SafeWork NSW

DRAFT Sawmilling industry code of practice

Code of practice

Editorial note

When reading this Code of practice (this Code), please be aware that any reference to:

- the 'Work Health and Safety Act' refers to the *Work Health and Safety Act 2011* (NSW), or any successor legislation,
- the 'Work Health and Safety Regulation' refers to the *Work Health and Safety Regulation 2025* (NSW), or any successor regulation,
- a code of practice refers to the relevant NSW Code of practice, or any successor code of practice.

This Code may contain references to relevant withdrawn or superseded Australian Standards or Australian/New Zealand Standards.

Copyright information

Acknowledgment

SafeWork NSW wishes to acknowledge the contribution and collaboration of industry and social partners through the public comment period and technical development of this Code.

Additionally, the cooperation of other WHS regulators and Safe Work Australia is acknowledged for aligning materials where appropriate, particularly from the Office of Industrial Relations – Workplace Health and Safety Queensland.

Contents

Foreword

This Code of practice (this Code) on how to manage work health and safety risks of the sawmilling industry is an approved code of practice under section 274 of the *Work Health and Safety Act 2011* (the WHS Act).

An approved code of practice provides practical guidance on how to achieve the standards of work health and safety required under the WHS Act and the *Work Health and Safety Regulation* (the WHS Regulation) and effective ways to identify and manage risks.

A code of practice can assist anyone who has a duty of care in the circumstances described in the code of practice. Following an approved code of practice will assist the duty holder to achieve compliance with the health and safety duties in the WHS Act and WHS Regulation, in relation to the subject matter of the code of practice. Like regulations, codes of practice deal with particular issues and may not cover all relevant hazards or risks. The health and safety duties require duty holders to consider all risks associated with work, not only those for which regulations and codes of practice exist.

Codes of practice are admissible in court proceedings under the WHS Act and WHS Regulation. Courts may regard a code of practice as evidence of what is known about a hazard, risk, risk assessment or risk control and may rely on the code in determining what is reasonably practicable in the circumstances to which the code of practice relates. For further information see Safe Work Australia's *Interpretive Guideline: The meaning of 'reasonably practicable'*.

Compliance with the WHS Act and WHS Regulation may be achieved by following another method if it provides an equivalent or higher standard of work health and safety than the code.

An inspector may refer to an approved code of practice when issuing an improvement or prohibition notice.

Scope and application

This Code is intended to be read by a person conducting a business or undertaking (PCBU). It provides practical guidance to PCBUs on how to manage risks to health and safety associated with the sawmilling process in the NSW timber industry. Other approved codes of practice should be referenced for guidance on managing the risk of specific hazards.

This Code may be a useful reference for other persons interested in the duties under the WHS Act and WHS Regulation.

This Code applies to all types of work and all workplaces covered by the WHS Act where sawmilling is carried out. This includes small bush sawmills to large, fully automated sawmills that are engaged in the sawing of round logs and flitches of all timber species, into sawn timber. It applies to all processes conducted within such sawmills and sawmill yards, including the handling of round logs, the sawing of round logs into sawn timber, the handling of sawn timber, the chemical treatment of timber as well as the management of sawmill waste within the boundaries of a sawmill yard.

How to use this Code of practice

This Code includes various references to the legal requirements under the WHS Act and WHS Regulation. These references are included for convenience only and should not be relied on in the place of the full text of the WHS Act or WHS Regulation. The words 'must', 'requires' or 'mandatory' indicate a legal requirement exists that must be complied with.

The word 'should' is used in this Code to indicate a recommended course of action, while 'may' is used to indicate an optional course of action.

1 Introduction

1.1 What is a “sawmill”?

A sawmill is a facility where timber logs are sawn into dimensional boards, etc. A sawmill typically has a log sorting / storage yard, sawing machinery and an area where processed timber products are sorted, stored and dispatched. Sawmills may include additional processes such as timber conditioning kilns, timber preservative treatments and manufactured timber products. A sawmill can be located permanently in one location or be portable.

The general duty of care under the WHS Act applies to the sawmilling industry.

There are significant risks associated with the sawmilling industry. Severe and fatal injuries can result from unsafe work practices and unsafe plant including:

- limbs amputated by unguarded moving parts of sawing machinery,
- being crushed by mobile plant, falling logs and timber packs,
- falls from the different levels,
- hearing loss due to noisy plant,
- psychosocial injuries,
- musculoskeletal disorders caused by manually handling sawn timbers,
- exposure to chemicals, wood dust and extreme weather.

1.2 Who has health and safety duties?

There are a number of duty holders who have a role in managing the risks in the workplace and for the safe operation in the sawmilling industry, including those listed below.

A person can have more than one duty and more than one person can have the same duty at the same time.

The main duty holders and key legislative provisions have been referenced in the table below, however the list is not exhaustive.

Duty holder	Application
Person conducting a business or undertaking (PCBU) **WHS Act sections 19, 46 and 47**	A PCBU must eliminate risks to health and safety arising from sawmilling activities, or if that is not reasonably practicable, minimise the risks so far as is reasonably practicable. This includes: • the provision and maintenance of a safe and healthy work environment, • the provision and maintenance of safe plant and structures, • the safe use, handling, and storage of plant, structures and substances, • the provision of information, training, instruction and supervision, • monitoring the health and conditions of the workplace to prevent illness and injury,

	• the provision of adequate facilities for the welfare at work of workers, • managing psychosocial hazards. PCBUs also have duties to: • consult workers about work health and safety, • consult, cooperate and coordinate with other duty holders, • ensure that the health and safety of other persons is not put at risk from work carried out as part of the conduct of the business or undertaking.
Designers, manufacturers, importers, installers and suppliers of plant, substances or structures **WHS Act** sections 22-26	Must ensure, so far as is reasonably practicable, the plant or substances they design, manufacture, import, supply or install is without risks to health and safety including carrying out testing and analysis and providing information about the risks posed to users of the plant or substances.
Persons with management or control of plant at a workplace **WHS Act section 21** **WHS Regulation Part 3.1, sections 203 – 215 and 219 - 220**	A PCBU with management or control of plant must: • manage health and safety risks associated with the plant, • ensure that any mobile plant doesn't collide with pedestrians or other powered mobile plant, • so far as is reasonably practicable, prevent unauthorised alterations or interference with plant, • take all reasonable steps to ensure that the plant is used only for the purpose it was designed.
Officers **WHS Act section 27**	Officers of the PCBU must exercise due diligence to ensure the PCBU complies with the WHS Act and WHS Regulation. This includes maintaining up to date WHS knowledge and taking reasonable steps to ensure the business or undertaking has and uses appropriate resources and processes to eliminate or minimise risks to health and safety from sawmilling activities. Further information on who is an officer and their duties is available in Safe Work Australia's *Interpretive Guideline: The health and safety duty of an officer*.
Workers **WHS Act section 28**	While at work, workers must: • take reasonable care for their own health and safety, • take reasonable care that their actions or omissions do not adversely affect the health and safety of other persons,

WHS Regulation section 46	• comply with any reasonable instructions given by the PCBU, as far as they are reasonably able, • cooperate with any reasonable health and safety policies or procedures of the PCBU. Workers should also only use / operate plant while fit for work (free from the effects of fatigue, illness, drugs, alcohol, etc.). If personal protective equipment (PPE) is provided by the PCBU, the worker must, so far as they are reasonably able, use or wear it in accordance with the information, instruction and training provided.
Other persons at the workplace WHS Act section 29	A person at a workplace must: • take reasonable care for their own health and safety, • take reasonable care that their acts or omissions do not adversely affect other people's health and safety, • comply, so far as they are reasonably able, with reasonable instructions given by the PCBU to allow the PCBU to comply with the WHS Act.

1.3 Consultation

Duty / Provisions	Application
Consulting workers WHS Act sections 47 - 49	• PCBUs have a duty to consult with workers, so far as reasonably practicable, on WHS matters which affect them. • Consultation is a two-way process with workers to identify WHS issues, share information, give workers a reasonable opportunity to express views and take those views into account before making decisions about health and safety matters. • While consultation may not always result in agreement, agreement should be the objective as it will make it more likely the decisions are effective and actively supported. • Workers should be encouraged to report hazards and health and safety problems immediately so the risks can be managed before an incident occurs. • If workers are represented by a health and safety representative, the consultation must involve that representative. • Workers must be advised of consultation outcomes in a timely manner. • PCBUs must have effective mechanisms to consult with workers, including when: — identifying hazards and assessing risks, — making decisions about ways to eliminate or control risks, — changing or updating workplace facilities, — proposing changes that may affect the health and safety of workers,

	— making decisions about consultation procedures, resolving safety issues, monitoring workers' health and conditions, and providing information and training, — selecting new equipment, — introducing new tasks, changing existing tasks or carrying out work in new environments.
Consulting, cooperating and coordinating activities with other duty holders **WHS Act section 46**	• PCBUs must, as far as reasonably practicable, consult, cooperate and coordinate activities with all other persons who have a WHS duty in relation to the same matter. • Duty holders should exchange information about who is doing what to ensure effective coordination of works and management of risks, this includes: — the PCBU engages workers to carry out work, — the PCBU directs or influences workers in carrying out work, — other persons may be put at risk from work carried out in their business or undertaking, — the PCBU manages or controls a workplace or the fixtures, fittings or plant at a workplace, — the PCBUs business or undertaking involves designing, manufacturing, importing or supplying plant, substances or structures for use at a workplace, — the PCBUs business or undertaking involves installing, constructing or commissioning plant or structures at a workplace.

Further guidance on consultation requirements is available in the *Code of practice: Work health and safety consultation, cooperation and coordination.*

1.4 Information, training, instruction, and supervision

Duty / Provisions	Application
Information, training, instruction or supervision **WHS Act section 19** **WHS Regulation section 39**	• PCBUs must provide any information, training, instruction, or supervision necessary to protect all persons from health and safety risks, including the safe operation of plant in the sawmilling industry. • The information, training and instruction: — must be suitable and adequate for the nature of the works, risks and control measures implemented, — must be readily understandable to the person it is being provided to, so far as is reasonably practicable, — should be supported by relevant safe work procedures, i.e. emergency procedures, traffic rules, PPE. • Workers need to be trained and have the appropriate skills to carry out tasks safely. • Training needs to be provided to workers by a competent person. • Training programs should be practical and 'hands on' and take into account the particular needs of workers.

2 Risk management process

WHS Regulation sections 34 – 38

Risk management is a systematic process to eliminate or minimise the potential for harm to people.

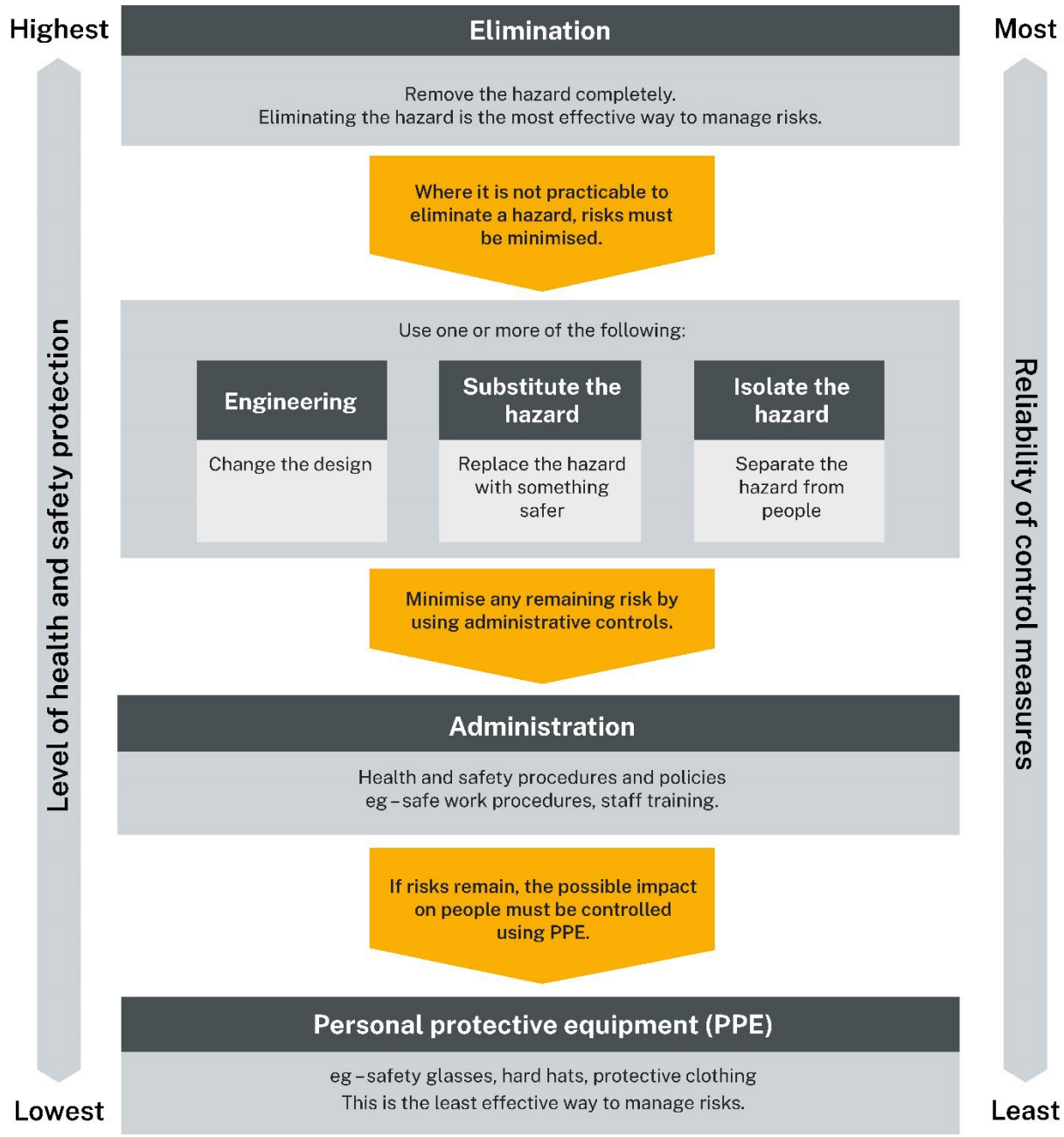

Figure 1: An overview of the hierarchy of control

Further risk management guidance is available in the:

- *Code of practice: How to manage work health and safety risks*
- *Code of practice: Managing psychosocial hazards at work*
- *Code of practice: Sexual and gender-based harassment*

3 Specific hazards and control measures

3.1 Receiving, storage and dispatch yard(s)

The hazards and risks that may cause serious or fatal injuries during log receiving, storage and timber dispatch include:

- Mobile plant such as log loaders, forklift trucks, logging and timber dispatch trucks colliding with each other or with pedestrians.
- Logs and timber packs unexpectedly being dislodged and falling or rolling during loading / unloading and storage.
- Persons falling from log stacks and flatbed trucks.
- Slips, trips and falls throughout the yard(s) due to inadequate maintenance of the site.
- Exposure to temperature extremes, ultraviolet light, low visibility and venomous wildlife such as snakes, spiders, wasps etc.

Traffic management

WHS Regulation section 40
Duty in relation to general workplace facilities.

WHS Regulation section 203
Management of risks to health and safety.

WHS Regulation section 215
Powered mobile plant - specific control measures.

When mobile plant is being operated around the workplace or in close proximity to each other and/or pedestrians, a risk assessment must be conducted, and appropriate control measures implemented and should include a traffic management plan.

A traffic management plan is designed to keep people, plant and product safely separated. Every work site should have a traffic management plan in place (including short term and mobile sites such as bush mills). Traffic management plans should consider:

- Including clearly marked exclusion zones, loading zones, mobile plant zones, driver safety zones, pedestrian areas, walkways and safe parking areas.
- Clearly defined vehicular routes and pathways around the worksite.
- Including the method of communication between mobile plant (e.g. load shifting plant and delivery / dispatch vehicles and their drivers when outside the vehicle's cabin) and between mobile plant and pedestrians.
- Pedestrians (including yard workers, truck drivers, etc.) to wear high visibility clothing and other PPE appropriate for the area as identified by the risk assessment (e.g. hard hats, safety footwear, eye and hearing protection etc.).
- The volume and type of traffic moving around the site.
- Areas on site for access by authorized vehicles only.
- Parking areas for non-authorised vehicles e.g. visitors.
- Environmental factors including weather, visibility, lighting and noise.

- Identifying site specific infrastructure and utilities which may be a hazard e.g. overhead power lines and structures, drainage lines and excavations and how they might impact on the work activities.
- Mobile plant to be fitted with audible reversing alarms.
- Fitting flashing lights to mobile plant as identified in the risk assessment.
- Establishing appropriate speed limits that are signposted and/or governed on the mobile plant.
- Appropriate sign posting.
- The physical size of the log-receiving, storage and timber dispatch yard(s) are large enough to allow all yard based operations to be conducted without risk to other persons.
- The ground surface of the log-receiving, storage and timber dispatch yard(s) are suitable for the mobile plant to be operated within these areas. The ground surface should be even, free of humps and hollows so that logs and finished product can be transported and stored / stacked without risks to persons.
- Reducing the reversing of delivery and dispatch vehicles on the site as much as possible.
- Being included as part of the site induction process.

Exclusion zones

An exclusion zone is used to keep people and mobile plant separated. Exclusion zones should be implemented when mobile plant is used to load / unload vehicles, move product around the site or any other instance where pedestrians can be harmed by mobile plant or the activity it is undertaking e.g. from loads falling. The boundary of the exclusion zone should take into consideration the operation area of the mobile plant and the 'spill' distance from any loads falling or stacked product collapsing. Consideration should be given to:

- A designated exclusion zone should be available at permanent sites with clear, marked lines and adequate signage.
- In the absence of a fixed exclusion zone, one can be set up using mobile barriers (concrete or water filled), safety cones and temporary signage.
- When creating an exclusion zone, consider the following:
  - the size of the area required for the task to be performed,
  - the product to be unloaded or loaded,
  - the movement of traffic and people,
  - blind spots and other hazards,
  - how pedestrians can alert mobile plant operators before they enter the exclusion zones (e.g. establishing eye contact, hand signals, two-way radios, warning lights and/or alarms activated by pedestrian sensing devices etc.).

Where it is not reasonably practicable to implement exclusion zones, mobile plant with onboard proximity technology should be used to alert mobile plant operators and/or pedestrians when they have entered a pre-determined 'no go' zone around the mobile plant.

A designated driver safety zone should also be provided when loading and unloading trucks unless a risk assessment has identified a safer option. The driver safety zone should:

- have physical barriers,
- have a seat to enable the driver to sit if the loading / unloading is lengthy,
- be readily accessible to amenities,
- be readily visible by the loading / unloading plant operator at all times,

- be located to allow the driver to clearly observe the loading operation,
- have an established communication procedure between the driver and the plant operator.

The PCBU for the sawmilling site should establish these safe work areas and ensure separation distances are established and maintained. Work area separation should be adhered to by workers as part of their duty to follow the safe work procedures of the business or undertaking.

For further information on traffic management and exclusion zones refer to Safe Work Australia's *General guide to workplace traffic management.*

Security of log and timber stacks

Logs and timber should be stacked to enable ease of recovery. Pedestrian access around log and timber stacks should be restricted. Persons should never climb on log or timber stacks, as unexpected movement can lead to risks such as falls, falling objects, entrapment or crush injuries. To ensure log stack security use suitable stanchions and chokes and keep stack heights as low as possible with minimum degrees of slope.

Yard activities outside daylight hours

Adequate lighting should be provided to enable workers to carry out work without risk to health and safety, including when unloading logs and loading timber outside day light hours or in poor visibility. Driving and reversing lights on mobile plant should not be relied on as they create moving shadows and do not allow the plant operator(s) nor ground workers to clearly see the full length of logs / timber being handled by machinery.

All persons in the yard during nighttime activities should wear high visibility reflective garments.

3.2 Load shifting equipment and practices

WHS Regulation section 214
Powered mobile plant – general control of risks.

WHS Regulation section 215
Powered mobile plant - specific control measures.

WHS Regulation section 219
Plant that lifts or suspends loads.

The hazards and risks that may cause serious or fatal injuries while operating load shifting plant such as log loaders, forklift trucks, cranes can include:

- plant colliding with persons or things,
- objects being dislodged and falling onto the operator or other persons,
- objects such as logs and timber lengths penetrating the cabin,
- plant overturning,
- operators being ejected from the plant,
- workers being crushed while performing maintenance on the plant.

All mobile load shifting plant should be fit for purpose for the loads to be shifted and the terrain to be negotiated including changes in the terrain due to environmental conditions, for example, yard surfaces becoming muddy or icy in cold, wet weather.

The size / weight of the load to be handled must be within the safe working limits of the load shifting plant. For example, as displayed on the load rating plate or on the item of plant or as specified in the operator's manual.

Mobile load shifting plant should be fitted with appropriate operator protective devices, such as a Rollover Protective Structure (ROPS) or a Falling Object Protective Structure (FOPS) and guarding to prevent objects penetrating the cabin.

The cabin should be designed to eliminate or minimise, so far as is reasonably practicable, the operator from exposure to noise and the environment.

Where fitted, seat belts should be worn at all times while operating mobile load shifting plant.

Loads should never be suspended or travel over a person unless the plant is specifically designed for that purpose.

Operator licensing

WHS Regulation Part 4.5 High risk work
Division 1 Licensing of high risk work

For certain load shifting plant such as forklift trucks, cranes, boom type elevating work platforms (over 11 metres), operators must hold a High Risk Work (HRW) Licence. Persons slinging and directing loads must have a Dogging HRW Licence.

Operators for other load lifting plant such as front-end loaders and excavators must be provided with the appropriate information, training and instruction to enable them to operate the plant in a safe competent manner.

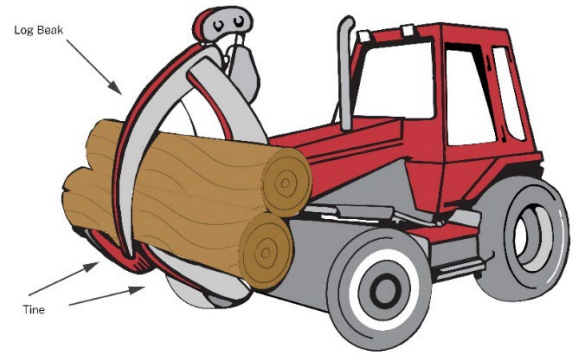

Figure 2: Log Loader fitted with a log beak (grab) that has the capacity to secure logs onto the tines.

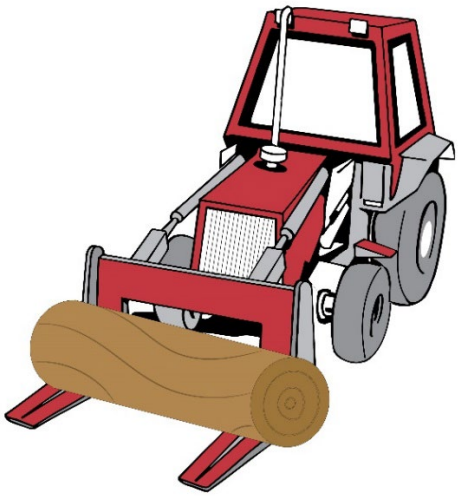

Figure 3: Log Loader fitted with knife edge tines.

Unloading logs

Before unloading logs from trucks, the driver should inspect the load for signs of movement. If there is a risk of logs falling, the unloading facility should secure the logs on top of the load before the driver releases the binders. Logs should always be lifted over the top of the pins and stanchions using specifically designed load shifting plant.

Drop stanchion deliveries should not be used because if only a few logs roll off the truck bed, then the rest need to be manually rolled off with a cant hook. This exposes the driver and others to a high risk of fatal crush injuries from falling / rolling logs.

After unloading, a designated area should be provided for drivers (when applicable) to prepare their truck for departing the site, for example, to clean bark off trailers and/or "piggyback" empty log trailers.

For further information on unloading logs refer to Safe Work Australia's *Forestry: Guide to manage risks of loading, transporting and unloading logs.*

3.3 Log servicing - docking

When required log servicing usually occurs in the log yard. It involves using a chain saw or auto docking plant to dock logs to a specified length prior to being broken down into cants. The hazards and risks that may cause serious injuries during log servicing include:

- docking worker being struck by mobile plant operating in the log yard,
- severe lacerations and amputations from chainsaw kickback, push back or pull in,
- muscular skeletal injuries from manually handling the chainsaw (sudden forces, repetition and vibration),
- entrapment, entanglement and/or being crushed in the auto docking plant,
- sight (eye) loss from flying projectiles and hearing loss from excessive noise,
- burns from the chainsaw fuel source,
- exposure to temperature extremes, ultraviolet light and venomous wildlife such as snakes, spiders, wasps etc.

Logs should always be docked in a designated exclusion area, located on even, firm ground and away from the log loader working area.

PCBUs should establish that workers are competent in the safe use of chainsaws prior to directing them to do so. During training workers should be supervised until assessed as competent.

The chainsaw operator should be using PPE (refer to Chapter 4.21) that is suitable for the task, including:

- high visibility clothing,
- safety helmet incorporating a face shield and hearing protection,
- leg chainsaw chaps,
- protective gloves,
- full enclosed steel capped footwear.

For further information on the safe operation of chainsaws refer to the chainsaw operator's manual.

3.4 Log debarker and woodchipper

The hazards and risks that may cause serious or fatal injuries while operating log debarking and wood chipping equipment can include:

- logs unexpectedly being dislodged and falling or rolling while being loaded onto the infeed deck or conveyor,
- entrapment, entanglement and/or being crushed in the debarking or wood chipping equipment,
- sight (eye) loss from flying projectiles,
- exposure to excessive noise.

Location

A sawmill's debarker and waste chipper should be located away from the sawmill building(s) or contained in soundproof sheds to reduce the noise impact on workers and other persons.

Those in close proximity to this plant are particularly at risk from the noise generated. A risk assessment should be conducted and appropriate control measures implemented. Refer to Chapter 4.15 Noise.

Guarding

All moving parts of the debarker or chipper should be effectively guarded with either fixed or interlocked guarding to prevent injury from flying timber or contact with working parts of the machine. Refer to Chapter 4.4 Plant guarding.

Access to infeed

A system of work, including lock-out procedures, should be in place to prevent access to the infeed until the plant is stationary. Refer to Chapter 4.6 Isolation and lockout procedures.

3.5 Log breakdown saw

The hazards and risks that may cause serious or fatal injuries while operating a log breakdown saw can include:

- entrapment and/or entanglement in the breakdown saw, log carriage and the associated transmission,
- severe lacerations and amputations from contact with the saw blade,
- impact injuries from kickback,
- sight (eye) loss from flying projectiles,
- exposure to excessive noise.

Breakdown saws include:

- single circular saw,
- Canadian saw - two blades - upper and lower,
- twin edger circular saw,
- single band saw,
- twin band saw,
- swing saw - individual or tractor mounted,

- trolley mounted circular saw.

General safety

- Safe access to infeed and outfeed decks

  Safe access should be provided to allow misaligned or caught logs / flitches to be released or manoeuvred by manual means and the decks should be isolated and locked out when doing so. Refer to Chapter 4.6 Isolation and lockout procedures.

- Placing logs on infeed deck

  All logs should be placed on the infeed deck of a breakdown saw by mechanical means such as log loaders.

- Handling circular saw blades

  The manual handling risks associated with the transportation of saw blades should be assessed and appropriate control measures should be implemented. Refer to Chapter 4.15 Noise. When transporting the saw blades by hand, the cutting teeth should be guarded and appropriate PPE such as cut resistant gloves and forearm protection should be worn. Safe systems should be used to transport large diameter circular saw blades between the saw doctor's workshop, storage area and the saw and should include the use of mechanical lifting aids. When not in use, all circular saws should be stored in suitable storage racks located away from passageways or walkways.

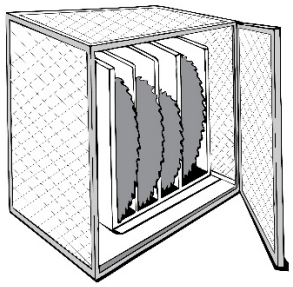

Figure 4: Correct storage for saw blades.

- Band saw blades

  When not in use or when being transported band saw blades should have a guard placed over the cutting teeth and be stored away from walkways.

  Floor trolley and mechanical lifting aids should be used to transport band saw blades between the saw doctor's workshop, the storage area and the saw. A band saw blade should be handled (placed on and off a saw) by at least two people. Whenever manually handling band saw blades appropriate PPE such as cut resistant gloves and forearm protection should be worn.

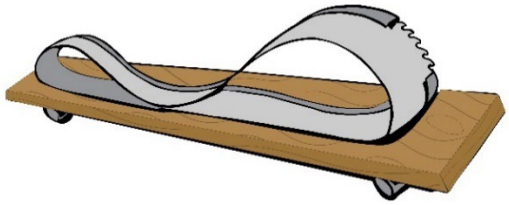

Figure 5: Store band saw blades away from walkways with a guard over the teeth.

The cutting teeth guard should not be removed until the band saw blade is being fitted to the saw.

- Cutting action

  Downward cutting actions should be used wherever practicable. This is because:

  — the downward force of the cut tends to assist the security of the log on the carriage,

  — sawdust and water spray are directed towards the ground,

  — dislodged pieces of timber are directed to the rear of the cut.

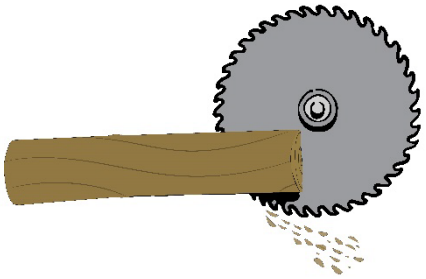

Figure 6: A downward cutting action helps to secure the log on the cradle

In the event of the saw blade jamming, the machine should be stopped before appropriate remedial action is undertaken.

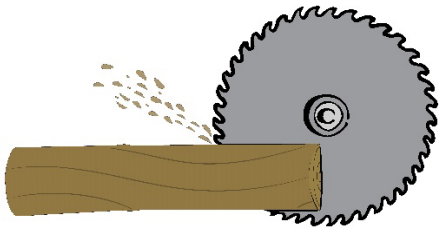

Figure 7: An upward cutting action can cause instability and puts the operator at risk from flying debris

Log carriage (cradle)

The majority of breakdown saw carriages are mounted on rails and are powered by means of wire cable and winch drum.

Some older breakdown saws use a rail mounted carriage which is manually pulled / pushed past the revolving saw. This is a high-risk work practice which should not be used.

The person with management or control should ensure that the log carriage and associated fittings are maintained and safe working condition. At least two full turns of wire rope should remain on the winch drum when the carriage is fully extended.

Suitable brush guards should be fitted to all wheels on log carriages. Both the winch drum and winch cable return pulley should be fully guarded.

The traverse of a log carriage should be achieved by mechanical means such as a winch.

All logs should be secured to the carriage before the log is passed through the saw.

Operator's location

- Risk assessment

  Where an operator is located adjacent to a breakdown saw or log carriage, a risk assessment should be conducted to implement appropriate control measures and should consider the following:

  — constant flying sawdust and water spray,

  — prolonged noise frequently above 85 dB(A). Refer to Chapter 4.15 Noise,

  — risk of being struck by flying slivers of timber,

  — risk of being struck by heavy flitches,

  — fatigue due to an uncomfortable and high risk workplace,

  — greater risk of muscular skeletal injuries if required to physically handle each flitch such as pulling a flitch off the vertical.

- Remote operation

  The operator should be in an enclosed workstation clear of the breakdown and saw log carriages. The enclosed workstation should include a means of communication such as a two-way radio to other processes within the sawmill. A remote enclosure provides the following advantages for the operator:

  — reduced risk from noise, flying sawdust and water spray and injury from flying pieces of timber,

  — protection from the weather conditions,

  — less fatigue,

  — improved view of personnel in the immediate area.

- Alarm

  The activated interlock switches should be configured to alert the operator by a warning device such as a flashing light or audible alarm, located in the cabin.

- Vision

  The operator located in a cabin should be able to see the entire work area including the saw and transfer decks and any person that enters this area. This can be assisted by using suitably located mirrors and/or closed circuit television (CCTV).

Guarding

The following provisions to be considered:

- Work area

  The working area should be effectively fenced to prevent access while the saw and carriage are operating. The area should be kept clear of all obstructions.

  The area around and under an elevated breakdown saw, including infeed and outfeed decks / roll cases, should be effectively fenced to prevent access. Fence gates should be fitted with fail-safe interlocks that will locally stop the drive of the roll case, the saw blade rotating and where appropriate, the carriage traverse before persons can enter the area. The drives should be reset from the operator's control panel.

- Saw blade(s) transmission drive

  All power transmission shafting, vee and flat belts, chain and gear drives, etc. should be fully guarded in accordance with the *Code of practice: Managing the risks of plant in the workplace*.

- Saw blade

  Single circular saw blades should be fitted with a robust, adjustable top hood which should be adjusted to suit the log being sawn. The upper saw blade of a Canadian saw should be fitted with a robust top hood.

- Riving knife

  To reduce the likelihood of the flitch contacting the back of the sawblade and kicking back, a riving knife or some other system of work such as a power operated wedge, should be used with breakdown saws. Refer to Chapter 4.4 Plant guarding.

3.6 Bench saw

The hazards and risks that may cause serious injuries while operating a bench saw include:

- entrapment and/or entanglement in the bench saw's transmission,
- severe lacerations and amputations from contact with the saw blade,
- impact injuries from kickback,
- muscular skeletal injuries from manually feeding in flitch,
- sight (eye) loss from flying projectiles,
- exposure to excessive noise.

Non-powered infeed

The manual handling hazards associated with the use of breast benches should be assessed and appropriate control measures such as mechanical infeed systems should be implemented (see section 4.15).

Guarding

The following provisions should be considered:

- Saw blade top hood

  A top hood should be designed and positioned to prevent sawdust and small pieces of wood flying back towards the operator.

  All saw benches should be fitted with a strongly constructed top hood with the height fully adjustable and the adjustment easily accessible. When fully lowered the hood should cover the whole of the blade protruding above the bench including the riving knife.

  The top hood should be adjusted as low as practicable while allowing the individual log / flitch / timber to be cut.

- Infeed drive hob

  The infeed drive hob should be fitted with a guard which shields the operator from the friction drive area on the opposite side to the timber infeed area, i.e. through 180 degrees opposite the timber infeed.

- Riving knife

  To reduce the likelihood of the flitch contacting the back of the sawblade, a riving knife or some other system of work such as a power operated wedge, should be used with bench saws. Refer to Chapter 4.4 Plant guarding.

Bench trolleys

Bench trolleys should be positioned between the infeed / outfeed operators and the edge of the bench where the length of timber requires support.

Controls for powered infeed benches

The operator of a powered infeed bench is at risk of being drawn into the working parts of the bench by the infeeding timber and contacting the infeeding drive hob and/or saw blade. The distance the operator is positioned from the infeed drive hob and/or the saw blade should be considered to control the risk.

When an operator's work position is located within two metres of the bench a suitable emergency stop should be fitted. For example, an infeed stop bar should be used to stop or isolate the infeed drive the moment any part of an operator's body rests against the bar. Refer to Chapter 4.5 Plant control devices.

- Remotely located gauge controls

  The width gauge controls of an infeed power bench should be remote from the bench.

  That is:

  — the sawyer may be located in a cabin which is remote from the bench,

  — the gauge control switch box may be located on an overhead beam and be able to traverse along the beam,

  — the gauge controls may be operated by a 'friction drive operator' located to one side of a bench.

Standing a saw - packing adjustment

Adjusting the packing of circular saws while the blade is running poses a significant risk and this practice should not be undertaken unless the manual adjustment packing nut of the packing adjustment mechanism is located away from the top surface of the bench. This can be achieved by:

- Screw adjustment

  Increasing the length of the adjusting screws (both sides) so that they extend past the sides of the bench.

  Alternatively, hand adjustments can be relocated to the front of the bench using steel rods and swivel joints. Some minor re-design of the bench may be necessary.

- Hydraulic adjustment

  Existing screw adjustment mechanisms may be removed and replaced by a hydraulic (grease gun) system.

  Adjustment controls can be located on the front skirt of the bench.

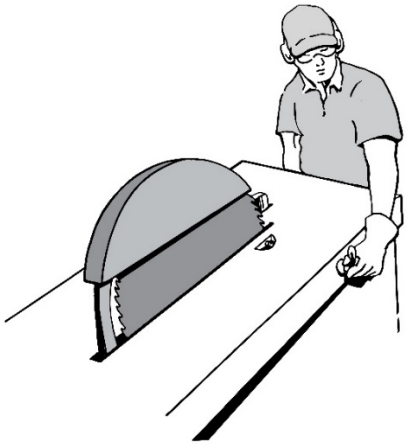

Figure 8: A remote packing adjustment keeps the operator well away from the moving saw blade.

3.7 Docking saw

The hazards and risks that may cause serious injuries while operating a docking saw include:

- entrapment and/or entanglement in the docking saw's transmission,
- severe lacerations and amputations from contact with the saw blade,
- muscular skeletal injuries from manually feeding in timber,
- sight (eye) loss from flying projectiles,
- exposure to excessive noise.

The following are examples of docking saws:

- saw pivoted from overhead,
- saw pivoted from below,
- saw mounted on horizontal bars,
- saw mounted in a fixed position,
- automatic 'firewood' docking saw.

Mode of operation

- Manual

  The saw is manually pulled through the timber. The saw should be set up so that it will automatically return to its rest position upon release of the handle and not rebound back into the work area. This can be achieved by either spring return or counter-balanced return.

  Where reasonably practicable, during docking an interlocking device should be provided to reduce the risk of inadvertent serious injuries to the hand not operating the saw. Only when the idle hand is placed on / in the interlocked device can the docking saw be operated.

- Power (air or hydraulic)

  The saw is powered through the timber and should be set to automatically return to its rest position when:

  - the hand control is released,
  - the hand control is returned to the neutral position,
  - the saw blade reaches the end of its stroke,

- air / hydraulic pressure is lost.

Operator controls

A docking saw should be designed so that its movement is operated by a hand control only.

Guarding

The following provisions should be considered:

- Docking saw at rest

  When a docking saw is at its rest position, the saw blade should be fully enclosed.

- In cutting position

  The saw should be guarded to prevent human contact with the blade from directly in front of the saw and from either side of the saw. If it is not reasonably practicable to fully achieve this, then a two button hand control system may be considered. The saw should come forward to cut the timber only when both control buttons are pressed simultaneously using both hands. Control buttons should be spaced apart to prevent a one-handed operation.

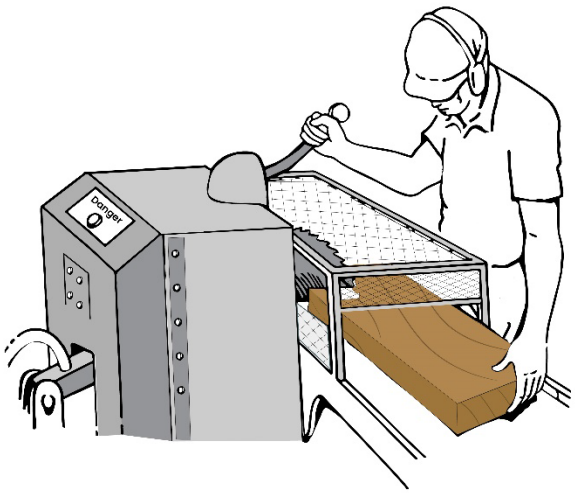

Figure 9: Docking saw guards should ensure that the operator cannot make contact with the running saw blade during normal operation.

- Fixed docking saw

  A fixed saw should be effectively guarded to prevent persons bumping or leaning against the saw. This can be achieved by placing a barrier on top of the saw which extends to the front and both sides of the saw.

- Automatic docking saw

  An automatic docking saw is designed to operate on a continuous basis, without the need of an operator. They should be fully guarded by a perimeter fence incorporating an access gate fitted with a fail-safe interlock switch. When activated the switch should prevent the saw from moving to cut timber. The reset control should be located outside the perimeter fence. Refer to Chapter 4.4 Plant guarding.

  An automatic docking saw should be fitted with an emergency stop switch. Refer to Chapter 4.5 Plant control devices.

Location of docking saw in relation to timber infeed

A docking saw should be located so that the operator is not at risk from injury by the timber infeed.

Timber on the infeed roll case / transfer deck / conveyor should come to rest before it is handled by the docking saw operator.

3.8 Multi-saw (gang saw)

The hazards and risks that may cause serious injuries while operating a multi-saw include:

- entrapment and/or entanglement in the multi-saw's transmission,
- severe lacerations and amputations from contact with the saw blades,
- impact injuries from kickback,
- muscular skeletal injuries from manually feeding in flitch,
- sight (eye) loss from flying projectiles,
- exposure to excessive noise.

Location of operator

Multi-saw operator controls should be located so that the operator is not put at risk from kickback. The controls should be located to one side of the saw or far enough behind the saw so that the operator will not be at risk in the event of a kickback.

Anti-kickback devices

Anti-kickback devices such as fingers, combs, or other barriers should be fitted to multi-saws to prevent the risk of injury from flying timber. Refer to Chapter 4.4 Guarding.

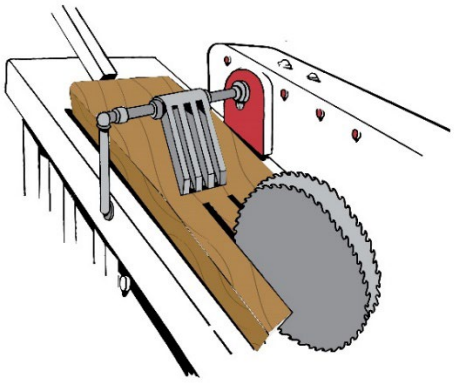

Figure 10: Anti-kickback device.

Please note: The guard has been removed from the saw blades to show the position of the anti-kickback device.

3.9 Timber sizing and profiling machines

Timber sizing and profiling machines are used to “dress” seasoned timber to a required cross-sectional size or shape e.g. hard wood tongue and groove floorboards. The infeed can be manual or automatic.

The hazards and risks that may cause serious injuries while operating sizing or profiling machines include:

- entrapment and/or entanglement in the machine’s transmission,
- severe lacerations and amputations from contact with the cutting blocks,
- impact injuries from timber kickback,
- muscular skeletal injuries from manually feeding in the timber,
- sight (eye) loss from flying projectiles,
- exposure to excessive noise,
- respiratory illness from wood dust.

Timber sizing and profiling machines should:

- have fully enclosed acoustic dampening covers over the cutter blocks that are accessed by either removing the cover’s securing bolts or use an electronic interlocking device,
- have fixed guarding that encloses all transmission and associated moving parts,
- have appropriately maintained anti-kickback devices,
- have local exhaust extraction,
- never be adjusted when the cutting blocks are revolving, and the guards are removed.

When working near timber sizing and profiling machines, operators should:

- wear eye and hearing protection,
- wear respirators if no airborne monitoring has been undertaken or test results indicate unacceptable levels of airborne dust.

For manually fed timber sizing and profiling machines, provisions should be made to enable the operator to:

- stand to the side of the timber infeed work piece in the event of kickback,
- store raw materials at an appropriate height to avoid bending and twisting when feeding in timber work pieces,
- use a second worker or trolley to guide long lengths of timber from the machine.

Operators should:

- never look into the infeed opening when the cutter block is rotating,
- allow the cutter blocks to reach maximum revolutions before feeding timber into the machine.

3.10 Sorting tables and strapping timber

The types of timber sorting tables include green chain / cables, stacker's sorting tables and carousels. The hazards and risks that may cause serious injuries include:

- entrapment and entanglement in power operated equipment such as green chain conveyors,
- crush injuries, lacerations and amputations from timber falling onto the sorting table and strapping,

- muscular skeletal injuries from manually handling the timber,
- sight (eye) loss from wayward strapping.

The layout of a stacker's sorting table / carousel should be designed so that the timber stackers are not put at risk by the inflow of sawn timber falling onto the table.

Sorting tables should also have a good ergonomic design to minimise manual handling injuries. The person with management or control should consider the following ergonomic issues:

- The relationship of a green chain / sorting table / carousel to the finished product stacks.
- The leading edge of a sorting table / carousel should be approximately the waist height of the stacker.
- The top of a stack's bed log or the height of the base of a stacking cradle, should not be lower than the shin / knee height of a stacker. The bottom layer of a stack should not be placed directly on the ground.
- A full stack (sling / bundle of timber) should not be higher than a stacker's shoulders.
- A stacker should be able to slide a piece of timber off the sorting table and slide it directly onto a stack. The distance between the edge of a sorting table / carousel to front edge of a stack should be as close as practicable.
- The height of a stack of steel-banded slings / bundles of sawn timber should be kept as low as practicable. The stack should be stable at all times.
- Multiple stacks of slings can be made more stable using timber gluts placed across two stacks.
- Banding of slings / bundles of sawn timber should be conducted at ground level. Where reasonably practicable, synthetic bands should be used to reduce the risk of lacerations.

3.11 Conveyors

Sawmills contain several different types of conveyor systems. These consist of:

- chain conveyors commonly known as 'green chain' used for sorting timber,
- roller case conveyors used to transport timber lengths longitudinally from one process to another,
- transfer decks used to transport timber lengths laterally,
- belt or auger conveyors used to transport waste products.

The hazards and risks that may cause serious injuries include:

- entrapment and entanglement of hair, clothing or body parts in all the conveyor moving parts,
- lacerations and amputations from nip points where belts or chains engage with pulleys, sprockets or gears,
- crush and muscular skeletal injuries from timber over-hanging the edge of the conveyor or being ejected during “jam ups”,
- falls on or from conveyors when attempting to clear “jam ups”.

Conveyor energy isolation switches

In addition to installing a main lockable power isolation switch that completely isolates the drive energy from the conveyor system, isolation switches should also be installed for each drive and have a durable label, clearly identifying what energy source is being isolated. This

includes electric conveyor motor drive isolation switches and hydraulic or air shut-off valves. All conveyor isolation switches should be capable of being secured in the off position.

Conveyor emergency stops

> **WHS Regulation section 211**
> Emergency stops.

- Emergency stops must be installed and readily accessible. They should be located:
  - at each end of the conveyor,
  - at each transfer point (loading / unloading),
  - at positions adjacent to where the conveyor can be started,
  - at all permanent workstations.
- A lanyard switch / pull wire may be located at any point as an emergency stop.
- All control switches such as 'motor isolation switches' and 'emergency stops' must be identified according to their functions (e.g. 'motor isolation' or 'emergency stop').
- A pull wire should be identified.
- Emergency stop mechanisms should be designed so that when they are activated, they stop all up stream conveyors in the line thus preventing a build-up of timber.

Conveyor guards

To minimise the risk, exposed nip and pinch points should be guarded so that moving and rotating components cannot cause injury.

For areas where persons may need to climb onto the conveyor to clear potential blockages:

- interlocked access guarding should be installed to reduce the risk of persons inadvertently riding the conveyor, and
- a risk assessment should be undertaken and appropriate control measures implemented if there is a risk of falling from one level to another.

Designated conveyor crossing points

For designated conveyor crossing points consider the following:

- Workers should only cross a conveyor at the designated crossing point (such as an underpass or a bridge) as provided by the PCBU.
- Workers should not ride on a conveyor.
- All crossovers should be designed and constructed to provide safe access / egress and be of solid construction with non-slip walkway surfaces.
- All bridge crossing points should include steps and guardrails irrespective of the potential fall height.
- Underpasses should be provided with a roof over the top of sufficient strength to withstand the likely impact loads.

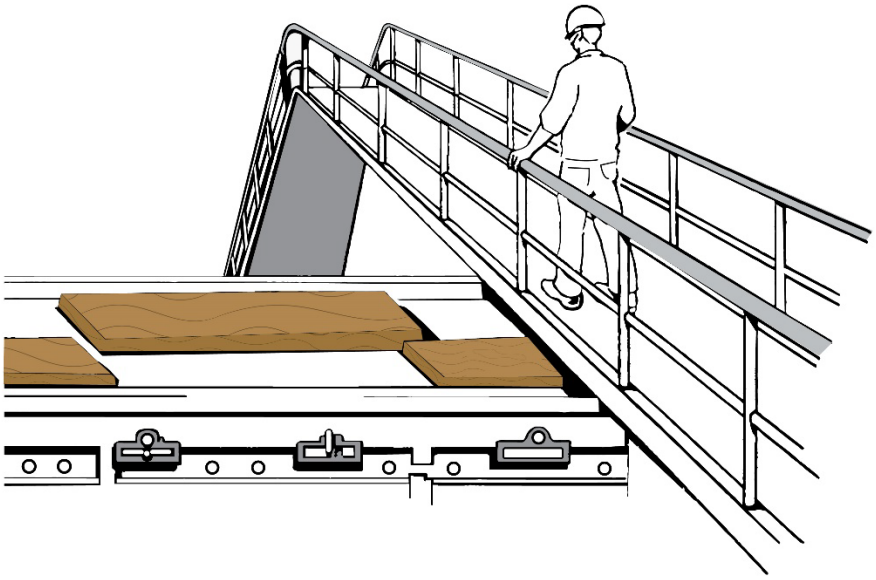

Figure 11: The use of a bridge is a safe method of traversing the entire sawmill.

- Hinged sections, which act as barriers should be provided at both sides of walk-through openings in a roller case conveyor. All hinged sections should be designed so that the conveyor automatically stops upstream when the hinged section is opened. Such hinged sections should also be designed so that they do not in themselves create a hazard by falling on or striking any person.

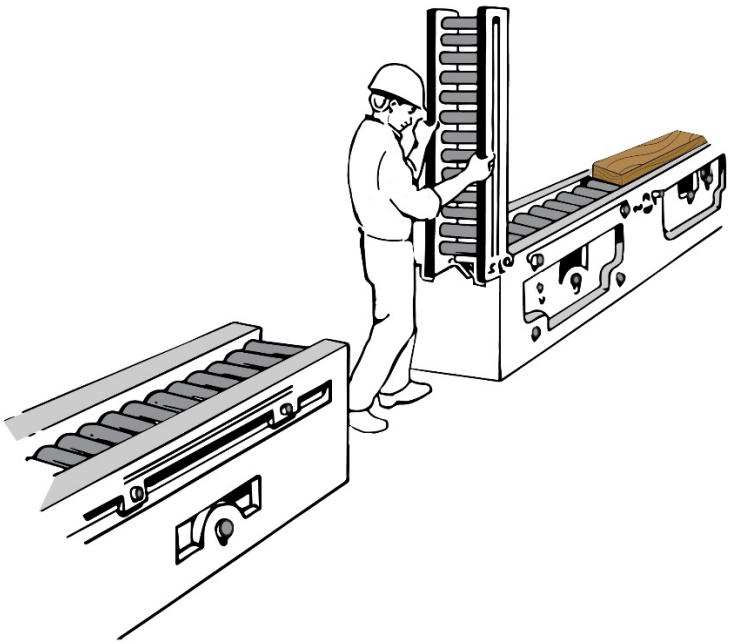

Figure 12: A hinged crossing point is suitable for smaller conveyors

For further information on the safe operation of conveyors refer to:

AS/NZS 4024.3610 *Safety of machinery. Part 3610: Conveyors – General requirements.*

AS/NZS 4024.3611 *Safety of machinery. Part 3611: Conveyors – Belt conveyors for bulk materials handling.*

AS/NZS 4024.3612 *Safety of machinery. Part 3612: Conveyors – Chain conveyors and unit handling conveyors.*

AS/NZS 4024.3614 *Safety of machinery. Part 3614: Conveyors – Mobile and transportable conveyors.*

3.12 Platforms, walkways and stairways

WHS Regulation section 40
Duty in relation to general workplace facilities

WHS Regulation section 78
Management of risks of fall

All persons must, so far as is reasonably practicable, be able to enter, exit and move about the sawmill and the site without risk to health and safety both under normal working conditions and in an emergency. The hazards and risks that may cause serious injuries while moving on foot include:

- Slips, trips and falls due to:
  - poor housekeeping,
  - uneven, slippery and/or poorly maintained walking surfaces,
  - poor or low lighting levels.
- Falls from one level to another e.g. elevated walkways, platforms, stairs, ladders.
- Persons being struck by mobile plant e.g. forklifts, moving logs / timber on conveyors, falling logs / timber while being lifted or stored.
- Persons being entrapped in working machinery.

Platforms

All exposed edges on platforms and landings should have guard rails at a minimum height of 900mm measured vertically from the platform floor.

Elevated walkways and stairs

The sawmill should be designed to allow risk free access by all workers and others to all work locations without the need to climb over machinery such as conveyors, roller cases, etc, or climb through active work locations. One safe method of allowing workers and others to have access to all parts of a sawmill is by elevated walkways. All exposed edges on elevated walkways and stairs must have guardrails / handrails or other suitable control measures to prevent falls from one level to another. All stairs should be fitted with anti-slip treads.

Handrails should be between 900mm and 1100mm high when measured vertically from the elevated walkway floor or the nosing of a stair tread.

Elevated walkways should begin close to a sawmill's infeed and end close to the stacking area. All work locations within the sawmill should have ready access to the elevated walkway.

Walkways

Where it is impractical to install an elevated walkway, it is recommended that a series of designated walkways be constructed. A walkway should be clearly defined (e.g. yellow painted borders on concrete floors) and be free from any obstructions.

All persons must be able to walk safely along the entire length of a walkway. If there is a risk of being struck by moving or falling timber, caught in working machinery or struck by mobile plant the installation of physical barriers should be considered to separate people from the hazard. Refer to Chapter 3.1 – Traffic management and exclusion zones.

For further information on the safe use of platforms, walkways and stairways refer to:

- *AS 1657 Fixed platforms, walkways, stairways and ladders - Design, construction and installation.*
- *Code of practice: Managing the risk of falls at workplaces.*

3.13 Pressure vessels

WHS Regulation Part 4.5, Division 1
Licensing of high-risk work

WHS Regulation section 224
Pressure equipment

WHS Regulation section 237
Records of plant

WHS Regulation Part 5.3
Registration of plant designs and items of plant

Pressure vessels commonly found in sawmills include:

- Fired pressure vessels – steam boilers.
- Unfired pressure vessels:
  - air compressors,
  - air receivers,
  - compressed gas cylinders (LPG, oxygen, acetylene etc.),
  - timber preservative treatment plant,
  - associated pressure piping.

The hazards and risks that may cause serious injuries or death associated with pressure vessels and their contents include:

- Blast injuries from:
  - the sudden expansion of the pressurised fluid,
  - the explosion of hazardous leaking gas e.g. LPG.
- Projectile injuries from:
  - a vessel rupturing,
  - “blowing down” with compressed air.
- Asphyxiation or poisoning from leaking hazardous gases in a closed space.
- Thermal burns from leaking steam or the explosion of a hazardous leaking gas.

The following control measures should be observed for pressure vessels:

- Pressure equipment should be designed, installed and tested in accordance with approved standards.
- Pressure equipment should be located well away from high vehicle traffic areas.
- Compressed gas cylinders should always be restrained from falling and never left “free standing.”
- Pressure equipment should be commissioned, operated, serviced and maintained in accordance with the manufacturer’s specifications.

- Regularly test and service operating controls, pressure gauges and safety relief valves as recommended by the manufacturer or a competent person.
- Never operate pressure equipment with a faulty safety relief valve or pressure gauge.
- Ensure persons are adequately trained to operate and maintain the pressure equipment.
- The provision of appropriate PPE to protect against hazards such as heat, flames, steam, hot surfaces, toxic gases, noise, falling objects and projectiles.
- Pressure equipment must be inspected on a regular basis by a competent person. Gas cylinder must be inspected and marked with a current inspection mark showing the date of the most recent inspection.

Compressed air

The following additional control measures should be observed for compressed air equipment:

- Compressor air inlets should have air filters installed and be positioned away from contaminated atmospheres.
- Air coolers and air driers should be installed to minimise condensation build up.
- Air pressure equipment should be drained regularly to avoid condensation build up.
- Where compressors start automatically, display signage on the compressor to warn persons of the automatic starting feature.
- Safety chains or safety locking devices should be used on all compressed air connections.
- When using compressed air for cleaning purposes:
  - always wear eye protection, and
  - take precautions to prevent creating projectiles.
- Compressed air should never be directed at a person as compressed air can enter the blood stream and create air embolisms. Danger signs alerting persons to never direct a stream of compressed air towards themselves or others should be displayed in areas where compressed air is discharged using air blow guns.
- Compressed air should never be used for respiratory equipment unless designed for that purpose.
- A compressor supplying compressed air must be provided with guarding to prevent access to dangerous parts of the machine such as pulleys, drive belts, drive shafts and couplings and they must be maintained in good condition and fit for the purpose they were designed for. If a guard is to be removed for maintenance work, then isolation procedures must be implemented prior to the removal of the guard.
- If a compressor does not have guarding to prevent access to dangerous parts of a machine the PCBU should manage the risks to health and safety using a risk management approach to identify, assess and control the risks.

Registration of pressure vessels

The person with management or control of the pressure vessels with a hazard level A, B or C as defined in Section 2.1 of AS 4343:2014 *Pressure equipment – Hazard levels* must ensure that equipment is designed, and items of plant are registered. Pressure vessels such as boilers, timber preservative vessels and air receivers will generally fall into one of these hazard levels.

The person with management or control of the plant that is required to be registered at a workplace must keep a record of all tests, inspections, maintenance, commissioning, decommissioning,

dismantling and alterations of the registered plant for the period that the plant is used or until the person relinquishes control of the plant.

License to operate boilers

Steam boilers are generally classified on their mode of operation as being unattended, limited attendance or fully attended boilers. In addition to operators being properly trained and competent to operate such steam boilers, they must also have a HRW licence to operate either:

- Standard boiler (BS) or
- Advanced boiler (BA).

3.14 Timber drying kilns

Irrespective of the heating and humidity source used in timber drying kilns, the combination of high temperatures, wood products and often chemicals can result in fire hazards and exposure to toxic chemicals and/or gases. The hazards and risks that may cause serious injuries or death while operating timber drying kilns include:

- burns from steam, flame or hot surfaces,
- loss of consciousness from high temperature / humidity,
- asphyxiation from escaping unburnt heating gas,
- electric shock or electrocution from poorly maintained heating / monitoring electrical systems,
- crush injuries from falling stacked timber.

For the safe operation of timber drying kilns, the following should be observed:

- Ensure every kiln has a means of escape for persons inadvertently trapped inside. The escape route should be unobstructed at all times from within and outside the kiln.
- Prior to persons entering the kiln, the kiln should be fully ventilated and allowed to cool.
- Regularly inspect the structural integrity of the kiln, all electrical, steam and/or gas installations for damage and leaks.
- Regularly test the temperature and humidity control systems for accuracy.
- Ensure proper airflow within the kiln to prevent hotspots and uneven drying.
- Develop SOPs for:
  - start-up and shutdown,
  - loading and unloading,
  - maintenance routines,
  - emergency shutdowns.
- Signage on inspection doors alerting of the possible escape of hot air and/or steam upon opening.
- The provision of appropriate PPE to protect against hazards such as heat, flames, steam, hot surfaces, toxic gases, noise, falling objects and projectiles.

If entering a partially or fully closed kiln, confined spaces protocols must be implemented. Refer to Chapter 4.14 Confined spaces.

3.15 Timber preservative treatment plants

WHS Regulation Chapter 7
Hazardous chemicals

For the safe application of timber preservative treatments including copper chrome arsenic (CCA), synthetic pyrethroids, creosote etc. refer to *Code of practice: Safe handling of timber preservatives and treated timber.*

PCBUs should:

- Refer to product labels and Safety Data Sheets (SDS) on the timber preservatives that will be used, to identify and understand the health hazards involved from exposure to these hazardous chemicals.
- Undertake a risk assessment including any personal exposure monitoring of workers, if required.
- Establish the required control measures to protect workers from exposure including the type of PPE to be worn when handling timber preservatives.
- Provide bunding around the treatment vessel and ensure treated timber remains within a bunded area until it is 'drip dry.'
- Provide a suitably sized spill kit.

Further information on hazardous chemicals is in the *Code of practice: Managing risks of hazardous chemicals in the workplace* and the *Code of practice: Labelling of workplace hazardous chemicals*.

3.16 Waste management

PCBUs should have in place a waste management system for the safe collection, storage and disposal of wood and timber residues such as sawdust, woodchips and timber "off-cuts."

The hazards and risks that may cause serious injuries or death when collecting, storing and disposing of wood and timber residues include:

- burns from fire waste disposal systems, the spontaneous combustion of sawdust and woodchip stockpiles and wood dust explosions,
- asphyxiation from entering confined spaces such as wood and timber residue storage containers,
- respiratory illnesses and diseases from airborne wood dust due to poor housekeeping,
- musculoskeletal injuries from trips, slips and falls due to poor housekeeping,
- crush injuries from collapse and entrapment in wood and timber residue storage containers and stockpiles,
- exposure to venomous wildlife such as snakes, spiders, wasps etc.

Wood and timber residue management

To reduce the generation of airborne wood dust PCBUs should:

- utilise dust collection systems such as Local Exhaust Ventilation for processes that generate wood dust,
- provide general ventilation systems to circulate fresh air throughout the work area,
- maintain good housekeeping practices by reducing a build-up of wood dust throughout the work area,

- regularly clean and maintain ventilation systems.

Storage containers for wood and timber residue include bins, silos and hoppers. Ignition sources should be controlled in and around these storage areas to reduce the risk of wood dust explosion.

Safe operating procedures (SOPs) should be in place for cleaning wood dust transfer blower system filters, unloading of wood and timber residue storage containers, unblocking discharge chutes on storage containers and waste wood dust blower ducts. Storage containers and associated blower ducts are confined spaces. Refer to Chapter 4.14 Confined spaces.

To minimise wood dust generated when cleaning, industrial vacuum cleaners with HEPA filters should be used where reasonably practicable for the collection of wood dust. Do not use compressed air to remove dust from skin or clothing as compressed air can enter the blood stream and create air embolisms. When sweeping, dampen the wood dust to prevent it from becoming airborne.

When stockpiling wood and timber residues the following control measures should be considered:

- Stockpiles should be located away from overhead electric power lines, combustion sources and waterways.
- Unauthorised access to stockpiles should be restricted.
- Wood dust generated from stockpiles should not impact on other workers or neighbouring properties.
- To reduce the risk of stockpile collapse, appropriate battering angles should be maintained including after excavation so that no shear faces are left exposed.
- When working on a stockpile, vehicles should not be driven over unstable material, especially near the edge of the main access path.
- When working with wood dust persons should use PPE that is suitable for the tasks including an appropriate respirator and eye protection.
- Sawdust and woodchip stockpiles generate heat. To reduce the risk of spontaneous combustion:
  - stockpiles should be regularly monitored for temperature build up and signs of combustion,
  - stockpiles should be turned over to prevent temperature build up,
  - where possible stockpiles should be completely removed and a new stockpile made at regular intervals,
  - adequate firefighting equipment should be readily available in the event of a fire.

Fire waste disposal systems

Fire waste disposal systems can be in the open, in a pit or enclosed in a purpose built structure that is usually fed by a conveyor. They must be constructed and maintained in a condition that is without risk to the health and safety of persons on site and neighbouring properties.

The hazards and risks associated with fire waste disposal systems include:

- burns from fire or explosion,
- respiratory illnesses or asphyxiation from exposure to smoke.

Fire waste disposal systems should consider:

- the location and proximity to other buildings, log and timber stacks, wood and timber residue stockpiles, overhead services, other assets, other work activities, neighbouring properties, prevailing winds, ash run off during wet weather, flammable and combustible materials.
- systems such as fencing to restrict unauthorized access to the waste burning area.

- signage to alert unsuspecting persons of the danger of being injured by fire, hot ash or ground collapse close to the fire edge.

Waste burners should be:

- fitted with spark arresters and external sprinkling systems,
- have enclosed feed systems to transport sawdust to the burner,
- follow confined spaces protocols during cleaning and maintenance.

Prior to installing a fire waste disposal system approval should be gained from relevant authorities such as the NSW Environment Protection Authority (EPA), local council, Fire and Rescue NSW and/or the NSW Rural Fire Service.

Treated timber waste should not be disposed of by fire. It is recommended to engage a licensed disposal contractor.

3.17 Firewood processing

The firewood process can involve either:

- sorting and packaging waste off-cut timber from the sawmilling process, or
- docking logs into billets and splitting the billets longitudinally into firewood.

Chemically treated timber should never be used for firewood.

The firewood process can be either manual, automated or a combination of both and can occur either at the sawmill or in the field.

Docking and splitting of billets into firewood

The hazards and risks that may cause serious injuries during the docking and splitting billets for firewood include:

- mobile plant that supply the logs or dispatch the firewood colliding with persons,
- severe lacerations and amputations from the docking saw or entrapment, entanglement and/or being crushed in the hydraulic wood splitting wedge,
- muscular skeletal injuries from manually handling log segments and firewood,
- sight (eye) loss from flying projectiles and hearing loss from excessive noise.

The firewood process should always be undertaken in a designated exclusion area, located on even, firm ground and away from the log loader working area.

The hydraulic wood splitting wedger should be set to automatically return to its rest position when:

- the activation control is released,
- the activation control is returned to the neutral position,
- when the powered device reaches its end of stroke,
- hydraulic pressure is lost.

3.18 Bush mills

The following provisions which apply to bush mills are in addition to the provisions for other types of sawmills outlined in this code.

A bush mill is a small portable sawmill usually located at or close to a harvesting area. In addition to considering the hazards of a normal sawmill, bush mill crews can be exposed to additional hazards and risks that may cause serious or fatal injuries such as:

- the weather i.e. extreme heat, cold, wet and/or exposure to ultraviolet light that can lead to heat stroke, hypothermia or melanoma,
- exposure to wildlife such as venomous snakes, spiders, wasps, wild dogs etc,
- bush fires or floods,
- tree felling and associated functions,
- isolation / remoteness and the ability to get medical assistance in a timely manner.

PCBUs or persons in control must ensure that bush crews are provided with:

- appropriate first aid provisions, and
- an emergency plan.

They must also ensure so far as is reasonably practicable that bush crews are provided with:

- a safe system of work which includes adequate communication systems, and
- adequate facilities.

Communication systems for bush mills

The following communication systems should be considered when working in isolation or remote locations (also refer to Chapter 4.17 Remote or isolated work):

- notifying the base of the commencement of work (home, sawmill, police station or local Forestry Corporation of NSW District Office),
- regular check-ins during the day,
- notifying the base that the worker(s) are leaving the bush mill site,
- the provision of satellite phones or personal location beacons (PLBs).

First aid provisions for bush mills

> **WHS Regulation section 42**
> Duty to provide first aid

In consultation with the relevant workers, PCBUs must determine their first aid needs with regard to all relevant matters concerning the bush mill including:

(a) the nature of the work being carried out,

(b) the nature of the hazards,

(c) the size and location of the workplace,

(d) the number and composition of the workers and other persons at the workplace.

In addition to the contents of a basic first aid kit as detailed in the *Code of practice: First aid in the workplace* the first aid kit should also include:

- Remote module:
  - a heavy duty 10 cm crepe bandage for snake bites,
  - large clean sheeting, for covering burns,
  - thermal blanket, for treating shock - whistle, for attracting attention,
  - torch / flashlight.
- Burn module:
  - burn treatment instructions on a waterproof instruction card,
  - hydrogel, 8 x 3.5 gram sachets,
  - hydrogel dressings,
  - clean polythene sheets, small, medium and large,
  - 7.5 cm cotton conforming bandage.

At a minimum, all bush crew members should have formal training in first aid.

Emergency plan for bush mills

WHS Regulation section 43
Duty to prepare, maintain and implement emergency plan

An emergency plan must be prepared for every workplace including bush mills. The emergency plan must clearly explain how to respond to an emergency and how to evacuate people from the bush mill location in a controlled manner. The emergency plan should be reviewed every time the bush mill's location, hazards, work activities and the number of workers and other persons change. It should also consider the remoteness of the location and response times for assistance. For further guidance refer to Chapter 4.24 Emergency plans and the *Code of practice: Managing the work environment and facilities.*

Facilities - Amenities for bush mills

WHS Regulation section 41
Duty to provide and maintain adequate and accessible facilities.

All bush mills, irrespective of remoteness and duration of operation must, so far as reasonably practicable, provide clean, safe and accessible facilities for workers including toilets, drinking water, washing and sheltered facilities for eating meals, taking breaks and protecting themselves in adverse weather conditions. It may not always be reasonably practicable to provide the same types of facilities for a bush mill that are normally provided for a fixed workplace. A risk assessment in consultation with the bush crew members should be undertaken when establishing adequate and accessible amenities.

The following should be considered:

- Toilets
  Where it is not reasonably practicable to provide access to permanent toilets, portable toilets should be provided. Portable toilets should be in a secure place with safe access. They should be installed so they do not fall over or become unstable and should be serviced regularly to keep them clean.

- Drinking Water
  If direct connection to a water supply is not possible, bottled water or containers should be provided for workers.
- Handwashing
  Where it is not reasonably practicable to provide access to permanent hand washing facilities, workers should have access to, for example, a water container with soap and paper towels or hand sanitiser.
- Sheltered facilities for eating, taking breaks and protection from adverse weather
  Workers must be provided with access to hygienic facilities for eating, preparing and storing food. The facility should be sheltered with provision for seating. For short duration, temporary remote locations where it is not reasonably practicable to provide workers portable eating facilities such as a mobile caravan or a tent, then the only enclosed facility available to them may be their vehicle. In this instance portable food storage facilities should be provided such as a car fridge or insulated lunch box.

For further guidance refer to the *Code of practice: Managing the work environment and facilities.*

4 General workplace health and safety for sawmills

4.1 Site security and access

WHS Act section 19(2)
Primary duty of care

The PCBU for the sawmill site must ensure, so far as is reasonably practicable, the health and safety of other persons is not put at risk from work carried out as part of the conduct of the business or undertaking. Other persons could be contractors, suppliers, visitors and unauthorised persons entering the site.

To assist in the management of other persons entering the sawmill site, the following control measures should be considered:

- Secure fencing around the perimeter of the site.
- All vehicle and pedestrian entry points to the site should be clearly signposted and should include the following information where appropriate:
  - authorised personnel only,
  - no public access,
  - visitor parking,
  - all visitors must report directly to the office,
  - PPE requirements,
  - building / area identification e.g. office, store deliveries, log receiving, timber dispatch, sawdust / woodchip dispatch etc.
- Security surveillance outside working hours.
- Security alarm / monitoring systems.
- Shut down procedures when the site is unattended including:
  - site entrance gates and buildings locked and secured against unauthorised entry,
  - keys securely stored for all mobile plant,
  - fuel bowsers locked out,
  - all plant and machinery isolated to prevent unauthorised operation,
  - portable power tools, chainsaws etc. locked away.
- All contractors, suppliers and visitors should report to the office on arrival and departure.

4.2 Site induction

WHS Act section 19(3)(f)
Primary duty of care – the provision of information, training, instruction or supervision

The PCBU for the sawmill is responsible for the safety of all persons on site including workers, contractors, suppliers (e.g. truck drivers) and visitors. The PCBU must so far as is reasonably practicable make them aware of any risks to their health and safety while on site. This should be done with a site induction. The extent of the site induction will depend on the duration, frequency, type of work and the areas that they will attend on site. Persons who have not been inducted should be escorted at all times unless they are confined to areas with low or no risk.

The site induction should include:

- site hazards that they may be exposed to,
- PPE requirements,
- site safety rules,
- traffic management arrangements,
- communication systems to be used between mobile plant operators and other workers,
- incident reporting and first aid,
- emergency evacuation procedures,
- location of amenities,
- restricted and no-go areas,
- zero tolerance toward violence and bullying and inform that any acts of assault, including sexual assault will be reported to the police.

All persons inducted should sign off and date the induction acknowledging they have understood the information, training and instructions provided.

4.3 Facilities – Amenities

WHS Regulation section 41
Duty to provide and maintain adequate and accessible facilities

A PCBU of the sawmill must ensure, so far as is reasonably practicable, the provision of adequate facilities for workers, including toilets, drinking water, washing and eating facilities. These facilities must be so far as is reasonably practicable, in good working order, clean, safe and accessible.

When considering how to provide and maintain facilities that are adequate and accessible, the PCBU must consider all relevant matters, including:

- the nature of the work being carried out at the workplace,
- the nature of the hazards (including extreme weather) at the workplace,
- the size, location and nature of the workplace, and
- the number and composition of the workers at the workplace.

It may not always be reasonably practicable to provide the same types of facilities for a temporary, mobile or remote workplace that are normally provided for a fixed workplace.

Further information on the provision of workplace facilities is in the *Code of practice: Managing the work environment and facilities.*

4.4 Plant guarding

WHS Regulation section 208
Guarding

WHS Regulation section 209
Guarding and insulation from heat and cold

WHS Regulation section 226
Plant with presence-sensing safeguard system – records

A guard is a physical or other barrier that can perform several functions including:

- preventing contact with moving parts or controlling access to dangerous areas of plant,
- screening harmful emissions, for example radiation,
- minimising noise through applying sound-absorbing materials, and
- preventing ejected parts or off-cuts from striking people.

If guarding is used as a control measure, the guarding must be either:

- a permanently fixed barrier that can only be removed using tools, or
- a physical barrier controlled by mechanical or electrical interlocking systems if access to guarded areas is necessary during operation, maintenance or cleaning.

If it is not reasonably practicable to use a permanently fixed barrier or an interlocked physical barrier then presence-sensing safeguarding systems may be used.

More than one type of guarding system may be required to ensure the safe operation of plant.

Plant guarding must:

- be fit for purpose, robust in construction and securely mounted to resist impact or shock,
- make by-passing or disabling the guarding, whether deliberate or accidental, as difficult as is reasonably practicable,
- not create a risk such as obstructing operator visibility, weakening the plant, causing discomfort to operators or introduce new hazards, such as pinch points, rough or sharp edges,
- be properly maintained,
- control, so far as is reasonably practicable, any risk from potential broken or ejected parts and work pieces,
- be able to be removed when the plant is not in normal operation to allow for maintenance and cleaning and, when the guarding is removed, that, so far as is reasonably practicable, the plant cannot be restarted unless the guard is replaced.

Hot, cold and/or moving parts should be guarded against accidental contact to minimise the chance of injury. For example, guards should be placed around:

- shafts, pulleys, flywheels, gears, cables, sprockets, belts, chains, clutches, couplings and blades and wings of fans,
- keyways, keys and grease nipples protruding from moving parts,
- belt, chain or cable run-on points,
- exhaust systems or other hot surfaces likely to cause burns,

- machinery used for removing bark, sawing and chipping.

A system of colour coding plant guards assists in identifying and maintaining guarding in position.

All guarding should be secured and correctly adjusted before the plant is operated. Where guards are heavy and/or require frequent adjustment, a system of pneumatics, electrics or some other mechanical means should be incorporated to reduce the need for manual handling.

Workers should be adequately instructed, trained and supervised in the proper usage of plant guarding.

Where plant, such as moulders are in soundproof booths, the general provisions for plant guarding should still be applied where access for adjustment purposes is required.

Guarding interlock systems

Guarding interlock systems can be electrical, mechanical, pneumatic or hydraulic and should be connected to the operation of a machine so that:

- the machine will not operate until the guard is closed,
- the guard will not close until any body part is removed from the danger zone,
- either the guard remains locked until all dangerous movements have ceased, or opening the guard disengages the machine drive and stops all movement.

Riving knives

A riving knife is designed to prevent the saw blade from being pinched by the timber as it passes the blade and to prevent a flitch of timber coming into contact with the rear of the saw blade resulting in kickback.

Where riving knives are required, they should be constructed from high grade steel shaped to follow the edge of the saw blade.

The thickness of a riving knife should be the same as that of the kerf. The leading edge of a riving knife should be tapered. The riving knife should be adjusted as close to the blade as possible. It should also be adjusted to a height just below the top of the saw blade.

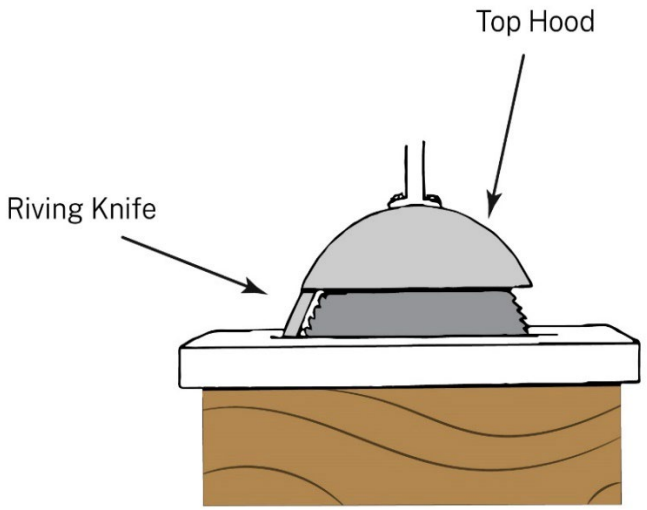

Figure 13: The riving knife should be as close to the blade as possible.

Presence-sensing safeguard systems

When permanent or fixed guards are not practicable, interlocked presence sensing devices may be used. Presence sensing devices detect a person or a body part approaching the danger zone and stops the dangerous operation of the machine.

Presence sensing devices include pressure sensing mats, light screens and configurable scanners.

Where timber is required to be manually fed into band saws and bench saws, consider using presence-sensing devices that mechanically stop the saw blade within milli-seconds upon sensing that a person has come into contact with the saw blade.

PCBUs with management or control of plant that have presence-sensing safeguard systems at the workplace, which use one or more forms of radiation either self-generated or otherwise generated by pressure, must keep a record of safety integrity tests, inspections, maintenance, commissioning, decommissioning, dismantling and alterations.

The records must be kept for:

- 5 years, or
- the life of the plant or until the person relinquishes control of the plant is registered plant or has been altered.

Further information on plant guarding is in *Code of practice: Managing the risks of plant in the workplace.*

4.5 Plant control devices

WHS Regulation section 210
Operational controls

Plant operational controls must be:

- suitably identified on the plant to indicate their nature and function and direction of operation,
- readily and conveniently located for each operator using the plant,
- located or guarded to prevent unintentional activation,
- able to be locked into the ‘off’ position to enable disconnection from energy sources,

Plant operational controls should also be:

- located so that the operator is free from risk to health and safety, particularly from moving plant parts, moving timber and flying timber particles or pieces,
- laid out to be consistent with good ergonomic requirements and allow the operator a clear view of the plant's operational areas.

Emergency stops

WHS Regulation section 211
Emergency stops

An emergency stop is a device which requires deliberate action to bring a machine to rest when danger is recognised. An emergency stop should stop the plant as quickly as possible and apply a brake where provided.

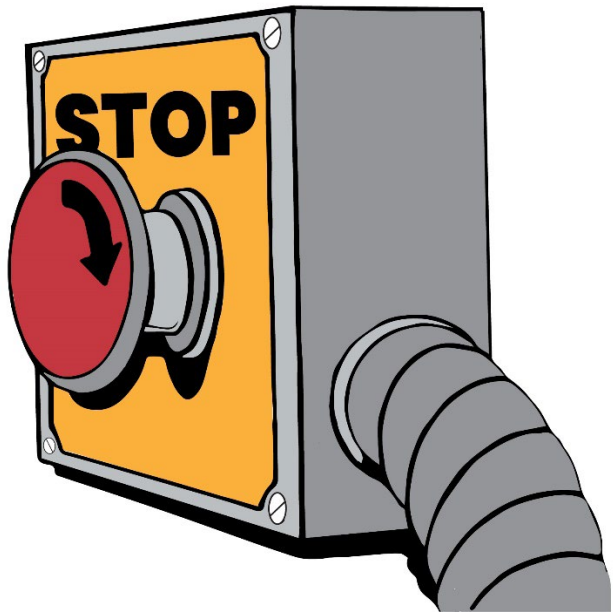

Figure 14: Mushroom head emergency stop

An emergency stop control:

- must be prominent, clearly and durably marked and immediately accessible to each operator of the plant,
- must be red in colour including any handle, bar, push button or lanyard associated with the stop control,
- cannot be adversely affected by electrical or electronic circuit malfunction.

Where the plant is designed to be operated or attended by more than one person and more than one emergency stop control is fitted, multiple emergency stop controls must be of the 'stop and lock-off' type so that the plant cannot be restarted after an emergency stop control has been used unless each activated emergency stop control is reset.

Once engaged, emergency stop controls should remain that way. It should only be possible to disengage emergency stop controls by a deliberate action. Disengaging the emergency stop control should not restart the plant. It should only allow the normal starting sequence to be activated.

The emergency stop should not be used for normal stopping. Emergency stops should not be used as a means of isolation or immobilisation or as an alternative to guarding.

Plant Isolation Systems

All plant should have a main energy source isolator capable of being locked in the 'off' position.

Further information on plant control devices is in the *Code of practice: Managing the risks of plant in the workplace.*

4.6 Isolation and lockout procedures

WHS Regulation section 203
Management of risks to health and safety

Plant should be isolated when workers are required to perform task such as maintenance, repair, installation and cleaning so that it does not move or start up unexpectedly.

The most effective isolation procedure is the lock-out process as follows:

- shut down the plant,
- identify all energy sources and other hazards,
- identify all isolation points,
- isolate all energy sources,
- control or de-energise all stored energy such as hydraulic or pneumatic pressure storage systems,
- lock out all isolation points,
- tag machinery controls, energy sources and other hazards,
- test by 'trying' to reactivate the plant without exposing the tester or others to risk.

Each worker involved in the maintenance, cleaning or repair of the plant should have a lock, tag and key for each isolation point. There should be no duplicate key for any lock, except a master key that is kept in a secure location, and which should only be used in an emergency.

Tags should only be used as a means of providing information to others at the workplace. A tag should not be used on its own as an isolation device; only a lock is effective in isolating the energy source.

Tags and locks should only be removed by the person who applied them. If the person who applied the tag is unavailable, their tag or lock should only be removed in accordance with a management approved procedure.

Further information on isolation and lockout procedures is in the *Code of practice: Managing the risks of plant in the workplace.*

4.7 Robotics

WHS Regulation section 222
Industrial robots

Robotic systems are used in the sawmilling industry, for example, to stack and unstack timber. They can undertake repetitive tasks, working rapidly and lift heavy loads reducing the risk of manual handling injuries. The main risks of injury are being impacted, crushed or trapped by:

- the components of the robotic system that can energise unexpectedly and not recognise objects including people in its path of programmed travel,
- falling or projected objects released by the gripper mechanism(s) due to mechanical failure.

If the sawmill operates remote or automatically energised plant such as industrial robots that could lead to risks of injury, the person with management or control of this plant:

- Must not direct or allow a worker to work in the immediate vicinity if it could start without warning and cause a hazard unless suitable control measures, for example, lock out tag-out procedures are in place to control the risk of injury.
- Must ensure that access to the immediate area is controlled at all times:
  - by isolating the area, or
  - by:
    i. providing interlocked guards, or
    ii. if a risk remains, providing presence-sensing devices, or
    iii. if the risk remains, providing permit to work systems.

4.8 Ionising and non-ionising radiation

WHS Regulation section 203
Management of risks to health and safety

WHS Regulation section 223
Lasers

To assist in more efficient, accurate sawmilling, technology utilising ionising radiation (e.g. x-rays) and non-ionising radiation (e.g. lasers) is being used to scan detailed profiles of logs, detect defects such as knots, splits and rot, align saw blades and logs for sawing. Lasers can also be used to detect the proximity of persons near dangerous plant.

Exposure to:

- x-rays can damage DNA as it passes through the tissues of the body damaging vital organs and the body's ability to fight infection. Extreme dose exposure will result in death within days or weeks.
- the laser's narrow concentrated light beam can cause burns, cancer (mutation/damage of skin cells) and damage to the eyes including blindness.

If x-rays and lasers are being used in the workplace, then the person with management or control of the x-ray and/or laser equipment must manage risks to health and safety associated with this equipment in accordance with the WHS Regulation, Part 3.1.

To demonstrate that a safe system of work is in place and the risks to workers and others are managed, the person with management or control must also ensure they comply with the EPA requirements on ionising radiation and refer to *Australian Radiation Protection and Nuclear Safety Agency* for non-ionising radiation guidance material.

When working with ionising and non-ionising radiation equipment, PCBUs must provide appropriate PPE and information, training and instruction in its proper use, storage and maintenance, for example as recommended by the manufacturer.

If lasers are being used in the workplace, then the person with management or control of the laser equipment must also ensure that:

- Laser equipment intended for use on plant is designed, constructed and installed to prevent accidental irradiation of any person.
- Laser equipment on plant is protected so that no person (including the operator) is exposed to direct radiation, radiation produced by reflection or diffusion or secondary radiation.
- The visual equipment used for the observation or adjustment of laser equipment on plant does not create a risk to health and safety from laser rays.

- Workers operating the laser equipment are trained in the proper operation of the equipment.

4.9 Inspection and maintenance of plant

WHS Regulation section 213
Maintenance and inspection of plant

Regular planned inspection and routine maintenance should be carried out to ensure the safe and efficient operation of saws and associated plant. All maintenance, inspection and testing of plant must be carried out by a competent person and in accordance with the manufacturer's recommendations and if there are no manufacturer's recommendations then in accordance with the recommendations of a competent person. If this is not reasonably practicable, maintenance and inspection and testing must be carried out annually.

Persons with management or control of the plant at the sawmill should also implement procedures for:

- Reporting defects:
  - Any defects to equipment should be reported immediately.
  - Workers are a good source of information about defects in plant because of their day-to-day experience and they should be encouraged to be involved in reporting such defects.
- Record keeping:
  - All maintenance, inspection and testing of plant should be recorded to assist in maintaining recommended service intervals and providing a history of repairs undertaken.

Further information on the inspection and maintenance of plant is in the *Code of practice: Managing the risks of plant in the workplace.*

4.10 Electricity

WHS Regulation section 150
Inspection and testing of electrical equipment

Electrical work and wiring must be performed by a competent person such as a licensed electrician and comply with *AS/NZS 3000 Electrical Installations "Wiring Rules."*

Plug in electrical equipment

Plug in electrical equipment that is supplied with electricity through an electrical socket outlet and operated in sawmills are often exposed to 'hostile' conditions such as exposure to moisture, heat, vibration, mechanical damage and/or sawdust. These conditions can damage the equipment or reduce its life span potentially exposing persons to electric shock or electrocution.

PCBUs must ensure that electrical equipment exposed to hostile conditions is regularly inspected and tested by a competent person who has acquired thorough training, qualification or experience, the knowledge and skills to carry out inspections and testing of electrical equipment.

The frequency of inspection and testing will vary depending on the nature of the workplace and the risks associated with the electrical equipment. The *AS/NZS 3760 In service safety inspection and testing of electrical equipment and RCDs*, outlines inspection, testing, tagging methods and frequency.

A record of testing must be kept until the electrical equipment is next tested or permanently removed from the workplace or disposed of. The record may be in the form of a tag attached to the electrical equipment and must specify:

- the name of the person who carried out the testing,
- the date of the testing,
- the outcome of the testing,
- the date on which the next testing must be carried out.

Residual current devices

WHS Regulation section 164
Use of socket outlets in hostile operating environment

WHS Regulation section 165
Testing of residual current devices

Residual current devices (RCDs) are electrical safety devices designed to immediately switch off the supply of electricity when electricity leaking to earth is detected at harmful levels. They offer high levels of personal protection from electric shock.

PCBUs must, as reasonably practicable, ensure that plug-in electrical equipment supplied with electricity through a socket outlet are protected by RCDs when this electrical equipment:

- is operated in hostile conditions,
- is moved between different locations in circumstances where damage to the equipment or to a flexible electricity supply cord is reasonably likely,
- is frequently moved during its normal use.

PCBUs must ensure sure that RCDs used at the sawmill are tested regularly by a competent person to make sure they are working effectively.

A record of testing (other than push button testing) must be kept until the device is next tested or permanently removed from use.

The PCBU may need to seek technical advice from a competent person about the kinds of RCDs that are suitable and appropriate for their sawmill.

Further information is in the *Code of practice: Managing electrical risks in the workplace.*

4.11 Hazardous chemicals

WHS Regulation Chapter 7
Hazardous chemicals

All sawmills store and handle hazardous chemicals from lubricants to adhesives, solvents, cleaners and paints. Hazardous chemicals come in various forms - powders, solids, liquids and gases. Uncontrolled exposure to chemicals can cause cancer, respiratory illnesses, skin and eye irritations as well as fire and explosion related injuries.

A PCBU must manage the risks to health and safety associated with using, handling, generating or storing hazardous chemicals at the sawmill. This also includes developing control measures for hazardous chemical spills and fire.

Hazardous chemicals register and safety data sheets (SDS)

WHS Regulation section 344
Person conducting business or undertaking to obtain and give access to safety data sheets

WHS Regulation section 346
Hazardous chemical register

A PCBU must keep an up to date register that lists all the hazardous chemicals used, handled or stored at the workplace. The register must also include the current SDS for each chemical listed.

The chemical register with the SDSs must be readily accessible to everyone affected by the hazardous chemicals including workers, contractors and emergency services.

An SDS provides critical information about hazardous chemicals. For example, an SDS includes information on:

- the chemical's identity and ingredients,
- health and physical hazards,
- safe handling and storage procedures,
- emergency procedures,
- disposal considerations.

Labelling hazardous chemicals

WHS Regulation section 342
Labelling hazardous chemicals – containers

WHS Regulation section 343
Labelling hazardous chemicals – pipe work

A PCBU must ensure hazardous chemicals are always properly labelled, even after they have been transferred from the original container. Once emptied, the container should be cleaned before it is used again.

A PCBU must ensure, so far as reasonably practicable, that hazardous chemicals in pipework are labelled or signposted.

Containing and managing hazardous chemical spills

WHS Regulation section 357
Containing and managing spills

Where there is a risk of a spill or leak of a hazardous chemical, PCBUs must provide so far as is reasonably practicable a spill containment system that includes provisions for the cleanup and disposal of hazardous chemical spills or leaks, and any resulting effluent.

Further information on hazardous chemicals is in the *Code of practice: Managing risks of hazardous chemicals in the workplace* and the *Code of practice: Labelling of workplace hazardous chemicals.*

4.12 Asbestos

WHS Regulation Chapter 8, Asbestos, part 8.3
Management of asbestos and associated risks

If asbestos containing material is in good condition, it poses little health risk. However, when asbestos containing products are disturbed by fire, cutting, drilling, water blasting or similar activities, small fibres may be released into the air.

These fibres are harmful if inhaled and may lead to asbestos related diseases such as asbestosis, lung cancer or mesothelioma.

Asbestos Register

WHS Regulation section 425
Asbestos register

A person with management or control must ensure an asbestos register is prepared and kept at the workplace. The asbestos register must be maintained to ensure the information in the register is up to date. Note: An asbestos register is not required to be prepared when:

- the workplace is a building that was constructed after 31 December 2003, and
- no asbestos has been identified at the workplace, and
- no asbestos is likely to be present at the workplace from time to time.

However, if asbestos is identified, a person with management or control of a workplace must ensure a register is prepared for the workplace which includes:

- when the asbestos or ACM was found or likely to be present, and
- where it is located, and
- what type of asbestos or ACM it is, and
- what condition it is in, or
- that no asbestos or ACM is identified or likely to be present at the workplace.

The PCBU must also:

- make the register available to anyone likely to be exposed to asbestos or ACM,
- pass the register on to anyone who takes over management or control of the workplace.

Asbestos management plan

WHS Regulation section 429
Asbestos management plan

WHS Regulation section 433
Review of asbestos management plan

If asbestos has been identified at a workplace or is likely to be present at the workplace from time to time, the PCBU must prepare and maintain a written and up to date asbestos management plan, regardless of the asbestos is naturally occurring or manufactured.

The plan must include:

- the identification of asbestos or ACM, e.g. reference (or a link) to the asbestos register, and signage and labelling,
- decisions, and reasons for decisions, about the management of asbestos at the workplace e.g. safe work procedures and control measures,
- procedures for detailing incidents or emergencies involving asbestos or ACM at the workplace,
- workers carrying out work involving asbestos e.g. consultation arrangements, responsibilities and training details of workers undertaking asbestos removal or asbestos-related work.

The PCBU must review the plan at least every five years or when:

- there is a review of the asbestos register or a control measure,
- asbestos is removed, disturbed, sealed or enclosed at the workplace,
- the plan is no longer adequate for managing asbestos or ACM at the workplace,
- requested by a health and safety representative (HSR).

The plan must be available to anyone involved in work at the workplace.

Further information on asbestos is in the *Code of practice: How to manage and control asbestos in the workplace.*

4.13 Falls

Falls are a major cause of serious and fatal injuries in Australian workplaces. Falls can occur when persons are moving or working:

- on an elevated level such as clearing timber jams on a raised conveyor, while manually loading / unloading from the top of a truck bed, working from a ladder etc.,
- on the same level such as slipping or tripping while walking on uneven or wet floors,
- near holes such as trenches, service pits, voids etc.

Slips, trips and falls

WHS Regulation section 40
Duty in relation to general workplace facilities

A PCBU must ensure so far as is reasonably practicable that the workplace layout is maintained to allow people to enter, exit and move around safely, both during normal operations and in emergencies.

Floors and other walking surfaces should be designed, installed, and maintained to minimise the risk of slips, trips or falls. Additionally, good housekeeping practices should be followed to further enable unhindered movement of persons throughout the workplace.

Working at heights

WHS Regulation section 78
Management of risk of fall

WHS Regulation section 79
Specific requirements to minimise risk of fall

WHS Regulation section 80
Emergency and rescue procedures

A PCBU must eliminate the risk of falls in the workplace. If that's not reasonably practicable, they must minimise the risks as much as they can. A PCBU has specific duties to manage the risk of someone falling from one level to another, including that they must:

- Ensure, as far as is reasonably practicable, that any work involving the risk of a fall is done from the ground or on a solid structure.
- Provide safe ways to enter and exit the workplace and any elevated area where someone could fall, like platforms or scaffolding.

If it's not reasonably practicable to eliminate the risk of a fall, then minimise the risk by providing:

  — a fall prevention device such as temporary work platform, guardrails or scaffolding, or if this is not reasonably practicable, then

  — a work positioning system that either prevents a fall hazard being reached such as a fall restraint system, or enables a person to work supported in tension in a way that prevents the person from falling such as industrial rope access, or if this is not reasonably practicable, then

  — a fall arrest system such as industrial safety net, catch platforms or fall arrest harnesses with lifelines or individual anchors, or

  — a combination of these controls may be used if one alone isn't enough to ensure safety.

If a fall arrest system is used, emergency and rescue procedures must be in place and have been tested to ensure that they are effective.

Ladders

Falls from ladders have resulted in a significant number of serious and fatal injuries, even at low heights. Although ladders are often the first choice for working at heights, they should only be used if safer options like elevating work platforms (EWPs) or scaffolding are not reasonably practical.

Further information on working at heights is in the *Code of practice: Managing the risk of falls at workplaces.*

4.14 Confined spaces

WHS Regulation Chapter 4 Hazardous work, part 4.3
Confined Spaces

A ‘confined space’ is defined as an enclosed or partially enclosed space that:

- is not designed to be occupied by a person, and
- is intended to be at normal atmospheric pressure while any person is in the space, and
- is or is likely to be a risk to health and safety from:
  — an unsafe oxygen level, or
  — contaminants, including airborne gases, vapours and dusts, which may cause injury from fire or explosion, or
  — harmful concentrations of any airborne contaminants, or
  — engulfment.

Most sawmills have confined spaces such as sawdust hoppers / bins, tanks, pits, pipes, ducts, flues, chimneys, pressure vessels and other similar enclosed or partially enclosed structures.

When working in confined spaces, there are serious health and safety risks, for example:

- loss of consciousness, injury or death from contaminants in the air,
- a fire or explosion that kills or seriously injuries,
- asphyxiation from oxygen deficiency,
- crushing or suffocation from something like sawdust if someone falls into it.

Incidents in confined spaces can involve multiple deaths. Other workers enter a space to rescue a victim, unaware of the risks and they are also overcome by toxic fumes or gases.

A PCBU must ensure so far as is reasonably practicable that a worker does not enter a confined space until the following has been addressed:

- a risk assessment has been completed for that space,
- a confined spaces entry permit has been issued for the work to be undertaken,
- appropriate signage has been displayed,
- appropriate communication and safety monitoring has been implemented,
- specific controls are in place to manage introduced plant or services, atmospheric contaminants, flammable gases and vapours, and fire and explosion in that space,
- emergency procedures have been established,
- appropriate PPE has been issued to all persons who may need to enter that space to carry out first aid or rescue procedures in an emergency,
- appropriate information, training and instruction has been provided to all relevant workers who will or may need to enter that space.

All atmospheric testing and monitoring equipment used in confined spaces should be calibrated and checked on a regular basis.

Further information on confined spaces is in the *Code of practice: Confined spaces.*

4.15 Noise

WHS Regulation Chapter 4 Hazardous work, part 4.1
Noise

Sawmills use noisy machinery that often operate at the same time such as debarkers, chippers, saws, dust extraction and compressed air. For example, bench saws and multiple rip saws with no noise reduction measures have typical noise levels of 102dB(A).

Workers who are exposed to high noise levels may experience fatigue, stress, headaches, tinnitus (ringing in the ears) that can lead to permanent hearing loss that cannot be cured or improved.

PCBUs must ensure workers are not exposed to:

- noise levels of more than 85 dB(A) over eight hours, or
- peak (sudden loud) noises of more than 140 dB(C) which can cause instant damage to hearing.

Note: The length of time a worker is able to work is reduced by half for every 3dB(A) increase in noise level above 85dB(A).

Consideration should be given to:

- Do workers need to raise their voice to communicate with a person one metre away?
- Do workers notice a reduction in hearing over the course of a day?

- Do workers request to repeat things?
- Do workers experience ringing in the ears (tinnitus), the same sound having a different tone in each ear or muffled hearing?
- Are any long-term workers hard of hearing?
- Do workers operate noisy machinery for long periods?

Factors that can increase noise levels when using timber processing plant are:

- using dry, hard, stiff timbers,
- size of the work piece (longer, thinner or wider pieces vibrate more and carry noise),
- machines with dull and worn blades,
- higher blade / tool speeds,
- out-of-balance blades / tools,
- machine settings that do not adequately control and support the timber. The freer the timber is to vibrate the greater the noise level,
- lack of damping or no sound enclosure around the machine.

If workers are at risk, PCBUs should manage the noise levels by:

- Identifying the sources of noise. Regularly walk around the workplace and consult with workers.
- Assessing the risk and effect on workers and people near the noise areas.
- Removing the cause of the noise e.g. getting rid of noisy machinery. If this is not reasonably practicable then the PCBU should reduce and control the noise by:
  - purchasing and using quieter plant and tools with low-noise blades,
  - installing anti-vibration mountings,
  - fitting silencers to reduce the noise of compressed air exhausts and blowing nozzles,
  - regularly maintaining the plant,
  - moving loud exhaust and extraction units outside,
  - locating debarkers and waste chippers away from the mill building,
  - installing enclosures, barriers or screens around noisy plant to block the noise,
  - fitting damping materials (such as rubber) or stiffening to panels to reduce vibration,
  - changing the speeds of plant,
  - using remote controls to operate noisy machines from a distance.
- Protecting workers by changing the way the work is done, for example:
  - limiting the time workers spend in noisy areas by changing work rosters to move them around, or moving them to quieter areas,
  - providing quiet areas for rest breaks for workers that are exposed to noisy work,
  - where needed, providing workers with personal hearing protectors that are the right size and fit, and are comfortable to wear. Make sure the equipment is regularly maintained, repaired and replaced so it continues to reduce the noise and risk of hearing loss,
  - installing warning signs in noisy areas to alert workers that personal hearing protectors must be worn,
  - making sure workers have regular hearing checks if they are working in areas that exceed standard noise levels and require them to wear personal hearing protection.

If workers are required to frequently use hearing protection as a control measure for noise that exceeds the exposure standard (as detailed in the WHS Regulation, section 56), the PCBU must provide hearing tests for the workers. The PCBU must also organise and pay for the hearing test.

For new workers, a baseline hearing test must be completed within three months of commencing their employment. The worker must then get a follow-up monitoring hearing test at least every two years during their employment.

Workers should be given the results of audiometric testing accompanied by a written explanation of the meaning and implications.

Further information on noise is in the *Code of practice: Managing noise and preventing hearing loss at work.*

4.16 Hazardous manual tasks

WHS Regulation Chapter 4 Hazardous work, part 4.2
Hazardous manual tasks

Much of the work undertaken in the sawmilling industry involve manual tasks such as lifting, lowering, pushing, pulling, carrying, holding and restraining things. These manual tasks become hazardous when they involve one or more of the following risk factors:

- High or sudden forces, for example when:
  - lifting, lowering, or carrying heavy timber,
  - handling timber that cannot be positioned close to the body,
  - using a finger or open-handed grip to handle thick and/or heavy pieces of timber,
  - attempting to restrain a length of falling timber.
- Repetitive movements and forces, e.g. handling, sawing, lifting, and stacking timber.
- Awkward or sustained postures, for example from:
  - working on inappropriate work bench / table heights,
  - pushing trolleys or timbers through breast bench saws,
  - twisting while sorting timber.
- Vibration when transmitted through:
  - a worker's hand / arm, for example when operating chainsaws, or
  - the whole body, for example when seated and operating a forklift or log lifter over rough terrain.

These hazardous manual tasks can lead to musculoskeletal disorders (MSDs). Most MSDs result from gradual wear and tear, however they can also occur from sudden damage to parts of the body.

MSDs include, but are not limited to:

- sprains and strains of muscles, ligaments and tendons,
- back injuries involving muscles, tendons, ligaments, spinal discs, nerves, joints and bones,
- nerve injuries or compression, such as carpal tunnel syndrome,
- muscular and vascular disorders from hand-arm vibration.

A PCBU should consult with workers to identify and manage the risks associated with hazardous manual tasks. For each risk factor that is identified, identify the 'sources of risk'. Ask where in the task is it occurring and why is this action occurring. Sources of risk include:

- the work area design and layout,
- the nature, size, weight, number of things involved in performing the task,
- the systems of work,
- the work environment.

PCBUs must manage the risks of MSDs and implement control measures that address the source of the risks. Considerations to be given to, for example:

- Designing / re-designing the work area to minimise awkward postures and allow workers to adopt a comfortable position.
- Reducing the amount of force necessary to perform tasks by using mechanical lifting aids.

Further guidance on how to manage the risks of hazardous manual tasks is available in the *Code of practice: Hazardous manual tasks.*

4.17 Remote or isolated work

WHS Regulation section 48
Remote or isolated work

Remote or isolated work is work that is isolated from rescue and medical assistance and the attendance of emergency services because of location, time or the nature of work.

Isolated work can include a cleaner working alone outside the sawmill's normal operating hours. A worker may be isolated even if other people may be close by, for example, a lone worker operating a woodchipper in an area away from all other workers on the sawmill site.

The main risks with remote or isolated work are:

- poor access to emergency assistance,
- inadequate personal support that may result in psychological injuries,
- exposure to violence.

PCBUs responsibilities

A PCBU must:

- manage the risks to health and safety of a worker associated with remote or isolated work,
- provide a system of work that ensures effective communication with the worker.

These can be achieved for example by:

- monitoring workers regularly, by phone calls or periodic visits,
- having a check-in process whereby workers are required to contact 'home base' at a nominated time,
- having an emergency response plan when workers fail to report in at an agreed time/s.

When implementing controls consideration should be given to:

- buddy systems,
- workplace layout and design,
- movement records,
- training, information and instruction,

- first aid in the workplace,
- communication systems.

Communication systems should be provided so that a worker can call for help in the event of an emergency at any time. These could include:

- mobile phones,
- satellite communication systems,
- personal security systems or personal duress systems,
- two-way radio communication systems,
- distress beacons such as a PLB.

Further information on remote or isolated work is in the *Code of practice: How to manage work health and safety risks.*

4.18 Fatigue

WHS Regulation section 35
Managing risks to health and safety

Fatigue is an acute or ongoing state of tiredness requiring sleep or rest for recovery.

Fatigue is a health and safety risk in the workplace as it affects the physical and mental capacities required to perform work. This can potentially increase workplace incidents. Work-related fatigue puts the health and safety of everyone on-site at risk.

PCBU responsibilities

A PCBU must consult with their workers about the hazards that can lead to fatigue, how to manage the risks and possible control measures.

Once they've identified what's causing fatigue, be it the demands of the job, the environmental conditions or something outside work, they can begin to assess the risk, then eliminate or minimise it.

For example:

- Job demands – eliminate or reduce the time spent on physically and mentally demanding work by:
  - redesigning jobs to include a variety of tasks and/or implement job rotation,
  - introducing equipment such as lifting gear to reduce physical effort,
  - planning for unexpected changes in workload.
- Work schedules – review the way work is planned by:
  - designing work schedules to allow for adequate breaks and recovery time between workdays or shifts,
  - managing excessive working hours, overtime and on-call duties,
  - ensuring workers take adequate work breaks,
  - managing workloads during emergencies and absenteeism.
- Shift work and rosters – review how these affect sleep patterns by:
  - considering whether night work is necessary,

  - structuring shifts so that non-essential, complex and safety critical tasks are not carried out when workers are likely to be fatigued,
  - using a forward-rotation shift system,
  - minimising sequential night shifts,
  - allowing shift workers adequate periods of non-work to overcome sleep debt following a sequence of night shifts.
- Environmental conditions - review how to minimise environmental effects by:
  - installing ventilation and cooling devices in hot work environments and enclosed spaces such as cabins on load shifting plant and heating devices in cold work environments,
  - installing adjustable, low vibration seats in mobile plant,
  - making sure the workplace is well-lit, safe and secure,
  - providing airconditioned lunch / break rooms,
- Non work-related factors – review lifestyle, travel time and other commitments by:
  - implementing a system that allows managers and workers to assess fitness for work before, during and after a shift,
  - providing information about managing fatigue, nutrition, work-life balance, and the body clock,
  - considering travel times between a worker's home and workplace, particularly if they're shift workers, work overtime or work in rural or remote workplaces.

Consider developing a fatigue procedure in consultation with workers. It should outline how to manage excessive working hours, fitness for work and fatigued workers.

Worker responsibilities

WHS Act Section 28
Duties of workers

Workers must take reasonable care of their own health and safety at work and not adversely affect the health and safety of others.

Workers must follow reasonable instructions and procedures relating to fatigue and policies.

Workers should:

- know the symptoms of fatigue and assess their own fitness for work each day,
- understand their own sleep, rest and recovery needs,
- monitor their own level of concentration while at work,
- talk to their manager if they think they are at risk of fatigue and do something to manage it, such as taking a break or doing regular stretching,
- not work overtime or do critical tasks when they know they are fatigued,
- look for signs of fatigue in their fellow workers,
- seek medical advice if concerned about their own health.

4.19 Psychosocial hazards (including violence, bullying and sexual harassment)

WHS Regulation sections 55A – 55D
Psychosocial risks

Workers can be exposed to a combination of work-related psychosocial hazards and risks factors. A PCBU has a duty to manage the risk of psychosocial hazards in the workplace. A PCBU must eliminate psychosocial risks, or if that is not reasonably practicable, minimise them so far as is reasonably practicable.

In determining the control measures to implement to manage the psychosocial hazard, PCBUs must have regard to all relevant matters including:

- duration, frequency and severity of exposure and how hazards may combine or interact,
- design of work and system of work,
- design, layout and environmental conditions of workplace,
- workplace interactions or behaviours,
- information, training, instruction and supervision provided to workers.

Some examples of psychosocial hazards may include:

- high job demands (e.g. high levels of physical, mental or emotional effort are needed to do the job),
- poor physical environments (e.g. performing hazardous work, conditions that affect concentration or are unpleasant),
- remote or isolated work (e.g. working extended periods alone). Refer to Chapter 4.17 Remote or isolated work,
- fatigue. Refer to Chapter 4.18 Fatigue,
- bullying and sexual harassment.

Further information on how to manage psychosocial hazards in the workplace can be found in the *Code of practice: Managing psychosocial hazards at work*. The code provides guidance on duties and practical strategies to manage and promote a mentally healthy workplace.

4.20 Personal protective equipment (PPE)

WHS Regulation section 44
Provision to workers and use of personal protective equipment

WHS Regulation section 45
Personal protective equipment used by other persons

WHS Regulation section 46
Duties of worker

WHS Regulation section 47
Duty of person other than worker

WHS Act Section 273
Person not to levy workers

PPE is any clothing or equipment a worker uses for protection. It includes equipment for eye protection, hearing protection, head protection (e.g. from falling objects / the sun), respirators, appropriate footwear, fall arrest / restraint systems (e.g. safety harnesses), protection from the environment (e.g. wet weather clothing, sunscreen), high visibility clothing etc.

PPE can be useful, but it is also one of the least effective ways of controlling health and safety risks. PPE works best when used with other control measures.

PCBUs responsibilities

If PPE is used to minimise a risk to health and safety in relation to work at a workplace, the PCBU must provide PPE to their workers and must not charge anyone for using the equipment. If contractors or others at the workplace do not have PPE, it should be issued by the PCBU.

When selecting PPE, the PCBU must consult with the workers to ensure the PPE is:

- selected to minimise risk to health and safety,
- suitable regarding the nature of the work and any hazard associated with the work,
- a suitable size and fit and reasonably comfortable for the worker who is to use or wear it.

The PCBU must also provide the worker with information, training and instruction in the proper use, wearing, storage and maintenance of the PPE.

The PCBU must also ensure that the PPE provided:

- is maintained, repaired or replaced so that it continues to minimise risk to the worker who uses it,
- is clean, hygienic and in good working order,
- is used or worn by the worker, so far as is reasonably practicable.

Worker's responsibilities

A worker must, so far as the worker is reasonably able, use or wear the PPE in accordance with any information, training or reasonable instruction given by the PCBU.

The worker must:

- not intentionally misuse or damage the PPE,
- inform the PCBU of any damage to, defect in or need to clean or decontaminate any of the PPE of which the worker becomes aware.

The effectiveness of PPE relies heavily on workers correctly following instructions and procedures.

4.21 Incident notification

Part 3 of the WHS Act

WHS Act section 35
What is a "notifiable incident"

WHS Act section 38
Duty to notify of notifiable incidents

A 'notifiable incident' is:

- the death of a person,
- a 'serious injury or illness', or
- a 'dangerous incident' that exposes someone to a serious risk (even if no one is injured).

'Notifiable incidents' may relate to any person — whether an employee, contractor or member of the public.

A PCBU must ensure that SafeWork NSW is notified immediately after becoming aware that a notifiable incident has occurred. Notifications can be made by contacting SafeWork NSW on 13 10 50 or via the SafeWork NSW website: *Notify SafeWork*.

When a PCBU is made aware that a notifiable incident has occurred, the PCBU must:

- report it to SafeWork NSW immediately, and
- preserve the incident site until an inspector arrives or directs otherwise. This doesn't prevent help being provided to an injured person, removing a deceased person, making the site safe to minimise the risk of a further notifiable incident, or to facilitate a police investigation.

Incidents involving multiple businesses or undertakings

If a 'notifiable incident' arises out of more than one business or undertaking then each must ensure that the incident has been notified to SafeWork NSW.

There is no need for all duty holders to notify — only one needs to. However, all duty holders retain their responsibility to ensure SafeWork NSW is notified, regardless of any agreement between them.

In these circumstances the duty holders must, so far as is reasonably practicable, consult, cooperate and coordinate to put appropriate reporting and notification arrangements in place.

Examples of these incidents are available in Safe Work Australia's I*ncident notification fact sheet*.

Enforcement action may be taken and penalties may be applied for not notifying notifiable incidents to SafeWork NSW. For more information see the SafeWork NSW website.

4.22 First aid

WHS Regulation section 42
Duty to provide first aid

First aid is the immediate treatment or care given to someone suffering from an injury or illness until further advanced care is accessed or the individual recovers.

PCBUs must ensure adequate first aid provisions.

First aid can reduce the severity of an injury or illness and in some cases, could mean the difference between life and death.

PCBUs involved in the sawmilling industry must ensure:

- first aid equipment is provided for the workplace and appropriately stocked to manage the types of injuries that may occur in the workplace,
- each worker at the workplace has access to the first aid equipment,
- access to facilities for the administration of first aid is provided,
- an adequate number of workers are trained to provide first aid at the workplace or workers have access to other persons who have been trained to provide first aid treatment.

Where multiple businesses are involved in the same work activities or share a workplace, first aiders and first aid facilities may be shared.

PCBU's should inform workers about the first aid supplies and equipment that are available.

Determining first aid needs

PCBUs should consult with workers when determining the workplace first aid needs. This duty to consult is based on the understanding that worker input and participation improves decision-making about health and safety matters.

When making decisions about first aid requirements at a workplace, the PCBU must have considered all relevant matters, including:

- the nature of the work being carried out,
- the nature of the hazards,
- the size and location of the workplace,
- the number and type of workers and other persons at the workplace.

It is important for PCBUs to determine their first aid needs based on the nature of hazards and risks at their workplace. For example, workers in sawmilling environments are exposed to multiple hazards such as sharp saw blades, machinery, chemicals, temperature extremes, slips, trips, falls, manual handling, confined spaces, moving plant and electrical risks.

The risk level in sawmills is high and as such at least one first aider should be provided for every 25 workers.

Further information on first aid is in the *Code of practice: First aid in the workplace.*

4.23 Emergency plans

WHS Regulation section 43
Duty to prepare, maintain and implement emergency plan

A PCBU must ensure that all workplaces have an emergency plan.

In the sawmilling industry emergency situations may arise due to a fire, explosion, chemical spill, medical event, bomb threat, violence or natural disaster i.e. flood, bush fire, extreme adverse weather.

An emergency plan is a written set of instructions that outlines what workers and others at the workplace should do in an emergency.

A PCBU must ensure that an emergency plan is prepared and maintained so it remains effective for the workplace, and provides for the following:

- Emergency procedures including:
  - an effective response to an emergency,
  - evacuation procedures,
  - notifying emergency service organisations at the earliest opportunity,
  - medical treatment and assistance,
  - effective communication between the person authorised by the PCBU to coordinate the emergency response and all persons at the workplace.

For emergency procedures, the PCBU should consider the following:

  - workers who travel to work, work alone or at remote locations (including procedures for managing off-site emergency situations),
  - workplaces with confined spaces or that use fall arrest systems,
  - neighbouring businesses undertaking high risk chemical processes and major hazard facilities,
  - briefing workers including contractors, visitors and neighbours who will affected by the emergency procedures.
- Testing of the emergency procedures including the frequency of testing.
- Information, training, and instruction to relevant workers in relation to implementing the emergency procedures.

Further information is in the Safe Work Australia's *Fact Sheet: Emergency plans* and *Code of practice: Managing the work environment and facilities.*

5 Appendices

5.1 Appendix A - Glossary

Terms used throughout this Code that require definitions or descriptions.

Term	Description
Bed log	Log on the ground to provide a base for a stack of logs kept in readiness for the mill.
Billet	A short section from a log usually docked for firewood either as a whole or to be split.
Blowing down	Process using compressed air to clean machinery or the mill's floor area.
Breakdown saw	Large saw used to cut a large log into billets. Billets are then sawn using a bench saw.
Bund	Leak proof enclosure designed to contain leakage of any fluid, such as hydraulic oil.
Bush mill	Small portable sawmill located at or close to a harvesting area. Operated by 1 to 3 workers.
Canadian saw	A circular saw which has two saw blades, one mounted above the other designed to saw large logs.
Cants	Larger portions of log left after a flitch has been cut from the log, could also be referred to as “balk”.
Competent person	A person who has acquired through training, qualification or experience the knowledge and skills to carry out the task.
Conveyor	Power operated apparatus or equipment which raises, lowers or transports load by means of a continuously driven endless belt, rope or chain (or similar means). Note: Roll case/transfer case/green chain are considered to be a conveyor.
Dangerous incident	An incident in relation to a workplace that exposes a worker or any other person to a serious risk to a person’s health or safety emanating from an immediate or imminent exposure to— (a) an uncontrolled escape, spillage or leakage of a substance, or (b) an uncontrolled implosion, explosion or fire, or (c) an uncontrolled escape of gas or steam, or (d) an uncontrolled escape of a pressurised substance, or (e) electric shock, or (f) the fall or release from a height of any plant, substance or thing, or (g) the collapse, overturning, failure or malfunction of, or damage to, any plant that is required to be authorised for use in accordance with the regulations, or

Term	Description
	(h) the collapse or partial collapse of a structure, or (i) the collapse or failure of an excavation or of any shoring supporting an excavation, or (j) the inrush of water, mud or gas in workings, in an underground excavation or tunnel, or (k) the interruption of the main system of ventilation in an underground excavation or tunnel, or (l) any other event prescribed by the regulations, but does not include an incident of a prescribed kind.
Docking	Cross cutting (across the grain) timber.
Drive hob	Hydraulically driven hob which drives timber through a powered saw bench.
Duty holder	Any person who owes a work health and safety duty under the WHS Act including a PCBU, a designer, manufacturer, importer, supplier, installer of products or plant used at work (upstream duty holder), officer or a worker.
Flitch	Slab of timber cut from a log. Flitch is passed through a saw bench to achieve desired size.
Glut	Timber piece used for levelling and separating slings/bundles of banded sawn timber.
Green chain	A type of conveyor used to transport the finished sawn timber to a sorting table. Can be used as a sorting table.
Guard	Device that prevents or reduces access to a danger point or area.
Hazard	A situation or thing that has the potential to harm a person. Hazards at work may include noisy machinery, a moving forklift, chemicals, electricity, working at heights, a repetitive job, bullying and violence at the workplace.
Health and safety committee	A consultative body established under the WHS Act. The committee's functions include facilitating cooperation between workers and the PCBU to ensure workers' health and safety at work, and assisting to develop work health and safety standards, rules and procedures for the workplace.
Health and safety representative	A worker who has been elected by their work group under the WHS Act to represent them on health and safety matters.
Hostile conditions	Includes conditions where electrical equipment is exposed to moisture, heat, vibration, mechanical damage, corrosive chemicals or dust.
Infeed / infeed deck	Machinery on which logs are placed to be fed into a breakdown or bench saw. Entry point of logs to the sawmill.
Ionising radiation	A type of energy that can remove electrons from atoms or molecules e.g. x rays and gamma rays.

Term	Description
Kerf	The width of the cut.
Kickback	Violent action of timber when thrown back by saw. Can be caused by timber closing on to the saw blade.
Lock-out	Lock placed on machinery to prevent it from being operated.
Log beak (grab)	Device fitted to forks on a log loader to secure a log against the back of the forks.
Log loader	Lowered mobile plant, designed to move goods, materials or equipment, equipped with an elevating load carriage and normally, a load-holding attachment.
May	'May' indicates an optional course of action.
Must	'Must' indicates a legal requirement exists that must be complied with.
Non-ionising radiation	A type of electromagnetic radiation that does not have enough energy to remove an electron from an atom or molecule, meaning it cannot ionize matter, e.g. visible light, microwaves and radio frequency waves.
Officer	An officer under the WHS Act is: - an officer under section 9 of the *Corporations Act 2001* (Cth) - an officer of the Crown within the meaning of section 247 of the WHS Act, and - an officer of a public authority within the meaning of section 252 of the WHS Act A partner in a partnership, or an elected member of a local authority while acting in that capacity, are not 'officers'.
Operator protective devices	Safety devices designed to protect the operator i.e. rollover protective structures (ROPS), falling objects protective structures (FOPS), operator restraining devices and seat belts.
Outfeed	Transporting: — flitch/billet/sawn timber away from saw, — sawn timber to sorting table, — scrap to chipper, — sawdust away from mill.
Person conducting a business or undertaking (PCBU)	A PCBU is an umbrella concept which intends to capture all types of working arrangements or relationships. A PCBU includes a: - company - unincorporated body or association - sole trader or self-employed person. Individuals who are in a partnership that is conducting a business will individually and collectively be a PCBU.

Term	Description
	A volunteer association (defined under the WHS Act) or elected members of a local authority will not be a PCBU. *Note –* A person may be both a PCBU, within the meaning of section 5 of the WHS Act, and a worker within the meaning of section 7 of the WHS Act.
Personal protective equipment (PPE)	Includes eye protection, hearing protection, protective footwear, protective clothing for the working environment (e.g. heat, cold, rain, etc), high visibility clothing, etc.
Plant	Includes any machinery, equipment (including scaffolding), appliance, implement or tool and any component fitted to it, or associated accessory.
Psychosocial hazard	A psychosocial hazard is a hazard that — (a) arises from, or relates to — (i) the design or management of work, or (ii) a work environment, or (iii) plant at a workplace, or (iv) workplace interactions or behaviours, and (b) may cause psychological harm, whether or not it may also cause physical harm.
Psychosocial risk	A risk to the health or safety of a worker or other person arising from a psychosocial hazard.
Repair	To restore plant to an operating condition, but does not include routine maintenance, replacement or alteration.
Risk	The possibility harm (death, injury or illness) might occur when exposed to a hazard.
Riving knife	Shaped steel plate designed to prevent timber which is being cut pinching on saw blade.
Roll case (roller case)	Conveyor consisting of a series of steel rollers set up in a straight line. Used to transport timber to and from a saw or throughout a sawmill. Roll case can be free-wheeling or driven.
Round log	Uncut log as transported from forest.
Sawmill	A facility where timber logs are sawn into dimensional boards, etc. A sawmill typically has a log sorting / storage yard, sawing machinery and an area where processed timber products are sorted, stored and dispatched. Sawmills may include additional processes such as timber conditioning kilns, timber preservative treatments and manufactured timber products. A sawmill can be located permanently in one location or be portable.
Sawyer	Worker in charge of a saw bench.
Serious injury or illness	An injury or illness requiring the person to have –

Term	Description
	(a) immediate treatment as an in-patient in a hospital, or (b) immediate treatment for — (i) the amputation of any part of his or her body, or (ii) a serious head injury, or (iii) a serious eye injury, or (iv) a serious burn, or (v) the separation of his or her skin from an underlying tissue (such as degloving or scalping), or (vi) a spinal injury, or (vii) the loss of a bodily function, or (viii) serious lacerations, or (c) medical treatment within 48 hours of exposure to a substance, and includes any other injury or illness prescribed by the regulations but does not include an illness or injury of a prescribed kind.
Should	'Should' indicates a recommended course of action.
Sling (sling of sawn timber)	Stack of finished sawn timber bound by steel wire or steel tape.
Stacker	Worker who sorts and stacks sawn timber into slings.
Stacking area	Area in the immediate vicinity of a sorting bench where sawn timber is sorted and stacked into different products.
Standing a saw	Process of adjusting a circular saw blade on a saw bench so that it cuts true.
Tag-out	Tag placed on machinery to prevent it from being operated. Used by production workers.
Transfer deck	Conveyor similar to roll case but is used to transfer timber (sideways) from one saw bench to another saw bench or green chain/sorting table.
Volunteer association	A group of volunteers working together for one or more community purposes where none of the volunteers, whether alone or jointly with any other volunteers, employs any person to carry out work for the volunteer association.
Wood and timber residues	Sawdust, woodchips, timber "off-cuts" etc.
Work group	A group of workers established to facilitate the representation of workers by one or more health and safety representatives. A work group may be all workers at a workplace but it may also be appropriate to split a workplace into multiple work groups where workers share similar work conditions or are exposed to similar risks and hazards. For example, all workers on night shift.
Worker	Any person who carries out work for a PCBU, including work as an employee, contractor or subcontractor (or their employee), self-employed person, outworker, apprentice or trainee, work

Term	Description
	experience student, employee of a labour hire company placed with a 'host employer' or a volunteer. *Note –* A person may be both a worker, within the meaning of section 7 of the WHS Act, and a PCBU within the meaning of section 5 of the WHS Act.
Workplace	Any place where work is carried out for a business or undertaking and includes any place where a worker goes, or is likely to be, while at work. This may include offices, factories, shops, construction sites, vehicles, ships, aircraft or other mobile structures on land or water.