to eliminate or control the risks. The employer must first attempt to eliminate any risk to health and safety in the workplace. For example discontinue an unsafe activity; look for design solutions to plant and equipment which remove hazards associated with their

operation; eliminate a manual handling risk by the use of mechanical lifting devices.

Where elimination is not achievable the employer must minimise the risk to the lowest level reasonably practicable. In the OHS Regulation this requirement is spelt out as a process of applying a “hierarchy of controls” in which the higher levels of controls, where possible, are preferred over those at a lower level because of their greater ability to reduce risk and their greater reliability.



Hierarchy of Controls

Your first obligation is to eliminate risk. Where this is not achievable you must minimize risk to the lowest level practical by applying controls in the following order of preference:

- *Substitute the hazard giving rise to the risk with a hazard that gives rise to a lesser risks.* For example redesign the work process so that less hazardous equipment, material or quantities are used; use less toxic chemicals or less flammable substances; have chemicals supplied in smaller quantities if decanting them poses risks.
- *Isolate the hazard from the person put at risk.* For example introduce a restricted work area; reduce emissions and noise from machinery through venting and containment or isolation barriers.
- *Minimise the risk by engineering means.* For example ensure that exposed moving parts on equipment are adequately guarded and lockout devices are fitted; reduce noise levels from machinery by installing dampening methods like mufflers; look for better safety design features on equipment.
- *Minimise the risk by administrative means.* For example organising the way tasks are done can sometimes reduce exposure to risks; job rotation and task variety can reduce the risks associated with repetitive manual handling tasks; provide appropriate safety training, instruction or information; use written safe work procedures; develop preventative maintenance schedules to identify and fix faulty machinery
- *Use personal protective equipment (PPE).* For example, use safety eyewear, hearing protective earplugs or muffs, safety helmets, cut resistant leg protection and reinforced footwear, respirators. PPE is the least preferred solution to OHS problems because it does not really address the hazard but merely provides a shield to protect the worker. While it generally should only be used to supplement other risk reduction strategies or when it is not reasonably practicable to address the risk in any other way, where PPE is a chosen method of risk control for certain tasks or situations, it must be worn at all times when working in those circumstances.

This hierarchy provides you with a guideline for deciding on the most appropriate control measures when discussing and developing your safety plans. You should select controls from the highest level possible depending on the circumstances of the hazard. There may also be cases where no single control measure is sufficient and a combination of measures need to be taken to minimise the risk.

The outcome of going through this stage of the risk management steps will help you know what you need to include in your site safety plan (discussed further in Section 5.4) and how it should be set out to ensure that the risk control measures you have decided upon are actually carried out during harvesting operations. It will also help you develop Safe Work Procedures to work in with the Site Safety Plan. A Safe Work Procedure should for example be developed to ensure fallers assess each tree prior to felling to ensure the crown is not entangled with another tree and to plan escape routes. A tool to help you develop Safe Work Procedures is included at Appendix 1.



Controlling risks

The control measures at higher levels of the “hierarchy of controls” give the best result and should be adopted where practicable. The measures at the lower levels are less effective and they require more frequent reviews of the hazards and the systems of work. In some situations a combination of control measures may need to be used.

You may consider the following when deciding what control measures to use:

- the nature of the forest, the trees comprising the forest, and the physical environment of the forest
- the nature of the work, the work process and working conditions
- the nature and severity of any potential injury or disease
- understanding of the relationship of the injury or disease to the work or process
- information available to employees about methods of preventing injury or disease associated with a particular hazard or risk
- the availability and suitability of methods to prevent, remove or control causes of injuries or diseases associated with a hazard or risk

Any new control measures should be evaluated to ensure that they are effective and safe and that they create no new hazards. Also, develop clear work procedures to ensure the control measures are properly integrated into the work process and make sure these are written down and available to employees.

3.5 Keeping your workplace safe – monitor and review

The employer is responsible for ensuring that any method chosen to control risk is working. Monitoring and review is a very important aspect of OHS management and should be included in regular performance reporting to management. OHS risk management is an ongoing process in this way. In addition, to make sure that a workplace stays safe and keeps abreast of change, an employer must redo the risk assessment and review any control measures whenever:

- there is evidence that the risk assessment is no longer applicable

- an injury or illness occurs because of a hazard that the risk assessment addressed, or failed to address
- a change is planned to the place of work, work practices, or work procedures that the risk assessment addressed.

Whenever circumstances change, the process of identification, assessment and deciding control measures must be repeated. Where a safety plan is updated, workers affected by the change must be consulted and informed about any new requirements. This is part of a process of continuous improvement, which is a basic strategy in assuring health and safety is maintained.



You must follow the three steps of *identification, assessment and elimination or control* for every health and safety issue that requires attention. For forest harvesting operations, this method provides a systematic way of working out effective action to control risks.

Chapter 4 Training



The OHS Act requires employers to provide such information, instruction, training and supervision as may be necessary to ensure the health, safety and welfare of their employees while at work.

Training is one of the most important ways to ensure workers are capable and effective in maintaining a safe and healthy work environment.

The OHS Act and the OHS Regulation set out specific requirements for training in OHS and training related record keeping that employers must comply with. For example, employers are required to provide induction training for all new employees. They must also ensure that members of OHS committees and OHS representatives receive OHS Consultation training.

Workers should be trained to apply systems of work and work practices that are safe and without risks to health. An employer must make sure that all employees have been adequately trained and instructed to perform their work safely before allowing them to work in harvesting operations. Workers must be made aware of any dangers involved with their work and of any safety precautions that should be taken to avoid accident or injury.

Make sure that every employee who uses plant — any machinery, equipment, or appliance such as a chainsaw, forwarder, mechanical tree harvester, grapple skidder — has had adequate information and training to use it safely. Employees must be provided with competent supervision while they use this equipment unless they have attained a level of competency in operating it safely without supervision. It is important to document workers' certification and accreditation, as well as any training provided to them including the nature of the training, the date the training was given, and the names of the persons who were trained.



Consider assessing the particular OHS training needs of employees on the basis of the kind of work being done, the equipment being used, the nature of the site and the hazards that may be encountered, and the experience and skill of the workers. For example, fallers should be trained in assessing each tree and possible escape routes prior to felling. Training in emergency and evacuation procedures should also not be overlooked.

The table that follows indicates the types of OHS training required by the OHS Act and OHS Regulation for various categories of workers. Employers should refer to the Act and Regulation for specific requirements.



Training Required by the OHS Regulation

NOTE: The various chapters of the OHS Regulation identify specific training obligations employers must meet. The table below identifies the primary requirements, and is not intended to be an exhaustive listing. Employers should refer to the Regulation itself to ensure they are familiar with all their requirements.

Training Areas	Who	Examples
Induction training for new employees, covering: <ul style="list-style-type: none"> • Workplace arrangements for managing OHS and reporting hazards to management • Health and safety procedures, including the use and maintenance of risk control measures • How employees can access any health and safety information that the employer is required by the OHS Regulation to provide • Any other matters relevant to the workplace, given the competence, experience and age of the employee (OHS Reg Clause 13(1), Chapter 2)	All new employees	<ul style="list-style-type: none"> • Agreed means for consultation to identify hazards, and assess, and eliminate or control risks. Identify who to report hazards to. • Systems of work, safe work procedures, communication methods, emergency and first aid responsibilities and procedures. Effective use and maintenance of personal protective equipment (PPE) • Where to find Material Safety Data Sheets (MSDS), emergency procedures related to plant, eg forwarders, loaders, etc.
Any information, training and instruction about risks at the place of work, necessary to ensure their safety (OHS Reg Clause 13(2), Chapter 2)	All persons who may be exposed to a risk	Identified hazards and agreed methods of control; communication requirements; weather conditions; terrain.
At a minimum, trained first aid personnel are required where more than 25 people are at a place of work. However employers must take into account the location of the workplace, number of workers there, and the type of work undertaken to determine the number of trained first aid personnel required. (OHS Reg Clause 20, Chapter 2)	Relevant crew members	<ul style="list-style-type: none"> • First aid certificate from a WorkCover approved first aid course • Occupational first aid certificate from a WorkCover approved occupational first aid course • Specific training to deal with medical emergencies that may arise in the course of forest harvesting activities.
Training for OHS committee members and representatives, provided by a WorkCover accredited trainer or appropriate registered provider. Records must be kept for this training (OHS Reg Clause 31, Chapter 3)	OHS committee members and OHS representatives	<ul style="list-style-type: none"> • Importance of OHS consultation and systematically managing OHS • Consultation requirements under the OHS Act • Effective communication techniques • Requirements for OHS Management Systems • Practical application of risk management • Continuous improvement of OHS systems
Training in manual handling techniques, correct use of mechanical aids and team lifting for work activities where it is not reasonably practicable to eliminate the risks arising from manual handling (OHS Reg Clause 80, Chapter 4)	All workers whose activities expose them to risks from manual handling	Logs, chainsaws, moving of large branches
Training in use of plant, and supervision to the extent necessary to minimise the risks to health and safety (OHS Reg Clause 136, Chapter 5)	All users of plant	All operators should provide evidence of competency attainment



Other Essential Training

Training Areas	Who	Examples
Site-specific induction training	All supervisors and workers when entering a new work site	Site-specific hazards (eg widow-makers, stags, exposure to pesticides), terrain (steep slopes), escape routes and health and safety requirements of the employer and owner of the site.
Training in safe use and storage of hazardous substances	All crew members who may be exposed to hazardous substances	Reading and following first aid advice on MSDS; use of PPE;
First aid training	All crew members	Given the frequent isolation of workers and individual nature of the work performed, first aid training for all crew members.
Any additional training necessary to ensure that fallers are competent to safely fell the types and sizes of trees they will be cutting in the forest.	Fallers	Training in accordance with Industry Competency Standards

Chapter 5 Coordination, planning and preparation

Safe and successful completion of any work involved with tree felling and the extraction, loading and transport of logs will depend on adequate planning and preparation, even before work within the forest begins. This chapter discusses the means by which this may be done and the need for coordination among the various parties involved in this activity.



The OHS Regulation requires that if more than one person has responsibility with respect to a particular OHS matter, each person retains responsibility for the matter, and that the responsibility is to be discharged in a coordinated manner.

5.1 Concurrent responsibilities

It is essential that all persons involved in harvesting operations understand their health and safety responsibilities.

Because OHS legislation places responsibilities for health and safety on a range of persons involved with work and the working environment, responsibilities for health and safety in the workplace may be thought of as “concurrent responsibilities”.

The OHS Act places a duty of care on employers for the safety of their employees and other persons in the workplace. Employees themselves have a responsibility to follow safe working procedures and they must take care not to endanger other persons in the workplace.

Controllers of work premises, plant or substances also have health and safety responsibilities under NSW OHS legislation. They must make sure that the premises used as a place of work (which under the legislation includes land) and the plant and substances used in the work process are safe and without risks to health when properly used. The OHS Act imposes this requirement even on persons who have only limited control of the premises, plant or substances, in that their responsibilities apply only to the matters over which they have control.

Within the NSW timber harvesting industry, employment relationships are often complex. Sometimes a landowner (or land manager or agent for the owner) may have a contract with a sawmill for harvest and delivery of timber logs, and the sawmill may contract with harvesting crews and haulage contractors for felling and delivery. In other cases a land owner (or land manager or agent for the owner) may enter individual contracts with the sawmill, the harvesting contractor and the haulage contractor.

The complexity of such relationships may appear to blur the lines of responsibility for matters affecting health and safety within the forest.

However, it is important to remember that responsibility for health and safety *cannot be contracted out*. It is shared among all the parties involved in the harvesting operation. A few points might help make this clear:

- The person in control of the place of work has obligations, not only to his direct employees, but also to the contractors and their employees.
- The level of responsibility for health and safety matters is based on the amount of control the person has over those matters, regardless of the number of contractors and subcontractors involved.
- Information about health and safety matters, including hazards like dangerous trees or terrain, must be passed along to persons who may be affected by these matters.
- Persons who may be affected by hazards must be consulted when deciding how to eliminate or control the risks the hazards might give rise to.

5.2 Co-ordination

Never assume that someone else is taking care of a health and safety matter.

NSW legislation requires that where more than one person has responsibility for a health and safety matter, each party retains responsibility for the matter, and that the responsibility must be discharged in a coordinated manner. There are several ways to do this.

One way is for the person in control to consult with their own employees and any contractors involved in the operation. They should use this as an opportunity to indicate their safety requirements and policies, review the job to be undertaken, safety issues that may arise and other matters.

The idea is that all persons involved with harvesting and hauling should be clear on their responsibilities and expectations, and that they have taken all reasonable steps to meet their health and safety obligations.

The example that follows shows how this might be done.



How coordination can work

Suppose a person (principal contractor) has been engaged to set up and manage a timber harvesting operation. He might determine which trees would be harvested, where the cut logs would be put for loading on the truck, the best means of entering and leaving the harvesting site, and other matters related to the job. He might engage harvesting and haulage contractors to fell, extract and deliver the cut logs to the mill.

The principal contractor is aware that he is basically in control of this operation and the work site, and he wants to make sure that no one gets injured. He meets with the harvesting and hauling contractors and discusses safety issues with them. He wants to find out how the contractors manage the risks in the work the crews do, and wants to make it clear that they are expected to understand and follow safety procedures. In fact, he has even put a clause into the contract that requires the contractor to comply with health and safety requirements and to ensure that the work will be done safely.

The principal contractor asks them to produce written copies of their safe work procedures and asks them about their supervisory arrangements to see that the safe work procedures are followed and that workers use appropriate PPE. He asks how the contractors ensure that the crew members are competent to operate the equipment they are using safely. He asks about any OHS training and first aid training the crews have had. In the end he is confident that the contractors have done what they can to make sure the workers are competent at their jobs and aware of the steps they need to take to prevent accidents and injuries.

Finally, the principal contractor and the harvesting and haulage contractors agree to meet at the work site to look over the site, assess the conditions there and plan how the job will be done. They will go over the equipment, methods and signage to be used, identify any foreseeable hazards and how to deal with them. They will talk about the best ways to bring down certain trees safely. And they will discuss emergency procedures and ways to ensure unauthorised persons might be kept out of the area or kept from harm if they do enter the forest.

5.3 Harvesting plan

A harvesting plan details and maps out harvest area boundaries, terrain, roads, log landings, snig tracks and other important site features. A harvesting plan should be developed prior to starting any harvesting work, in order to get a fuller picture of the environment where the work will be done and any conditions that should be taken into account when planning the job. Consultation on safety matters can also be done effectively during the development of a harvesting plan. Consideration should be given to providing the harvesting plan in draft form to any contractors for review prior to finalisation and approval.

5.4 Site safety plan

A *Site Safety Plan* should be developed. This can be done either in the process of developing the harvesting plan or from a completed harvesting plan, but a site safety plan should be developed even if there is no harvesting plan. The site safety plan should be based on the identification of hazards in the harvesting site and an assessment of the risks they present and the best

ways of eliminating or controlling them. Planning should also ensure that safe systems of work are carried out in the event that supervisory staff are momentarily unavailable.



The plan should be developed through consultation involving the person in control, any contractors and their employees. For example, haulage contractors could be involved in the consultation to ensure they follow safe systems of work and use appropriate log trucks and other equipment. Consultation on the site safety plan should also outline the roles and responsibilities of crew members in ensuring the plan is carried out and that the work environment is kept safe at all times.

The site safety plan may address the following factors and any other site or operational conditions that may affect safety:

- Workplace location/terrain/conditions/slope etc.
- Plant and equipment
- Experience and competence of workers to carry out assigned tasks (eg, types of tree being felled)
- Communication systems and methods
- Presence of hazardous trees, limbs (widow makers), mining excavations, sinkholes and caves, cliff lines, power lines, underground cables/pipelines and roads
- Presence of multiple contractors operating in the workplace
- The possible presence of unauthorised persons in the harvesting area and the means to ensure their safety
- Emergency planning including evacuation routes and a site medical emergency evacuation plan
- Procedures to be followed for hung up trees and trees that sit back
- Review mechanism to reflect changing conditions in the workplace

The site safety plan should be monitored to ensure that work is carried out according to that plan and that the plan is effective. The plan should be maintained and changed as required during the course of the harvesting work, and the changes should be reviewed with all persons involved with the harvesting operation.

5.5 Communication Planning

One aspect of planning for work in the forest that should not be overlooked is the necessity for effective communication systems. This is especially important in situations where workers work in isolation or in enclosed machinery where viewing of other workers may be difficult.

Some things that should be considered are:

- Notifying the base (home, sawmill, police station or local State Forests office) that work is commencing
- Regular check-ins by the crew during the day to say that all is okay
- Notifying the base that the worker(s) is (are) leaving the site.
- Use of hand-held radio communication systems between employees in the work area.

Chapter 6 Manual felling

Safety in manual tree felling operations can be affected by many factors including environmental factors like terrain, weather and wind conditions, noise levels; the skill and experience of harvesting operators; the nature of the trees and the adjacent areas; equipment condition and capability; and a host of other matters. While harvesting activities themselves can be dangerous, the dangers can become even greater and more difficult to manage when extraction and loading activities are taking place nearby.





This means that all aspects of the harvesting operation should be looked at very carefully: the people involved, the equipment being used, the environment, how communication will take place, how emergencies will be managed and any other matters that may affect the safety of workers and others in the forest.

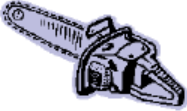


Workers and others in the area of harvesting operations must be kept free from risks to their health and safety and therefore, before harvesting starts, employers must apply the risk management steps to all these factors having a bearing on harvesting activities.

The table that follows gives examples of the areas where hazards might be identified and factors which need to be assessed as possibly contributing to the degree of risk, and suggests ways to control these risks.



Risk Management Approach to Manual Felling

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
<p>Working environment and conditions</p> 	<ul style="list-style-type: none"> • Changing wind speed and direction • Dangerous trees <ul style="list-style-type: none"> ▪ Hung up branches (widow makers) ▪ Excessive rot content ▪ Burnt out sections ▪ Storm damage ▪ Trees with excessive lean ▪ Dead trees (stags) ▪ Hung up trees • Multiple contractors working in area • Work is close to access routes 	<ul style="list-style-type: none"> • Determine whether it is safe to fell the tree Safe work procedures to address wind conditions • Identification of dangerous trees at site prior to commencement of work and on ongoing basis Assessment of whether tree can be felled safely manually Use of felling method appropriate to the dangerous tree Safe work procedures requiring the immediate removal of hung up trees • Establishment of exclusion zones to maintain safe separation distances from other work areas. • Appropriate design, wording and placement of warning signs, barriers and/or traffic control in accordance with Australian Standards, eg. <div data-bbox="1147 1361 1342 1503" style="text-align: center;">  </div> <ul style="list-style-type: none"> • Safety induction for visitors
<p>Felling methods</p>	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Nature/ type of tree • Terrain • Surrounding area • Required direction of fall/direction of lean • Competence of faller • Avoidance of marked habitat trees and filter strips 	<p>Adequate training</p> <p>Adequate supervision and consultation, especially in unusual circumstances where it may be appropriate to decide not to fell the tree</p> <p>Safe work procedures</p> <p>Scarf cuts, back cuts and cutting sequence used to suit conditions as assessed.</p>
<p>Escape Routes</p>	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Potential for overhead material falling 	<p>Identification and checking of suitable escape routes</p> <p>Ensuring stump height does not impede</p>

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
	<ul style="list-style-type: none"> • Environmental obstacles • Stump height • Tools and equipment in the path of escape routes 	<p>quick escape</p> <p>Route should be diagonal, to the rear and side of the direction of fall</p>
<p>Selection of suitable equipment, proper use of appropriate equipment and personal protection</p> 	<ul style="list-style-type: none"> • Training and experience of operators for tasks • Choice and availability of equipment for the job • Condition of equipment, including operation of safety features • Appropriate use of personal protective equipment (PPE) including high visibility clothing 	<ul style="list-style-type: none"> • Supervision and assessment of competence • Use of proper technique • Inspection of tree to avoid kickback, recoil or other problems • Provision of supervision, training, safe work procedures • Provision and use of appropriate equipment eg. low vibration chain saws • Ensure all tools required are available in the immediate work area • Routine checks and maintenance • Provision, supervision, and maintenance of PPE (see also section 13.8 on choosing the right PPE) 
<p>Proper use of hazardous substances (eg unleaded petrol)</p>	<ul style="list-style-type: none"> • Exposure to hazardous substances 	<ul style="list-style-type: none"> • Follow recommended procedures in Material Safety Data Sheets • Use of suitable and labelled containers
<p>Communication with other workers</p> 	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Coordination of ground workers with machine operators • Methods of communication between ground workers • Workers in isolated areas • Levels of noise affecting communication • Terrain • Possible interference with electronic communication 	<p>Effective use of equipment and methods of communication including radio, oral and visual</p> <p>Safe work procedures</p> <p>Appropriate training</p> <ul style="list-style-type: none"> • Agreed alternative communication measures

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
Emergency procedures and evacuation	Consideration of such factors as: <ul style="list-style-type: none">• Methods of communication• Access to and egress from the site• Isolation of workers• Timeframes for medical assistance	Safe work procedures Appropriate training including first aid training Consultation with providers of emergency assistance, including designation of emergency meeting point

Chapter 7 Mechanical felling and processing

Many of the risks associated with working in the forest environment may be controlled by the use of mechanical harvesters. However as in manual tree felling, mechanical harvesting operations can be affected by many factors - weather and wind conditions; environmental factors; the skill and experience of harvesting operators; equipment condition and capability and other matters. Extraction and loading activities taking place nearby can sometimes add to the difficulty of planning and carrying out a safe harvesting operation.





This means that all aspects of the harvesting operation should be looked at very carefully: the people involved, the equipment being used, the environment, how communication will take place, how emergencies will be managed and any other matters that may affect the safety of workers and others in the forest.


Workers and others in the area of harvesting operations must be kept free from risks to their health and safety and therefore, before harvesting starts, employers must apply the risk management steps to all these factors having a bearing on harvesting activities.

The table that follows gives examples of the areas where hazards might be identified and of factors which need to be assessed as possibly contributing to the degree of risk, and suggests ways to control these risks.



Risk Management Approach to Mechanical Felling and Processing

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
<p>Working environment and conditions</p> 	<ul style="list-style-type: none"> • Wind speed and direction • Identification and assessment of dangerous trees (eg hung up branches, unreliable fall direction, etc.) • Methods of felling to suit conditions • Ability of harvester to operate safely on the terrain • Slope and terrain variation for safe entry and exit of operator from cabin • Visibility and lighting 	<ul style="list-style-type: none"> • Safe work procedures covering conditions when it is safe or unsafe to continue • Identify unsuitable trees for mechanical felling prior to operation and on ongoing basis, and determine course of action • Appropriate training and supervision • Operation according to instructions from manufacturer and supplier • Appropriate training <p>Visual check of ground before exiting cabin</p> <p>Use of handrails/hand holds</p> <p>Use three points of contact</p> <ul style="list-style-type: none"> • Adequate lighting for all work locations at all hours of work
<p>Workers and plant in vicinity of mechanical harvester</p>	<ul style="list-style-type: none"> • Possibility of tree falling in work area of other crews • Work area close to access routes • Coordination of activities with ground workers and with other plant operators 	<ul style="list-style-type: none"> • Establishment of exclusion zones appropriate to tree density and terrain • Safety induction for visitors • Use of warning signs • Systems and methods for oral, visual and/or radio communication <p>High visibility clothing</p>
<p>Communication with other workers</p> 	<ul style="list-style-type: none"> • Coordination of ground workers with machine operators • Methods of communication between ground workers • Workers in isolated areas • Levels of noise affecting communication • Terrain • Possible interference with electronic communication 	<p>Effective use of equipment and methods of communication including radio, oral and visual</p> <p>Safe work procedures</p> <p>Appropriate training</p> <ul style="list-style-type: none"> • Agreed alternative communication measures

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
Plant and equipment	<ul style="list-style-type: none"> • Competence of operators • Safety during operation, including safety devices, condition of equipment, etc. • Operational capability of equipment • Exposure to hazardous substances • Static electricity discharge during fuelling 	<ul style="list-style-type: none"> • Appropriate training and supervision • Fitted ROPS & FOPS, operator protective guards, seat restraints (eg set belts, harness, etc.) • Inspection and maintenance • Suitable hand rails/hand holds • Follow manufacturer/supplier information; appropriate training • Follow recommended procedures in Material Safety Data Sheets • Follow recommended procedures in Material Safety Data Sheets
<p>Operator Safety</p> 	<p>You should consider the possible effects of such things as:</p> <ul style="list-style-type: none"> • Slips trips and falls • Environmental hazards eg poor visibility and noise • Unrestrained objects in cabin • Operator fitness/fatigue 	<ul style="list-style-type: none"> • Suitable footwear • Use of handrails/hand holds • Use of seat belts/restraints • 3 points of contact • Wearing of PPE including hearing protection and high visibility clothing • Ensuring all objects in the cabin are securely stored or fastened • Rotation of tasks • Rest breaks • Physical exercise eg stretching and/or warm ups
Emergency procedures and evacuation	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Methods of communication • Access to and egress from the site • Isolation of workers • Timeframes for medical assistance 	<p>Safe work procedures</p> <p>Appropriate training including first aid training</p> <p>Consultation with providers of emergency assistance, including designation of emergency meeting point</p>

Chapter 8 Forwarding and snigging

Two of the main ways logs are moved from the place where the trees are felled to the log landing are by the techniques of snigging and forwarding. *Snigging* refers to the pulling of logs, either partially or completely on the ground. *Forwarding* refers to the use of a vehicle to carry the logs completely off the ground. Both processes require the use of heavy vehicles such as rubber tyred skidders, crawler tractors, or forwarders with tracks or wheels.



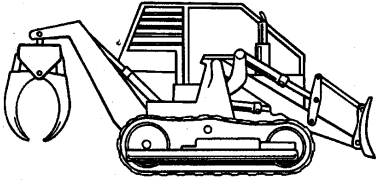
Prior to undertaking the extraction work employers must identify any hazards that may arise because of the activities, assess the risks that these hazards might bring about, and implement appropriate controls.


As in other forest harvesting operations these extraction methods require careful planning and coordination in order to avoid exposing workers or other persons in the work area to risks to their health and safety. Consideration of such factors as weather and environmental conditions, the skill and experience of the operators, the condition and appropriate use of the plant and equipment, and a range of other things should be taken into account when planning the extraction work.



The table that follows gives examples of the areas where hazards might be identified and of factors which need to be assessed as possibly contributing to the degree of risk, and suggests ways to control these risks.



Risk Management Approach To Forwarding and Snigging

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
<p>Working environment and conditions</p> 	<ul style="list-style-type: none"> • Slopes and grades of terrain and tracks • Condition of snigging track <ul style="list-style-type: none"> ▪ Debris ▪ Deep ruts ▪ Excessive ground moisture ▪ Rocks • Dangerous trees, eg dry snags, hung up trees • Falling objects from overhead tree canopies • Presence of other persons in the extraction area • Choice of equipment to suit weather and environmental conditions • Exposure to noise and other environmental conditions 	<ul style="list-style-type: none"> • Use of equipment in accord with the limitations specified by manufacturer Safe work procedures to address terrain and environment conditions Side cutting on steep slopes • Clear track as needed and maintain Appropriate plant and equipment for track conditions • Removal of trees as required • Position plant to avoid being struck on entry or exit where overhead hazards have been identified • Exclusion zones Warning signs • Use of plant and equipment according to manufacturers specification • Use and maintenance of PPE
<p>Work Methods</p>	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Order in which trees will be felled and extracted • Visibility of fallers • Competence of operators • Risk of injury during hooking and unhooking 	<ul style="list-style-type: none"> • Consultation between faller(s) and skidder/forwarder operator • Ensuring faller is sighted before moving in Use of high visibility clothing • Ensuring workers have appropriate skills, experience, training and supervision • Ensuring stability of skidder before dismounting Keeping hands and legs clear of possible log movement

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
	<ul style="list-style-type: none"> • Speed and stability of plant 	<p>Where possible, winching in direct line with winch's centre line</p> <p>Use of appropriate equipment, eg grapples</p> <ul style="list-style-type: none"> • Driving safely, and at speed appropriate for terrain <p>Using crawler tractor rather than rubber tyred skidder on steep grades</p> <p>Safe work procedures to ensure loading to the safe capacity of plant, to suit environment, slope, etc.</p> <p>Avoiding steep slopes</p> <p>Keeping blades low to add stability, as appropriate</p> <p>When traversing unfamiliar slopes, dismounting, walking and assessing prior to driving</p> <p><i>The use of safe work procedures covering all tasks should be considered.</i></p>
<p>Plant and equipment</p> 	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Condition of tyres (eg tread, inflation) tractor treads etc. • Condition and capacity of equipment, eg chains or ropes • Whether controls and safety devices are fully operational • Potential for injury from falling objects or roll-over • Possible slips, trips or fall of operator • Exposure to hazardous substances • Static electricity discharge during fuelling 	<ul style="list-style-type: none"> • Regular inspection for wear and breakage • Use and maintenance in accordance with manufacturer and supplier instructions • Regular testing and monitoring of controls and safety devices • All plant used conforms with relevant Australian standards, including use of ROPS/FOPS, operator protective guards and seat restraints • Provision of hand holds for entry and exit • Follow recommended procedures in Material Safety Data Sheets • Follow recommended procedures in Material Safety Data Sheets

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
<p>Operator Safety</p> 	<p>You should consider the possible effects of such things as:</p> <ul style="list-style-type: none"> • Slips trips and falls • Environmental hazards eg poor visibility and noise • Unrestrained objects in cabin • Operator fitness/fatigue 	<ul style="list-style-type: none"> • Suitable footwear • Use of handrails/hand holds • Use of seat belts/restraints • 3 points of contact • Wearing of PPE including hearing protection and high visibility clothing • Ensuring all objects in the cabin are securely stored or fastened • Rotation of tasks • Rest breaks • Physical exercise eg stretching and/or warm ups
<p>Communication</p> 	<ul style="list-style-type: none"> • Plant operators to ground workers & other plant operators • Workers in isolated areas • Levels of noise affecting communication • Terrain • Possible interference with electronic communication 	<ul style="list-style-type: none"> • Effective use of equipment and methods of communication including radio, oral and visual • Safe work procedures • Appropriate training • Agreed alternative communication measures
<p>Emergency procedures and evacuation</p>	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Methods of communication • Access to and egress from the site • Isolation of workers • Timeframes for medical assistance 	<ul style="list-style-type: none"> • Safe work procedures • Appropriate training including first aid training • Consultation with providers of emergency assistance, including designation of emergency meeting point

Chapter 9 Cable logging

Skyline or cable logging has potential safety risks due to the physical size and layout of this type of operation, as well as the nature of the plant and equipment used. Parts of the system may not be visible to the operator, for example, and ropes and pulleys may pose a serious risk of injuries when they fail.



Before starting cable logging, employers must identify any hazards that may arise because of the activities, assess the risks that these hazards might bring about, and implement appropriate controls.



Many factors contribute to the safety of cable logging operations. As in other forest harvesting operations, cable logging requires careful planning and coordination in order to avoid exposing workers or other persons in the work area to risks to their health and safety. Choice of an appropriate site with suitable anchor points is critical to a safe operation. The weather and other environmental conditions, the skill and experience of the operators, the condition and safe use of the plant and equipment, and a range of other factors should be taken into account when planning the work.

The table that follows gives examples of the areas where hazards might be identified and of factors which need to be assessed as possibly contributing to the degree of risk, and suggests ways to control these risks.



Risk Management Approach To Cable Logging

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
<p>Working environment and conditions</p> <p>The diagram illustrates a cable logging system. On the left, a 'MOBILE HAULER' is positioned on a slope, connected to a 'LANDING' point. A 'HANDROPE' is shown near the hauler. A 'CARRIAGE' is suspended from a 'SKYLINE' cable that runs down the slope. At the bottom right, a 'TAIL HOLD STUMP SKIDDING' area is shown. Labels include 'GREEN STUMPS', 'GYROPS', and 'LIVE SKYLINE SHOTGUN OR GRAVITY RETURN'.</p>	<ul style="list-style-type: none"> Slopes and grades of terrain Condition of work environment, including ground foundation Presence of other persons in the work area Exposure to noise and other environmental conditions 	<ul style="list-style-type: none"> Design and layout to suit slope, terrain and weather conditions Safe work procedures to address terrain and environment conditions Safe work procedures requiring assessment of site prior to set-up: stability, size, evenness Removal of unsafe trees or stumps prior to set-up On-going maintenance of site Exclusion zones and warning signs Safety induction for visitors Use and maintenance of PPE
<p>Work Methods</p>	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> Design and layout Competence of operators Set-up of plant and equipment Exclusion/danger zones Operations 	<ul style="list-style-type: none"> Safe work procedures covering: Anchor points, clearance distances, load limits, load size Ensuring workers have appropriate skills, experience, training and supervision Installation and commissioning of plant and equipment done by competent person(s) Ensuring adequate distances from areas of risk Safe work procedures covering: positioning of workers during operations, Signalling systems Dealing with unforeseen circumstances, eg crossed logs <p><i>The use of safe work procedures covering all tasks should be considered.</i></p>

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
Plant and equipment	Consideration of such factors as: <ul style="list-style-type: none"> • Condition and capacity of equipment, eg winches, guylines, etc • All controls and safety devices fully operational 	<ul style="list-style-type: none"> • Regular inspection for wear and breakage Use and maintenance in accordance with manufacturer and supplier instructions and specifications  <ul style="list-style-type: none"> • All plant and equipment conforms with relevant Australian standards
Communication 	<ul style="list-style-type: none"> • Plant operators to ground workers & other plant operators • Workers in isolated areas • Levels of noise affecting communication • Possible interference with electronic communication 	<ul style="list-style-type: none"> • Effective use of equipment and methods of communication including radio, oral and visual (including hand signals) Safe work procedures Appropriate training Agreed alternative communication measures
Emergency procedures and evacuation	Consideration of such factors as: <ul style="list-style-type: none"> • Methods of communication • Access to and egress from the site • Isolation of workers • Timeframes for medical assistance 	Safe work procedures Appropriate training including first aid training Consultation with providers of emergency assistance

Chapter 10 Log Landings and Log Dumps

As with other operations in the forest, work at the log landing (or at the log dump) brings together workers on the ground and in machines. This can create risks that must be anticipated and managed to prevent injury to those workers and others in the workplace. Proper planning and coordination prior to starting work can help make problems less likely to occur.


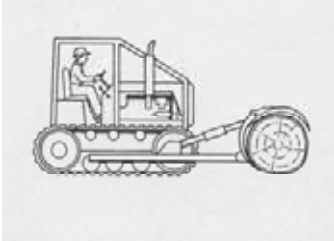




Prior to undertaking work at the landing employers must identify any hazards that may arise at the site and because of the work there, assess the risks that these hazards might bring about, and as much as possible control these risks.

The table that follows gives examples of the areas where hazards might be identified and of factors which need to be assessed as possibly contributing to the degree of risk, and suggests ways to control these risks.



Risk Management Approach to Log Landings and Log Dumps

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
<p>Work environment and conditions</p> 	<ul style="list-style-type: none"> • Slope and terrain • Hazardous trees near log landing site • Access and egress around log landings for workers and plant • Traffic flow, volume and type • Stability and line of sight of log stacks • Uncontrolled movement of logs on the ground • Multiple plant operations • Power lines – direct contact and high voltage arcing • Lighting • Other persons in the work area 	<ul style="list-style-type: none"> • Locate landing as much as possible on level ground • Remove dangerous trees safely • Adequately clear and maintain paths to and from landing • Adequate separation between log stacks and space for manoeuvring • Secure base and appropriate height and angle of stacks • Safe work procedures with proper unhooking of logs and chocking • Designated areas for activity with suitable separation distances • Maintain clearance distances and visual identification of lines <p>Avoid parking or working under power lines in hot weather conditions</p> <ul style="list-style-type: none"> • Adequate lighting for all work locations at all hours of work • Safety induction for visitors
<p>Plant operation</p> 	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Speed of plant entry and exit • Workers in proximity of plant • Limited visibility in log landing area • Competence of operators 	<ul style="list-style-type: none"> • Speed limits on plant entering & exiting • Operation of plant in agreed safety zones <p>Safe working procedures, with no loads swung above ground workers</p> <p>Truck drivers to be in a designated safe area</p> <ul style="list-style-type: none"> • High visibility clothing for all workers • Adequate training and supervision

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
	<ul style="list-style-type: none"> • Security of logs in mechanical handling • Condition of plant including safety features 	<ul style="list-style-type: none"> • Use of plant in accord with capacity limits • Regular inspection and maintenance of plant and equipment
<p>Operator Safety</p> 	<p>You should consider the possible effects of such things as:</p> <ul style="list-style-type: none"> • Slips trips and falls • Environmental hazards eg poor visibility and noise • Unrestrained objects in cabin • Operator fitness/fatigue 	<ul style="list-style-type: none"> • Suitable footwear • Use of handrails/hand holds • Use of seat belts/restraints • 3 points of contact • Wearing of PPE including hearing protection and high visibility clothing • Ensuring all objects in the cabin are securely stored or fastened • Rotation of tasks • Rest breaks • Physical exercise eg stretching and/or warm ups
<p>Communication with other workers</p> 	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Co ordination of ground workers with machine operators • Co ordination of machine & plant operators with other machine and plant operators • Level of noise and traffic affecting communication • Terrain • Possible interference with electronic communication 	<p>Effective use of equipment and methods of communication including radio, oral and visual</p> <p>Safe work procedures</p> <p>Appropriate training</p> <ul style="list-style-type: none"> • Agreed alternative communication measures
<p>Emergency procedures and evacuation</p>	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Methods of communication • Access to and egress from the site • Isolation of workers • Timeframes for medical assistance 	<p>Safe work procedures</p> <p>Appropriate training including first aid training</p> <p>Consultation with providers of emergency assistance, including designation of emergency meeting point</p>

Chapter 11 Loading, unloading, securing and transport

The processes of loading logs onto the haulage vehicle, securing, transporting and then unloading them at the log yard bring together vehicles, heavy mobile plant, people in machines and people on the ground. In such situations it is important for work to be adequately planned and coordinated. It is also important to realise that the way in which the logs are loaded and secured has a great affect on safety while the logs are being transported, as well as once they have been delivered and are being unloaded.



Methods to ensure work is carried out safely should be written into safe work procedures that take into account the hazards and risks related to the loading, unloading, securing and transporting processes. Look at all aspects of the work and determine the factors that could put people at risk of injury and the best ways to prevent this from happening. Look at the plant and equipment used, the environments in which the work is done, the work methods and the capabilities of the persons doing the work, how to ensure adequate communication and coordination among the people involved, and any other issues that could affect safety.

Effective coordination and communication between the contractors can ensure that all parties are aware of their OHS responsibilities and will follow safe work procedures. For example, mill owners and other persons who operate yards where logs are delivered and unloaded should develop safe work procedures that ensure the log loads are assessed prior to unloading. Assessment could be done at the weigh bridge or within the log yard, but the assessment should involve consultation between the haulage vehicle driver and the loader operator or other person in the yard. The safest way to ensure the security of the load should be agreed prior to release of the binders.

For loading, particular attention should be given to proper crowning and making sure that the logs are adequately restrained by the stanchions. When dealing with mixed length loads take extra care to ensure shorter logs do not come loose and fall on someone. One way is to load the longer logs to the outside against the stanchions and the shorter ones held in place by the longer logs.

When securing the loads, special care should be taken to use restraints that are appropriate for the type and species of the logs and to use the appropriate number of restraints to keep the load secure. Make sure that the binders and lashings are in good condition and are properly secured to prevent the load from shifting during transport.

Loads should be inspected and restraints adjusted as required when leaving the forest and prior to entering public roads, to ensure that logs have not shifted and that they will not pose a danger to other persons or vehicles on the

road. Vehicles should be driven safely and in accordance with relevant state and local requirements.







In unloading the logs, risks can arise from shifting or other movement of the logs. The load should be assessed prior to unloading and the logs should be restrained and secured to prevent log movement when the binders are released and the lashings removed. One way to do this is for the loader operator to use the log grab to hold the load in place while the binders are released. Particular attention should be paid to the safety of the driver while he or she is near the loader. A safe location away from any area of risk should also be agreed, where the driver should remain while unloading takes place.


The table that follows looks at several issues involved with loading, unloading, securing and transporting logs. It shows several of areas where hazards might be identified and of factors which need to be assessed as possibly contributing to the degree of risk, and suggests ways to control these risks.



Risk Management Approach to Loading, Unloading, Securing and Transport

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
<p>Working environment and conditions</p> 	<ul style="list-style-type: none"> • Work is close to access routes • Movement of logs • Stability of plant and haulage vehicle • Visibility and lighting 	<ul style="list-style-type: none"> • Appropriate placement of warning signs, barriers and/or traffic control • Safe work procedures for loading operations • Training of employees • Safety induction for visitors • Supervision of loading site • Establishment of exclusion zones for plant and persons appropriate to the working radius of plant used for loading. • Ensuring ground is level and firm to ensure stability of loading machinery and haulage vehicle with changing load conditions • Adequate lighting for all work locations at all hours of work
<p>Plant operation</p> 	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> • Size and type/species of logs • Plant used for loading and unloading • Condition of plant including operation of safety features • Competence of operator • Location of haulage vehicle driver 	<ul style="list-style-type: none"> • Selection of appropriate plant with hydraulic log grabs or other device to stabilize the log(s) during loading • Safe work procedures • Routine daily checks of plant and scheduled maintenance • Appropriate training and assessment of competency of operators; adequate supervision • High visibility clothing <p>Work procedures to ensure:</p> <ul style="list-style-type: none"> ▪ Driver located in designated safe areas known to the loader operator during loading/unloading operations. ▪ Loading operation has ceased prior to and during any load inspections. ▪ That when recording log

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
	<ul style="list-style-type: none"> Exposure to noise Safe entry and exit of operator from plant 	<p>stamp, driver is in designated safe area and approaches log only when all movement of log and plant has ceased.</p> <ul style="list-style-type: none"> All loading operations have ceased while load inspection is taking place. Selection of appropriate hearing protection Use of handrails/handholds <p>Using three points of contact</p>
<p>Operator Safety</p> 	<p>You should consider the possible effects of such things as:</p> <ul style="list-style-type: none"> Slips trips and falls Environmental hazards eg poor visibility and noise Unrestrained objects in cabin Operator fitness/fatigue 	<ul style="list-style-type: none"> Suitable footwear Use of handrails/handholds Use of seat belts/restraints 3 points of contact Wearing of PPE including hearing protection and high visibility clothing Ensuring all objects in the cabin are securely stored or fastened Rotation of tasks Rest breaks Physical exercise eg stretching and/or warm ups
<p>Tightening and releasing of load restraints on log haulage vehicles</p> 	<p>Consideration of such factors such as:</p> <ul style="list-style-type: none"> Type and number of load restraints Positive securing of logs whilst restraints are placed on, or released from loads 	<ul style="list-style-type: none"> Selection of appropriate restraints suitable for the type and species of logs being transported. Ensuring that appropriate number of load restraints are available on haulage vehicle to suit load requirements. Safe work procedures to ensure: <ul style="list-style-type: none"> Loading has been completed prior to tightening first load binder That where stanchions do not secure the entire load, other methods are used to ensure the logs are secured until the bindings are tightened or

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
	<ul style="list-style-type: none"> Use of stanchions on transport vehicle 	<p>released, and the driver is in a safe area.</p> <p>Release of binders only after assessment of load for movement.</p> <ul style="list-style-type: none"> Training and supervision Safe work procedures that require: <ul style="list-style-type: none"> Positive securing of stanchions to both sides of the bolsters. That fixed stanchions or removable stanchions are fitted with chocks <p>Use of stanchions designed to prevent deflection by the load</p> <p>Ensuring that loads comply with relevant guidelines including RTA requirements</p>
Transporting of logs	<ul style="list-style-type: none"> Competency of operators Potential for shifting of loads on forest roads Safety of, and interaction with other road users 	<ul style="list-style-type: none"> Training, supervision and assessment to National competencies for vehicle drivers <p>Training and assessment in load restraint techniques</p> <ul style="list-style-type: none"> Inspection and grooming as needed of access roads used for log haulage Procedures to require that load is checked for security and stability prior to driving on roads Liaison with local landowners and other road users, eg school bus operators
<p>Communication with other workers</p> 	<p>Consideration of such factors as:</p> <ul style="list-style-type: none"> Co ordination of ground workers with machine operators Co ordination of machine & plant operators with other machine and plant operators Level of noise and traffic affecting communication Terrain Possible interference with electronic communication 	<p>Effective use of equipment and methods of communication including radio, oral and visual</p> <p>Safe work procedures</p> <p>Appropriate training</p> <ul style="list-style-type: none"> Agreed alternative communication measures
Emergency procedures and	Consideration of such factors as:	Safe work procedures

SOME AREAS FOR HAZARD IDENTIFICATION	SOME FACTORS TO CONSIDER IN ASSESSING RISK	EXAMPLES OF CONTROL MEASURES
evacuation	<ul style="list-style-type: none">• Methods of communication• Access and egress from the site• Isolation of workers• Timeframes for medical assistance	Appropriate training including first aid training Consultation with providers of emergency assistance, including designation of emergency meeting point

Chapter 12 First Aid



The OHS Regulation requires employers to provide first aid facilities that are adequate for the immediate treatment of injuries and illnesses that may arise in the workplace.

Harvesting operations are potentially hazardous. Workers may be injured in spite of safety measures that have been put in place. Employers must ensure that workers have access to adequate first aid facilities, kits and trained first aid personnel to treat the types of injuries and illnesses that might occur while they are at work.

When determining the nature, number and location of the first aid facilities, kits and the number of trained first aid personnel required, the employer must take into account where the employees will be working, the number of employees at that location and the type of work employees will be doing.

Due to the isolation of harvesting operations, a first aid kit of the Type B requirements of the OHS Regulation should be provided at a minimum. Employers should provide first aid kits at or near the site of logging work, with the type of the kit depending on the location and number of employees at that site. Employees should have access to the first aid kits so they need to be located close to where people are working.

Given the dangers involved in forest harvesting work and the remote locations in which people generally work, employees must also have access to trained first aid personnel. A qualified first aid person should be immediately available on any forest operation. Qualified first aid personnel provide assistance to the sick and injured and are required to follow first aid procedures when treating injured people.

Since many workers work in isolation or on small crews, employers should consider training every worker in basic first aid. This basic first aid training might cover resuscitation, bleeding control, shock, burns, bites and stings from poisonous snakes and spiders, and fractures. Basic first aid refresher training could be delivered at regular intervals to ensure that knowledge and skill do not become outdated or forgotten.

A vehicle should be available while work is in progress for transportation in an emergency. Since a work vehicle is classified as a place of work there should be a first aid kit in every vehicle used by or on behalf of the employer to transport any person to or from the work site.

During induction, employees should be informed of the location of qualified first aid personnel, the first aid facilities and kits, and the procedures for replacement of stock.

Chapter 13 Other Things You Must Know

13.1 Plant

The OHS Regulation sets out many legal obligations regarding the design, manufacture, registration and use of plant. You need to refer to the OHS Regulation to learn more about these legal requirements.

Employers must identify the hazards that may be caused by the types of plant and equipment in use, assess the risks that the hazards may give rise to, and eliminate or control these risks.

Some things you should know about plant

To make sure plant and equipment does not pose a risk when in use and when left unattended, special consideration should be given to the following:

1. All plant must be used for the purpose it was designed for and within its rated capacity.
2. Some plant requires design registration, item registration, or both before it can be used in NSW.
3. All safety features, guarding and warning devices must be used as intended, tested regularly, and not be made inoperative.
4. Plant must be maintained in safe condition. Inspection, repairs and testing must be carried out by a person whose combination of training, qualifications and experience have given them the skills to do the job.
5. Employers should make sure that all plant is inspected and serviced regularly, and that it is carefully checked daily before it is used. Log books and inspection check sheets should be kept.
6. All users of plant must be adequately trained to use the plant safely, and must be provided with adequate supervision until they are competent to operate it safely without supervision. Some plant may require a Certificate of Competency to be held by the operator.
7. Operators should not be permitted to use plant while they are under the influence of alcohol or any drug or other substance (including prescription or non-prescription medication) that might affect their ability to operate the plant safely.
8. All available health and safety and emergency information about the plant and equipment must be provided to plant users, installers, testers, and other persons who may be exposed to a risk from the plant or equipment. This may need to be obtained from the supplier or developed by a competent person.

All mobile plant used in forest harvesting activities should be fitted with adequate roll-over protective structures (ROPS), falling-object protective structures (FOPS), operator protective guards and seat restraints that comply with relevant Australian Standards. These include AS 1636, Parts 1,2 and 3 - 1996; AS 2294.1 - 1997, AS 2294.2 - 1997, AS 4988 - 2002 and AS 2664 - 1983. A list of Australian Standards is included in Appendix 3.

13.2 Manual Handling

Manual handling is any activity that requires a person to use bodily force in order to lift, push, pull, carry or in some other way move or restrain an object. Virtually all jobs in the forest harvesting industry involve some form of manual handling, and employers must identify, assess and eliminate or control these risks. The *site safety plan* and safe work procedures should outline measures to eliminate or control possible manual handling risks.



Looking at Manual Handling

The injuries resulting from manual handling may often be the result of repeated movements and may occur over a long period. In managing risks from manual handling employers should consider such things as:

- Use of equipment or other measures that eliminate or reduce the need for manual handling (including appropriate stump height to reduce unnecessary straining)
- Ensuring plant and equipment is ergonomically designed (that is, designed to suit the size, strength and reach distances of most users).
- Rotation of tasks
- Breaks and rest periods to suit the tasks and duration of work
- The right number of people to do difficult tasks

Specific requirements regarding manual handling are set out in Part 4.4 of the OHS Regulation. More general guidance on identifying, assessing and eliminating or controlling manual handling risks can be found in the *National Code Of Practice For Manual Handling* [NOHSC: 2005 (1990)].

13.3 Noise



The Occupational Health and Safety Regulation requires employers to ensure that no person is exposed to noise levels that exceed an 8 hour equivalent of 85 dB(A) or peak at more than 140 dB(C).

The risk of causing permanent hearing damage is related to both how loud the noise is and the length of time a person is exposed to it. For example, one minute working in high noise levels such as 112 decibels dB(A) may cause the same amount of damage as eight hours working at 85 dB(A). Where exposure to high levels of noise cannot be avoided or prevented through some process of elimination (for example, use of soundproof cabins), appropriate hearing protection equipment must be provided to all persons who may be exposed to the noise.

There are several resources available for information about hearing protection. Australian Standard AS/NZS 1269.1, 1269.2, 1269.3, and 1269.4 on *Occupational Noise Management* provides guidance on measuring and managing possible exposure to noise in the workplace. You can also refer to the WorkCover NSW *Code of practice for noise management and protection of hearing at work* for information on this important matter.



13.4 Hazardous Substances

Workers in forest harvesting operations may use or become exposed to chemicals and other hazardous substances, such as chemicals, fuel and oils. Employers should ensure that people using or who may be exposed to hazardous substances are appropriately trained and informed of the risks and health and safety issues associated with these substances.

Some things you should know about hazardous substances

Employers have many legal obligations regarding hazardous substances. The main ones include:

- a) Providing and maintaining a register of hazardous substances used in the workplace
- b) Provision of Material Safety Data Sheets (MSDS) to employees who could be exposed to the hazardous substance. These are obtainable from suppliers and manufacturers and provide hazard and safety information including safe handling and storage
- c) Using the product as defined in the MSDS
- d) Development of effective measures to manage safe use and possible exposure, eg site control, training, storage, PPE
- e) Protection of the health and safety of all people including visitors and the public not directly working with the hazardous substances



The OHS Regulation provides detailed information regarding an employer's legal obligations with respect to hazardous substances. Employers should refer to this information where there is the possibility that workers or other persons may be exposed to such substances. WorkCover also makes available a range of publications that may be useful.

13.5 Amenities

The OHS Regulation requires employers to make sure that appropriate, hazard-free amenities are available for employees while they are at work. The appropriateness of toilet facilities, shelter sheds, drinking water and washing facilities and other amenities must be decided on the basis of the nature of the work, the size and location of the workplace and the number of persons in the workplace. More detailed guidance may be found in WorkCover's *Code of Practice for Workplace Amenities*.

13.6 Hot and Cold Weather



Employers must ensure they implement risk control measures to safeguard employees from risks arising from exposure to heat or cold. You should refer to WorkCover's *Code of Practice for Work in Hot or Cold Environments* for specific guidance on this important matter.

The effects of cold and wet work environments create particular hazards to logging operations. Wet conditions create slippery conditions underfoot and with mechanical handling of logs. Cold conditions affects the safe use of plant, particularly chainsaws and other vibrating plant.

Work outdoors in hot and humid weather or in other hot environments can lead to the risk of heat stress which can in some cases become potentially life threatening. Factors that can contribute to heat stress include temperature, humidity, excessive or poorly ventilated clothing, and levels of physical activity.

Preventing Heat Stress

Employers can take steps to avoid exposing workers to risks arising from working in hot conditions. Some of these are listed below. More can be found in the above Code of Practice.

- Scheduling work for cooler times of day, eg early morning or late afternoon
- Avoiding the need for continuous heavy work by alternating heavy work with light work
- Providing shade areas
- Shielding workers from sources of radiant heat
- Increasing air movement over workers, eg fans in the cabins of vehicles and mobile plant
- Providing cool drinking water
- Providing cool rest locations
- Providing sunscreen
- Selecting appropriate work clothing (but be careful not to sacrifice the safety offered by PPE just because it is hot)
- Providing frequent rest and cool-off periods
- Providing information and education about safe work procedures, preventive measures and symptoms of heat stress.



13.7 Fatigue

Physical and mental fatigue can give rise to risks to worker health and safety. Muscle fatigue, for example, makes it harder to do physical tasks (like operate a chainsaw) safely. It can be brought on by such things as repeated physical effort and strain, long work periods without proper breaks, and other factors.

Mental fatigue can make it harder for workers to stay alert and concentrate on mental tasks like identifying hazards or following safe work procedures. It can be brought on by many factors, including lack of sleep, working a long time on a task, shift work and night work. Working at night can be a particular problem for some workers, especially when the natural body rhythm is geared to sleeping at night and it is often difficult to sleep during the day.

Fatigue, like other sources of risk, should be effectively managed to avoid exposing workers to potential harm. Employers should consider adopting the use of work practices and equipment that reduce physical strain and effort, and should ensure that workers take adequate rest breaks. Care should be taken in determining work schedules so workers are not exposed to risks through working excessively long daily or weekly schedules.

Where shiftwork is being practiced or considered, scheduling of work should also be carried out to ensure workers are not exposed to risks because of fatigue. The WorkCover publications, *How to devise an effective roster* and *How to manage shiftwork* provide helpful information on safe work scheduling.

13.8 Personal Protective Equipment (PPE)

While personal protective equipment is the least desirable way to deal with hazards within the “hierarchy of controls” approach discussed in Section 3.4, PPE can be identified in the risk management process as a method of risk control for certain tasks or situations.

Where PPE is a chosen method of risk control for certain tasks or situations, it must be worn at all times when working in those circumstances. The OHS Regulation requires that where risk control measures chosen by an employer includes the use of PPE (for example safety boots, helmets or high visibility clothing) the employer must provide such items to each person at risk. Make sure the PPE is appropriate, fitted correctly, maintained in good condition and always used correctly. Workers should be trained not only in how to use it correctly, but also in how to look after it. It should be regularly inspected, and maintained in a clean and fully effective condition. Defective equipment should not be used.

Much information, including Australian Standards, is available concerning PPE. One information source that might be especially useful is *HB 9 – 1994 Occupational personal protection*, available through Standards Australia. This handbook refers to over 50 Australian Standards as well as a large number of international standards. It also has chapters on general principles on personal protective equipment, the identification of common hazards likely to be

encountered in the workplace, and general control measures for reducing the risks they might present.

Choosing the Right PPE

In choosing appropriate PPE there are a number of things you should consider:

- The nature of the risk and how exposed persons are to it
- How effectively the equipment will protect people
- The fit of such equipment for the wearer
- Wearability and comfort
- How long the equipment is to be worn
- How easy it is to maintain and availability of any needed replacement parts

Depending on the work being done, equipment used or other factors, the following items should be used:

- Safety helmets
- Sun protection
- Safety gloves
- Protective footwear
- Eye protection
- Respiratory protection
- Hearing protection
- High visibility clothing
- Cut resistant leg protection
- Wet weather gear



Appendices

Appendix 1 Safe Work Procedures



Safe Work Procedures Tool — Part A

This tool is intended to help you address the health and safety issues that may arise from the jobs and tasks that make up the system of work in your workplace. You should use this tool when you are:

- Designing a new job or task
- Changing a job or task
- Introducing new equipment or substances to the workplace
- Reviewing a procedure when problems have been identified, eg from an accident or incident investigation.

Step 1 Who is involved?

In developing safe procedures for a job you need to identify who will do and who will supervise the work.

Firstly, these people probably have a great deal of experience in doing the types of tasks that the job will involve. Consulting them will make the task of developing safe procedures easier. **Moreover, under health and safety laws you are required to consult with your employees on matters which may affect their health and safety**

Secondly, when you are developing procedures you will need to identify any new skills and knowledge that will be needed to do the job safely. Therefore, you need to know what skills and knowledge supervisors and workers currently have.

Step 2 What sources of hazards does the job involve?

Jobs usually involve one or more of the following:

- The application of physical effort, such as lifting, standing carrying, pulling – this is often called Manual Handling
- Using equipment such as chainsaw, forwarder, grapple skidder, etc.
- Working with chemicals and substances such as solvents, acids, gases, metals etc.

Many jobs involve all three elements. It is important to identify what manual handling tasks, equipment and substances are involved in order to identify the hazards and risks associated with the job (eg. *chainsaws create noise problems and can cause injury through kick back or other problems*).

It is also important to estimate how long and how often various tasks are done as part of the job (eg. *constant lifting of even small loads can increase risks of back injury; or prolonged exposure to noisy equipment increases the risk of hearing loss*).

Therefore, make a list of the manual handling tasks, the equipment and tasks that make up job.

Step 3 What hazards does the work environment involve?

People do their work in a workplace or environment that may present its own OHS problems. For example, tasks may be out in the open so there is

the likelihood of exposure to ultraviolet light and the weather; work may be performed at heights, or in a hot area, or close to dangerous plant.

These hazards need to be identified because they can pose health and safety risks.

Step 4 Assessing the Health and Safety Risks

Once the potential hazards have been identified in Step 3, you then need to consider to what extent they pose a risk to health and safety. To do this, you may need to gather a range of information, in addition to your own knowledge and experience, about the potential risks. Good sources of information include:

- **Your own health and safety records**
If the job involves equipment, chemicals or activities that are already part of the various jobs in your workplace you may already have made a record of the risks they pose. Moreover, your injury and illness records may also provide you with information about the risks.
- **Your employees**
Their experience of the workplace and the range of activities that go on are a valuable source of information about potential risks.
- **Material Safety Data Sheets – MSDSs**
For substances, the MSDS will provide information on the health effects of exposure to the substance. It will describe the health and safety risks posed by the substance.
- **User Manuals and Equipment Manuals**
These provide information on the safety issues about plant and equipment. If these are unavailable, you should ask the manufacturer to supply this information to you, especially if you intend to purchase the plant or equipment.
- **Safety Information**
There may be information on the work process from WorkCover, your local industry association, industry training provider or safety group.

The risks identified in this process need to be listed against the particular hazard (*eg. hearing loss from using a chainsaw for significant periods of the day, nausea and dermatitis from exposure to a solvent*).

Step 5 Finding Solutions to the OHS Risks

The most important part of the development of safe working procedures is to develop ways to eliminate or control the risks in the work process. All the above information, besides helping you identify and assess the OHS risks will also help you to address them:

- Employees, from their experience often have good ideas on what to do to address OHS problems.
- Material Safety Data Sheets (MSDSs) provide information on:
 1. How to handle and store chemicals safely.
 2. Ways to reduce possible exposure, such as ventilation, and the correct personal protective equipment that should be worn.
- User and Equipment Manuals provide information on what procedures need to be in place to operate the equipment safely.

In this process, you may develop a number of possible solutions to address the various OHS risks. Your first obligation is to attempt to eliminate any risk. For example discontinue an unsafe activity; look for

design solutions to plant and equipment which remove hazards associated with their operation; eliminate a manual handling risk by the use of mechanical lifting devices.

Where elimination is not achievable you must minimise the risk to the lowest level reasonably practicable. You should evaluate the risks based on the hierarchy of controls and select solutions as high up the hierarchy as possible. By doing this, you are ensuring the safest and healthiest workplace possible. In descending order the hierarchy organises risk control strategies into those that:

- *Substitute the hazard giving rise to the risk with a hazard that gives rise to a lesser risks.* For example redesign the work process so that less hazardous equipment, material or quantities are used; use less toxic chemicals or less flammable substances; have chemicals supplied in smaller quantities if decanting them poses risks.
- *Isolate the hazard from the person put at risk.* For example introduce a restricted work area; reduce emissions and noise from machinery through venting and containment or isolation barriers.
- *Minimise the risk by engineering means.* For example ensure that exposed moving parts on equipment are adequately guarded and lockout devices are fitted; reduce noise levels from machinery by installing dampening methods like mufflers; look for better safety design features on equipment.
- *Minimise the risk by administrative means.* For example organising the way tasks are done can sometimes reduce exposure to risks; job rotation and task variety can reduce the risks associated with repetitive manual handling tasks; provide appropriate safety training, instruction or information; use written safe work procedures; develop preventative maintenance schedules to identify and fix faulty machinery
- *Use personal protective equipment (PPE).* For example, use safety eyewear, hearing protective earplugs or muffs, safety helmets, cut resistant leg protection and reinforced footwear, respirators. PPE is the least preferred solution to OHS problems because it does not really address the hazard but merely provides a shield to protect the worker. While it generally should only be used to supplement other risk reduction strategies or when it is not reasonably practicable to address the risk in any other way, where PPE is a chosen method of risk control for certain tasks or situations, it must be worn at all times when working in those circumstances.

Step 6

Write up Safe Working Procedures

The next step is to write the solutions in Step 5 into Safe Working Procedures. The Procedure should identify:

- The Supervisor for the task or job and the employees who will carry out the task
- The tasks that might pose risks
- The equipment and substances that are used in these tasks
- The control measures that have been built into these tasks
- Any training or qualification needed to carry out the task
- The personal protective equipment to be worn
- Action to be taken to address safety issues that may arise while completing the task.

Step 7 Train in the Procedures

Once you have decided the procedures that need to be in place you have to consider what training and information supervisors and employees will need to have to support them.

You should think about the current knowledge and skills they have concerning manual handling, equipment, substances and the work environment.

Training should be designed to bridge the gap between what they can do now, and what they need to do, to do the job safely.

The training should cover:

1. What the job involves
2. The OHS problems associated with the job
3. The procedures that have been developed to ensure the job is done safely

Step 8 Review procedures

The procedures should be reviewed:

- At regular intervals
- When there is an injury or incident
- When there are changes to the work system such as could come about by introducing new equipment or substances, modifying the workplace, using different types of employees to do the job
- If new information is obtained about a previously unidentified hazard or risk.

Appendix 2 Definitions

Access	The way or means of approach or entry into an area.
Competent person	<i>Competent person</i> for any task means a person who has acquired through training, qualification or experience, or a combination of them, the knowledge and skills to carry out that task.
Control measure	A method of minimising a risk to health or safety in the event that it is not possible to eliminate the risk.
Egress	The way or means out of an area.
Exclusion zone	An area or zone around an area where work is taking place that is designated as off-limits to unauthorised persons. Exclusion zones should be clearly marked for easy identification.
Extraction	The process of moving cut logs from the place where they were felled to the log landing.
FOPS	Falling Object Protective Structure designed, built and fitted to protect the operator of a machine from a falling object when the operator is wearing a seat belt.
Forwarding	The process of moving logs from the harvesting area by carrying them clear of the ground by use of mobile mechanical plant.
Hazardous Substance	Any substance that is potentially harmful to health.
Log landing	An area where forest products are stored temporarily for processing, sorting and loading onto trucks. Sometimes referred to as "log dump".
MSDS	Material Safety Data Sheet – a document prepared by a manufacturer of a hazardous substance. The MSDS must be prepared before supplying the substance to another person for use at work. It must contain information about its recommended uses, its chemical and physical properties, information about its ingredients, health and hazard information, and information about safe use and handling of the substance.

Personal protective equipment (PPE)	Any clothing, equipment or substance (eg sun protection cream) designed to be worn or otherwise used to protect a person from risks of injury or disease.
Plant	Any machinery, equipment or appliance.
Risk assessment	The process of assessing the risk of harm to the health or safety of a person arising from an identified hazard. Risk assessment looks at the likelihood of an injury or illness occurring and how severe the injury or illness is likely to be. It also includes looking at the factors that contribute to the risk.
Risk management	The processes of identifying any foreseeable hazards that might occur in the course of an employer's undertaking, assessing the risks that may arise from these hazards and implementing measures to eliminate or control the risks.
ROPS	Roll-over protective structure designed, built and fitted to protect the operator of a machine during a roll-over when the operator is wearing a seat belt.
Safe work procedure	A document – based on an identification of the hazards, assessment of the risks of illness and injury arising from those hazards, and decisions about how they will be eliminated or controlled – that is written for a particular work process or task and designed to provide direction on the way the work can be done safely. It identifies the supervisor; the tasks that might pose risks; the equipment and substances used; agreed control measures; required training or qualifications; PPE needed; and any actions that might be taken if safety issues come up when the task is being done.
Site safety plan	A plan for managing the safety issues at a work site. It should be developed through a process of consultation with the contractors and persons involved in the activities at the site, and address hazards and safety issues related to the site, plant and equipment, the experience and competence of the people involved, presence of other operators at the site, emergency planning and any other matters that might affect safety.
Snigging	The process of pulling logs from the harvesting area by use of mobile mechanical plant, and

supporting them entirely or partially on the ground.

Snig track

A track along which snigging equipment travels while snigging logs.

Stanchion

A vertical post, strut or frame for supporting and confining logs on the back of a truck or other transporter.

Appendix 3 Relevant Australian Standards

AS/NZS 1269.1: 1998	<i>Occupational noise management – Measurement and assessment of noise emission and exposure</i>
AS/NZS 1269.2: 1998	<i>Occupational noise management – Noise control management</i>
AS/NZS 1269.3: 1998	<i>Occupational noise management – Hearing protector program</i>
AS/NZS 1269.4: 1998	<i>Occupational noise management Auditory assessment</i>
AS 1318 – 1985	<i>Use of colours for the marking of physical hazards</i>
AS 1319 – 1994	<i>Safety signs for the occupational environment</i>
AS 1470 – 1986	<i>Safety at work – Principles and practices</i>
AS 1636.1 – 1996	<i>Tractors – Roll-over protective structures – Criteria and Tests – Conventional Tractors</i>
AS 1636.2 – 1996	<i>Tractors – Roll-over protective structures – Criteria and Tests – Rear-mounted for narrow-track tractors</i>
AS 1636.3 – 1996	<i>Tractors – Roll-over protective structures – Criteria and Tests – Mid-mounted for narrow-track tractors</i>
AS/NZS 1800: 1998	<i>Occupational protective helmets – Selection, care and use</i>
AS 1885.1 – 1990	<i>Measurement of occupational health and safety performance – Describing and reporting occupational injuries and disease</i>
AS 1885.1Supp 1 – 1991	<i>Measurement of occupational health and safety performance – Describing and reporting occupational injuries and disease – Workplace injury and disease recording form (Supplement)</i>
AS/NZS 2153.1: 1997	<i>Tractors and machinery for forestry – Technical means for ensuring safety – Part 1: General</i>
AS/NZS 2153.3: 1997	<i>Tractors and machinery for forestry – Technical means for ensuring safety – Part 3: Tractors</i>

AS/NZS 2153.4: 1997	<i>Tractors and machinery for forestry – Technical means for ensuring safety – Part 4: Forestry Winches</i>
AS/NZS 2210.1:1994	<i>Occupational protective footwear – part 1: Guide to selection, care and use</i>
AS 2294.1 – 1997	<i>Earth Moving Machinery – Protective Structures – General. See also Supplement 1 : Operator Protective Structures Fitted to Plant used in the Timber Industry (Forest Operations)</i>
AS 2294.2 – 1997	<i>Earth Moving Machinery – Protective Structures – Laboratory tests and performance requirements for roll-over protective structures</i>
AS 2294.3 – 1997	<i>Earth Moving Machinery – Protective Structures – Laboratory tests and performance requirements for falling object protective structures</i>
AS 2294.4 – 1997	<i>Earth Moving Machinery – Protective Structures – Specifications for deflection limiting volume</i>
AS 2549 – 1996	<i>Cranes (including winches and hoists) – Glossary of terms</i>
AS 2550.5 – 1993	<i>Cranes – Safe use – Mobile and vehicle loading cranes</i>
AS 2664 – 1983	<i>Earthmoving machinery – Seat Belts and seat belt anchorages</i>
AS 2726.1 – 1995	<i>Chainsaws – Safety requirements – chainsaws for general use</i>
AS 2726.2 – 1995	<i>Chainsaws – Safety requirements – chainsaws for tree service</i>
AS 2727 – 1997	<i>Chainsaws – Guide to safe working practices</i>
AS 2759 – 1985	<i>Steel wire ropes – Application guide</i>
AS 2957.5 – 1988	<i>Earth moving machinery – Operation and maintenance – Guide to procedure for operator training</i>
AS 3569 – 1989	<i>Steel Wire Ropes</i>
AS 3574 – 1988	<i>Safety in Forestry – SAA Forest Safety Code</i>

AS 3575 – 1995	<i>Clearing saws, brushcutters and grass trimmers – safety requirements</i>
AS/NZS 3576: 1998	<i>Clearing saws, brushcutters and grass trimmers – Guide to safe working practices</i>
AS 4024.1 – 1996	<i>Safeguarding of machinery – General principles</i>
AS/NZS 4453.3:1997	<i>Protective clothing for users of hand-held chainsaws – Protective legwear</i>
AS 4988 – 2002	<i>Earth moving machinery – Hydraulic excavators – Laboratory tests and performance requirements for operator protective guards</i>

Appendix 4 Where to go for more information

WorkCover New South Wales

- NSW Occupational Health and Safety Act 2000
- NSW Occupational Health and Safety Regulation 2001
- *Code of Practice for Workplace Amenities*
- *Code of practice for noise management and protection of hearing at work*
- *Code of Practice for the amenity tree industry*
- *Code of Practice: Occupational Health and Safety induction training for construction work*
- *Code of Practice: Occupational Health and Safety Consultation*
- *Code of Practice for the sawmilling industry*
- *Code of practice for the control of workplace hazardous substances*
- *Managing chemical hazards in the workplace: advice for managers and supervisors*
- *Skin cancer and outdoor workers: a guide for employers*
- *Skin cancer and outdoor workers: a guide for workers*
- *Workplace personal protective equipment (PPE) program*
- *WorkCover Health and Safety Guide: First Aid in the Workplace*
- *WorkCover health and Safety Guide: Work in Hot or Cold Environments*
- *How to devise an effective roster*
- *How to manage shiftwork*
- *Chainsaw Safety*

Other sources of information

- HB 9 – 1994 *Occupational personal protection*, available through Standards Australia
- *National Standard for Manual Handling* [NOHSC: 1001 (1990)] (National Occupational Health and Safety Commission)
- *National Code Of Practice For Manual Handling* [NOHSC: 2005 (1990)] (National Occupational Health and Safety Commission)
- *Chainsaw Operator's Manual* (State Forests of NSW)
- *Forest Practices Code – Timber Harvesting in Native Forests* (State Forests of NSW)
- *Forest Practices Code – Timber Harvesting in State Forests Plantations* (State Forests of NSW)
- *Contractors Safety Pack* (State Forests of NSW)

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