

PART FOUR RESOURCES

14 COMMON HAZARD FILES

15 FURTHER INFORMATION

16 GLOSSARY

17 REFERENCES

14 COMMON HAZARD FILES

14.1 Overview

This section focuses on common hazards found across forestry operations and known and effective ways of controlling risks. These hazards rarely impact health and safety on their own. It is usually a combination of factors that leads to injury and illness. For example, fatigue is not just related to the length of time spent working and the time of day but also to accelerants such as noise, weather extremes, and manual handling.





These hazards are referred to throughout the Code. They are presented in a hazard file format so that they can be:

- printed off as a standalone information sheet for toolbox talks or other communications
- used to populate safe work procedures and referred to in site safety plans (SSPs).

14.2 Hazardous trees

HAZARDOUS TREES

In all aspects of forestry operations, hazardous trees may pose a risk of death or serious injury. Trees may be dangerous for a range of reasons, e.g., because of overhead hazards like hung-up trees or **widow makers** as well as their characteristics and locations.

			
<ul style="list-style-type: none"> ▲ Struck by falling limbs ▲ Struck by falling fire damaged tree ▲ Struck by another tree lodged in a hazardous tree ▲ Struck by falling tree or limbs where poor condition of tree affects the ability to control falling direction 	<ul style="list-style-type: none"> ● Damage to trees caused by fire, wind, or insects ● High winds ● Periods of drought ● Recent isolation ● Dead limbs drying out 	<ul style="list-style-type: none"> ● Mark the tree with a red and white hazard tape if safe to do so ● Clearly mark the hazardous area around the tree with high-visibility tape to a distance of two dominant tree lengths ● Record the tree's location on site documentation with methods such as GPS way point ● If assessed as too risky to remove, use a high-visibility hazard tape to identify the hazardous area around the tree to a distance of two dominant tree lengths ● If assessed as safe to fell, use a suitable manual or mechanical method ● Establish and maintain a separation distance between the hazardous tree and other operations (two tree lengths) ● Maintain communication with all in vicinity of hazardous trees 	<ul style="list-style-type: none"> ● Forest Products Commission, <i>Identifying and marking hazards in native forest coupes</i>, procedure 70.

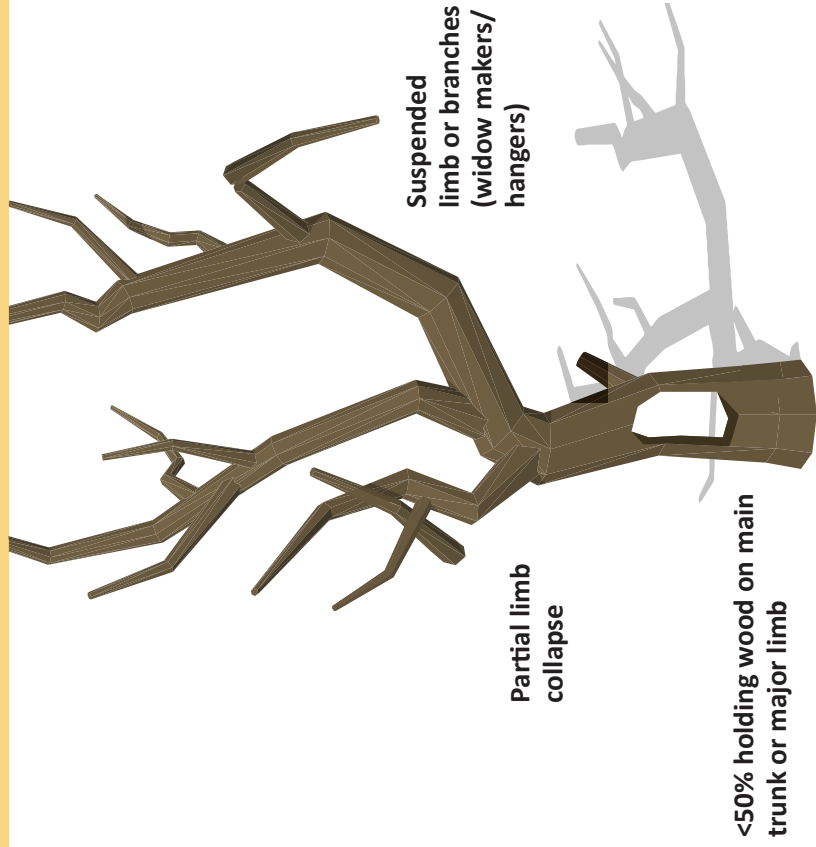
HAZARDOUS TREES

Additional information

Trees are hazardous if they have any of the features shown below.







- ▲ Widow makers / broken limbs
- ▲ Rot
- ▲ Fire damage to trunk or limbs
- ▲ Storm damage
- ▲ Insect damage
- ▲ Mechanical damage
- ▲ Exposed root systems
- ▲ Dead wood
- ▲ Symptoms of internal damage including swelling, bark cracks, and wounds
- ▲ Hung up trees and stags



14.3 Noise

NOISE



Exposure to noise above the prescribed level of 85 dB (A) over an 8-hour weighted average or a peak level of 140 dB (C) may be experienced in forestry operations. Chainsaws and chippers are most likely to reach high levels over shorter periods. Audiometric testing is required where exposure above the limits requires frequent wearing of hearing protection to control the risk.

 <ul style="list-style-type: none"> ▲ Noise above exposure limit during chainsaw and chipper use ▲ Longer time exposure to machine noise in cabin ▲ Noise exposure of ground workers ▲ Conditions in which a normal conversation is difficult 	 <ul style="list-style-type: none"> ● Length of exposure ● Poor sound proofing ● Inadequate hearing protection ● Use of machines that reach peak noise levels 	 <ul style="list-style-type: none"> ● Ensure the manufacturer or supplier provides noise assessment information ● Assess noise when purchasing, sound proofing of cabin, minimise time with cabin open ● Regularly maintain machinery to reduce noise emission ● Take suitable breaks and rotate tasks to reduce exposure ● Use damping and use of acoustic absorbent measures on machines, separate workers from the noise source if practicable, coordinate noisy activities ● Use highest rated hearing protection 	 <ul style="list-style-type: none"> ● WHS Regulations Part 4.1 – Noise ● Safe Work Australia approved Code of Practice <i>Managing noise and preventing hearing loss at work</i> ● Regulation 58 Audiometric testing
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14.4 Hazardous manual tasks

HAZARDOUS MANUAL TASKS



Some manual tasks are hazardous and may cause musculoskeletal disorders. Whole body and hand-arm vibration also contributes to hazardous manual handling.

			
<ul style="list-style-type: none"> ▲ Poor cab set-up ▲ Getting in and out of machines ▲ Tree planting ▲ Vibration ▲ Using chainsaw ▲ Tasks such as manual fencing ▲ Walking in the forest ▲ Slips and trips 	<ul style="list-style-type: none"> ● Awkward postures ● Repetitive movements ● Repetitive and sustained forces ● Duration and frequency of the task ● Environmental conditions including heat, cold, and vibration 	<ul style="list-style-type: none"> ● Assess ergonomics when purchasing (access, posture, visibility, seat, controls) ● Ensure three points of body are in contact with the machine and all points clean and non-slip ● Use planting tools that minimise or eliminate the need for bending and minimise force ● Support weight with harness when using equipment like brush cutters ● Purchase equipment with lowest hand-arm vibration emission level ● Ensure machine cab suspended with special damping or another solution for minimising vibrations 	<ul style="list-style-type: none"> ● WHS Regulations Part 4.2 – Hazardous manual tasks ● Safe Work Australia approved Code of Practice <i>Hazardous manual tasks</i>

14.5 In-field plant maintenance

**IN-FIELD
PLANT MAINTENANCE**

The WHS Act requires persons conducting a business or operation (PCBUs) to provide and maintain safe plant. This general duty is reinforced by WHS Regulations. In-field inspection, maintenance, and adjustment of forestry machinery like harvesters and excavators create a higher risk than regular preventative maintenance activities carried out off site.

		
<ul style="list-style-type: none"> ▲ Being hit, crushed, or lacerated when energy sources are not isolated ▲ Touching hot hydraulic oil or other hazardous chemicals ▲ Falls from height during repairs and maintenance ▲ Slips, strains, and falls getting in and out of machine ▲ Being hit by falling metal cowls, unsupported booms, and guards ▲ Touching moving machine parts when changing chain or bar ▲ Infrequently serviced chainsaws and cutting heads ▲ Lack of service schedule for equipment ▲ Working in hot conditions 	<ul style="list-style-type: none"> ● Proximity to exclusion zones ● Poor weather conditions ● Rough terrain ● Muddy or slippery surfaces ● Overhead hazards ● Nearby plant ● Other workers 	<ul style="list-style-type: none"> ● Carry out maintenance in safe zone, separated from other workers and on flat ground ● Prevent interference with safety features like isolating switches and guards ● Carry out maintenance in line with manufacturer's specifications, instructions, and information ● Isolate all equipment (i.e. turned off and locked out) as recommended by manufacturer ● Ground and secure any machine attachments (e.g. cutting head, blade, grapple) ● Regularly clear debris such as leaves, sticks, and needles from machines to minimise fire risk ● Regularly inspect plant before use ● Comply with 'Do Not Operate' tags or other warning notices ● Wear protective gloves when replacing chipper blades, chains, and bars ● Reinstate guards after maintenance work ● Maintain three points of contact when accessing machine for maintenance

IN-FIELD PLANT MAINTENANCE

Additional information

Regular and preventative maintenance is important for not only assuring the plant's safe operation but also to limit the exposure of other workers to hazards. Risks that regular maintenance should consider include:

- noise emissions
- exposure to high pressure fluids
- failure of safety features like braking systems
- integrity of guards and protective structures (e.g. margard)
- operator visibility through windscreens and protective structures
- suitability of emergency exits
- possibility of material being thrown at high speeds, like chain shot.

Forest machinery requires daily inspection and maintenance including checking fluid levels, refuelling, adding oils, cleaning the tracks and cabin, and replacing chipper blades on discs. Minor repairs may also be needed including repairing hydraulic hoses and replacing chains and bars.

Plant must be inspected and maintained in accordance with the manufacturer's specifications and instructions. If these are not known, inspections and maintenance must be done according to the recommendations of a **competent person**.

Items of plant that are tagged 'Do Not Operate' or have exceeded a scheduled maintenance date should not be used. These issues should be identified when checking equipment before starting work.

Plant should be de-energised and checked before any maintenance or repairs in the field start.






- WHS Regulations Div. 7
- s213. Maintenance and inspection of plant
- s214. Powered mobile plant – General control of risk
- Safe Work Australia approved Code of Practice *Managing the risks of plant in the workplace*

14.6 Hazardous chemicals

HAZARDOUS CHEMICALS

Hazardous chemicals may be used in pest control, weed control, and fertilising operations. Also, some substances used to operate and maintain mobile plant and powered handheld equipment are hazardous. Exposure needs to be controlled.

 <ul style="list-style-type: none"> ▲ Spills and splashes when handling or mixing chemicals ▲ Spray drift that exposes operator or others ▲ Storage and mixing near ignition sources or incompatible chemicals ▲ Premature re-entry into spray zones 	 <ul style="list-style-type: none"> ● Number of ways chemicals may enter a worker's body ● Frequency and duration of exposure ● Level of concentration of ingredients ● Quantities of fuel stored and potential ignition sources 	 <ul style="list-style-type: none"> ● Use non-chemical methods of weed control such as slashing, mulching, grazing, or heat kill methods where effective in the longer term ● Only store the lowest practical quantity of flammable substances ● Use precise dosing methods and technologies to minimise exposure ● Use less hazardous chemicals or minimum necessary application rates ● Have procedures and signage for workers re-entering an area that has been sprayed ● Use enclosed canopies in vehicles to deliver chemicals ● Maintain suitable separation distances to prevent exposure to other workers ● Use defined areas for storing chemicals ● Use personal protective equipment (PPE) as prescribed in safety data sheets ● Operate when weather conditions help manage spray drift ● Ensure chemicals are correctly labelled
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HAZARDOUS CHEMICALS

Additional information



Hazardous chemicals are regulated in Chapter 7 of the WHS Regulations. Specific duties apply to a PCBU to manage the risks to health and safety associated with using, handling, generating, and storing hazardous chemicals at a workplace. These duties include:

- providing workers with information, training, instruction, and supervision
- maintaining a register of hazardous chemicals
- obtaining the current safety data sheet of each hazardous chemical (usually from the supplier) and making it readily available to workers
- ensuring containers are correctly labelled, and safety signs are displayed
- identifying the risks of chemicals being used and controlling those risks in the most appropriate manner
- providing health monitoring to workers, where relevant (e.g. after exposure to organophosphate pesticides)
- preparing an emergency plan and providing safety and emergency equipment
- storing and dispensing hazardous chemicals safely.

Flammable or combustible substances must be kept at the lowest practicable quantity for the workplace.


In line with the hierarchy of control, identification of alternatives that eliminate hazardous chemicals should be the starting point in managing exposure.

- WHS Regulations Chapter 7 – Hazardous chemicals
- Safe Work Australia approved Code of Practice *Managing risks of hazardous chemicals in the workplace*
- Australian Pesticides and Veterinary Medicines Authority (APVMA) guidelines and codes of practice

14.7 Fatigue

FATIGUE

Fatigue is a state of tiredness or exhaustion that results in a degree of impairment. This impairment may be physical and/or mental and can result in an increased risk of workplace errors or incidents.

 <ul style="list-style-type: none"> ▲ Physically and mentally demanding work ▲ Lack of opportunity for quality sleep ▲ Working long days (>14 hrs) and long weeks (>55 hrs) ▲ Working at night or into the 12am to 6am period ▲ Inadequate breaks within and between workdays ▲ Sleep disorders ▲ Impact of out-of-work demands on sleep opportunity and quality 	 <ul style="list-style-type: none"> ● Mental and physical demands of the job (e.g. heavy physical demands, high concentration levels on demanding tasks such as rough terrain, slopes) ● Environmental conditions (e.g. weather extremes, noisy workplaces, whole body vibration) ● Work schedules (e.g. regularly working or travelling through the night, having limited opportunity for quality sleep, needing to travel long distance to work, having no regular breaks from work) ● Working time (e.g. regular shifts longer than 12 hours, inadequate breaks between and within shifts, or intrusion on time to get regular night sleep) ● Individual (e.g. nutrition and hydration, sleep disorders, non-work impacts on sleep, mental health status) 	 <ul style="list-style-type: none"> ● Follow work–rest schedules that reflect task and operating conditions (e.g. slope, visibility) ● Include contingencies for delays and disruptions ● Ensure contractual arrangements do not provide incentives to work excessive hours ● Work schedules that maximise opportunities for sleep at normal sleep times ● Minimise night working and working into night hours ● Provide training and information on fatigue and sleep disorders and countermeasures (e.g. nutrition and hydration) ● Provide training in the use of any self-reporting or fatigue risk scales and the process to use results to then reduce risk
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FATIGUE

Additional information

Fatigue can be assessed using objective working time, time of day, and rest break indicators but these can be supplemented by experience-based measures such as self-reported sleep time and indicators of alertness.

Use of experience-based measures requires appropriate training, policy transparency, and high levels of worker engagement for effective risk reduction.







- WHS Regulations Part 4.10 — Driving commercial vehicles
- WorkSafe Victoria *Fatigue management guidelines for the forestry industry*
- LITA Fatigue Working Group *Guidelines for developing and implementing a fatigue management policy in forestry*

14.8 Working at night

WORKING AT NIGHT





Forestry operations may be conducted in failing light or at night. Where practicable organise work schedules to minimise time spent working at night. Where night shifts are part of regular operations fatigue management measures set out in Section 14.7 should be referenced. Additional measures to improve lighting should also be considered.

 <ul style="list-style-type: none"> ▲ Poor visibility to conduct operations ▲ Being struck by machines ▲ Unable to see instability in log stacks ▲ Inability to estimate separation distances and maintain safe work areas 	 <ul style="list-style-type: none"> ● Regular night shifts ● Extreme weather ● Working in proximity to others 	 <ul style="list-style-type: none"> ● Use suitable illumination of work area including log stacks, projected path of booms, tops of pins on trucks being loaded ● Use suitably placed lighting on mobile equipment ● Illuminate and mark safety zones ● Follow fatigue management practices ● Use of luminous high-visibility clothing ● Use regular call ins to check in on workers 	 <ul style="list-style-type: none"> ● Safe Work Australia approved Code of Practice <i>Managing the work environment and facilities</i>
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14.9 Working near power lines

WORKING NEAR POWER LINES

Contact with energised power lines by forestry operations equipment or materials can cause death, electric shock, and other direct or indirect injuries. An electric shock can also occur without contact with overhead power lines. A close approach to line conductors may allow a 'flashover' to occur. The risk of flashover increases as the line voltage increases.

 <ul style="list-style-type: none"> ▲ Felling trees near power lines ▲ Using machinery that at full extension could touch overhead power lines ▲ Extreme weather conditions that could bring down lines 	 <ul style="list-style-type: none"> ● Location, height, arrangement, and visibility of overhead power lines and supporting structures (e.g. poles, towers, and stay wires) ● Voltage of power lines and exposed energised parts and whether they are insulated or bare ● Working position and arc of machines ● Weather and ground conditions 	 <ul style="list-style-type: none"> ● Incorporate location of power lines in coupe planning and harvest plans ● Ensure separation distance of two tree lengths for tree felling maintained near power lines ● Comply with 'No Go Zone' requirements ● Use zone limiting devices on machinery ● Fit proximity sensors to equipment ● Use procedures to ensure work is not conducted near or under energised power lines ● Use felling machines with precise directional falling capability ● Use PPE with electrical insulation properties ● Use flags or other markers to warn of overhead power lines ● Use procedures to identify and manage the risk of trees falling on adjacent power lines 	 <ul style="list-style-type: none"> ● WHS Regulations s166A. - Duty of person conducting a business or undertaking: overhead electric lines ● Safe Work Australia general guide <i>Working in the vicinity of overhead and underground electric lines</i> ● Safe Work Australia information sheet <i>Agricultural work near overhead electric lines</i> ● ENA NENS 04-2006 <i>National guidelines for safe approach distances to electrical and mechanical apparatus</i>
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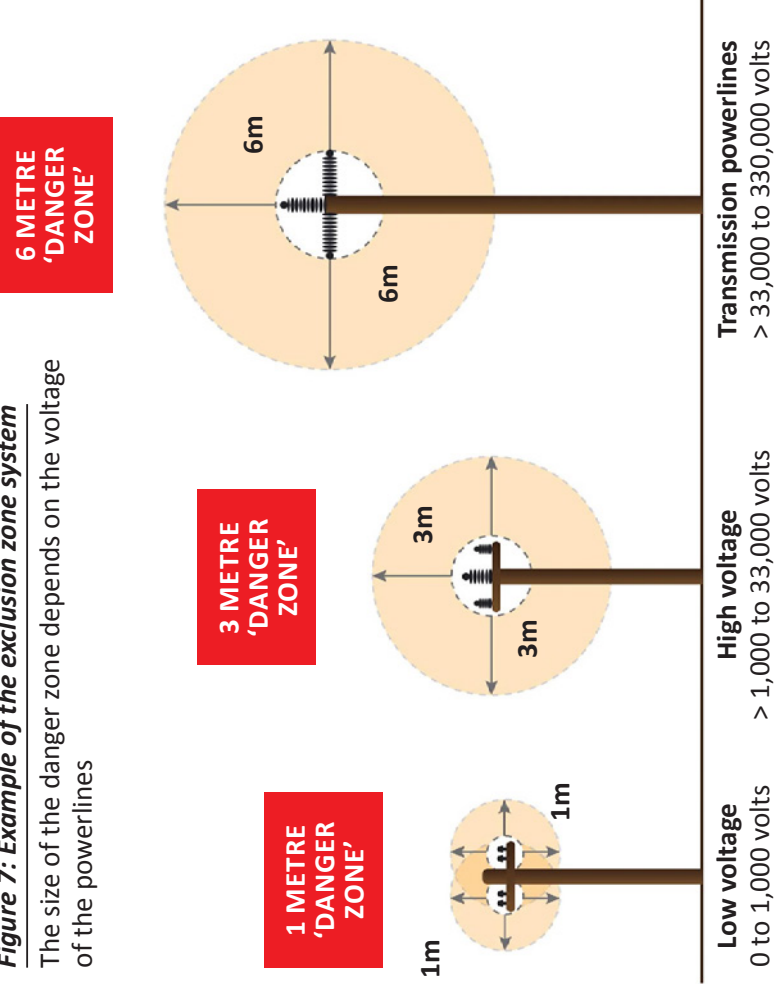
WORKING NEAR POWER LINES

Additional information

There is also the hazard created by falling trees too close to power lines. The energy regulator defines exclusion zones for different voltage levels (see Figure 7). Specified clearance distances, permits, and training requirements are part of the exclusion zone system.

Figure 7: Example of the exclusion zone system




The size of the danger zone depends on the voltage of the powerlines



14.10 Biological hazards

BIOLOGICAL HAZARDS





Biological hazards in forestry operations include fungi, spores, and sawdust. Exposure may result in skin infections such as contact dermatitis or allergic reactions to plants or wood products. Biohazards also include viruses, poisonous snakes, spiders, insects, and parasitic diseases.

	<ul style="list-style-type: none"> ▲ Irritants in plants and wood products ▲ Bites, stings, and infections from animals and insects ▲ Bacteria in soil ▲ Community transmitted viruses ▲ Cleaning products such as solvents
	<ul style="list-style-type: none"> ● Seasonal conditions ● Weather conditions ● Geographic location ● Level of virulence, toxicity, and ability to cause disease
	<ul style="list-style-type: none"> ● Provide Safety Data Sheet for substance such as solvents ● Provide hand cleaning facilities and hand hygiene practices ● Provide induction and training on viruses such as COVID-19 ● Provide suitable first aid ● Wear specific PPE, particularly where requirement increases risk (e.g. sweating)

14.11 Psychosocial hazards

PSYCHOSOCIAL HAZARDS

Psychosocial hazards or factors are anything in the design or management of work that increases the risk of work-related stress. Stress responses are the physical, mental, and emotional reactions that occur when a person perceives the demands of their work exceed their ability or resources to cope. Work-related stress if prolonged, and/or severe, can cause both psychological and physical injury.

			
<ul style="list-style-type: none"> ▲ Tolerance of inconsistent safety practices ▲ Inflexible work schedules and workloads ▲ No clear processes to resolve issues ▲ Lack of regular communication on work issues ▲ Little commitment from managers to address stress and bullying issues ▲ Lack of consultation on processes to manage psychological hazards ▲ Lack of training and information on psychological hazards 	<ul style="list-style-type: none"> ● Work delays that reduce time to complete work ● High physical and mental work demands ● Remote work ● Extreme weather conditions ● High levels of risk in tasks ● Health issues ● Out-of-work stressors 	<ul style="list-style-type: none"> ● Provide regular opportunities to address issues and resolve problems (e.g. crew meetings) ● Allow a flexible response to work schedules and workloads during planning ● Clearly communicate what is acceptable behaviour and processes to deal with non-compliance ● Provide access to support services ● Provide training and information on psychological hazards ● Establish issue resolution and anonymous reporting processes 	<ul style="list-style-type: none"> ● Work Health and Safety (General) Regulations 2022, Part 3.2 General workplace management Division 11 Psychosocial risks ● Work Health and Safety Commission code of practice <i>Psychosocial hazards in the workplace</i> ● Safe Work Australia national guidance material <i>Work-related psychological health and safety: A systematic approach to meeting your duties</i>

PSYCHOSOCIAL HAZARDS

Additional information

Psychosocial factors are tied to the system and nature of work and can include:

- high job demands (e.g. long hours or high workloads in demanding conditions)
- lack of resources to meet demands (e.g. poor equipment or lack of time to complete job)
- lack of reward/recognition
- lack of support at work
- poor work relationships including bullying
- inadequate problem-solving processes to address work relationships promptly and fairly.

These factors are not easily accommodated by a traditional risk management approach. The hazard is not easily identifiable, the likelihood and consequence of the risk is difficult to reliably calibrate, and controls are organisational and interrelated.

The hazards, risk assessment, and risk controls for forestry operations set out in this Code are inevitably underpinned by the work culture of the business.

A positive safety culture minimises many of the psychological hazards by:





- intervening early because of open communication throughout the business
- responding appropriately because of good support systems and active managers and supervisors
- encouraging open discussion of issues without fear of reprisal or stigmatisation
- using agreed and fair processes to resolve interpersonal issues
- maintaining integrity in all health and safety procedures by addressing breaches and failures openly
- training and informing workers so that there is a clear understanding of the individual and shared responsibility to manage risks.

The role of a positive safety culture should be considered alongside the psychological hazards and controls on the preceding page.

14.12 Drugs and alcohol

DRUGS AND ALCOHOL

Drug and alcohol use (including legitimate over-the-counter or prescribed medications) can affect a person's ability to work safely. Even if someone drinks alcohol or uses drugs outside working hours, it can impair their judgement, coordination, concentration, and alertness while on the job.

			
<ul style="list-style-type: none"> ▲ Operation of machines, vehicles, and equipment in an impaired state ▲ Work culture that accepts drug and alcohol use on the job ▲ Lack of regular and open communication on drug and alcohol issues ▲ Punitive approach to drug and alcohol use without an agreed process to manage issues ▲ Impact of prescription medications on ability to perform role 	<ul style="list-style-type: none"> ● Work-related contributors such as workload, isolation, schedules ● Inadequate supervision and poor communication practices ● Schedules that encourage drug use (e.g. long shifts where a worker takes drugs to stay awake) ● Availability and culture of acceptance of workplace use ● Out-of-work contributors such as grief, relationship breakdowns or health concerns 	<ul style="list-style-type: none"> ● Adopt an agreed policy based on extensive consultation ● Eliminate or minimise any schedules or work patterns that provide an incentive to use drugs or alcohol ● Establish a positive work culture that encourages self-reporting, monitors and responds in a non-punitive way, and provides access to assistance ● Make others apart from direct employees (e.g. other contractors or visitors) aware of the policy ● Provide training and information on drugs and alcohol 	<ul style="list-style-type: none"> ● Commission for Occupational Safety and Health guidance note <i>Alcohol and other Drugs at the Workplace</i> ● Australian Forest Products Association guideline <i>Drug and alcohol policy and testing program</i>

DRUGS AND ALCOHOL

Additional information

Typical activities in forestry operations where impaired performance would affect the health and safety of the individual or other workers include:

- operation of machinery
- work-related driving
- tasks that rely on concentration or motor coordination
- use of hazardous chemicals.

Managing alcohol and drug issues is part of a PCBU's responsibility to provide a safe and healthy workplace and every workers' responsibility not to put themselves or others at risk.

A drugs and alcohol policy should be based on the nature and extent of the problem and developed through a consultative process. While the WHS Act and Regulations do not mandate, require, or prohibit testing, some workplaces may choose to include testing as part of their drugs and alcohol management plan.

Testing should be commensurate with the size and nature of the problem and should be introduced with consultation, training, and information to ensure agreement and acceptance of the approach.

A testing program should be clear on:





- the purpose, type, and integrity of tests
- when testing takes place
- who administers tests
- what happens if a positive test is recorded
- the nature of support and assistance post testing.

Managing risk associated with alcohol and drug use requires high levels of engagement with the workforce (including other contractors), agreed processes to manage impairment issues, and suitable and confidential assistance programs to help recovery.

14.13 Driving to and from work site

DRIVING TO AND FROM WORKSITE





Work-related driving has been shown to carry a higher risk than travel in non-fleet vehicles. Vehicle and driver safety is covered by both workplace health and safety legislation and road traffic laws. The focus here is on the PCBU's obligations but workers also have a duty to take reasonable care and to follow the PCBUs procedures.

 <ul style="list-style-type: none"> ▲ Inadequate journey planning ▲ Inappropriate vehicles ▲ Poorly maintained vehicles ▲ Untrained drivers ▲ Speed ▲ Driver distractions ▲ Fatigue 	 <ul style="list-style-type: none"> ● Length of trips ● Time of day ● Road conditions ● Adverse weather conditions 	 <ul style="list-style-type: none"> ● Choose vehicles against criteria covering active and passive safety features ● Implement a safe driving and vehicle selection policy signed off by employees ● Ensure drivers are competent and fit to drive ● Do pre-start vehicle checks ● Use daylight running lights ● Adopt driver monitoring systems (e.g. lane assist and alertness warnings) ● Provide defensive and specialist vehicle skill training ● Ensure vehicles are maintained to both the manufacturer's service requirements and the broader vehicle safety standards ● Apply fatigue management measures such as planning longer trips to allow for regular breaks, encouraging drivers to take power naps if sleepy, and minimising night driving ● Ensure all vehicles have first aid kits, fire extinguishers and emergency contact numbers 	 <ul style="list-style-type: none"> ● WHS Regulations Part 4.10 — Driving commercial vehicles ● WorkSafe WA fact sheet <i>Driving commercial vehicles</i> ● Department of Transport <i>Drive Safe A handbook for Western Australian road users</i> ● NSW Government <i>Road Safety and Your Work A Guide for Employers</i>
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14.14 Working alone

WORKING ALONE





If a worker is working alone, they cannot be seen or heard by others. Due to the location, time, or nature of the work, they do not have easy access to help if they are injured, ill or there is an emergency.

 <ul style="list-style-type: none"> ▲ All the common hazards described in the Code ▲ Unreliable or poor communication systems ▲ Remote locations where emergency response is slow 	 <ul style="list-style-type: none"> ● Hazards that expose a lone worker to greater risk (e.g. machinery that one person cannot operate safely, objects too heavy for one person, chemicals that pose a particular risk for lone worker) ● Ability to communicate with worker onsite ● Ability to execute emergency and rescue plans ● Likelihood of rapidly changing environmental conditions 	 <ul style="list-style-type: none"> ● For tasks assessed as suitable for working alone adopt an agreed procedure that covers location, movement, and times to complete work, and report back ● Establish an effective communication system with a fail to safety back up ● Adopt check in and report back procedures ● Provide suitable first aid arrangements ● Establish ability to maintain effective communication 	 <ul style="list-style-type: none"> ● WHS Regulations ● s48 – Remote or isolated work ● Commission for Occupational Safety and Health guidance note <i>Working Alone</i> ● Safe Work Australia approved Code of Practice <i>Managing the work environment and facilities</i>
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14.15 Solar UV radiation

SOLAR UV RADIATION




Exposure to ultraviolet radiation (UVR) can damage the skin and eyes. The most serious health effect of exposure to solar UVR is skin cancer. Forest workers may be exposed to the sun for long periods, so their risk of developing skin cancer or other solar UVR-related illness is increased unless control measures are used.

	<ul style="list-style-type: none"> ▲ Working at time of year and time of day when UVR exposure highest ▲ Extended periods working outdoors 		<ul style="list-style-type: none"> ● Extended shifts ● Work with no forest canopy or other canopy protection 		<ul style="list-style-type: none"> ● Equip forest machines to limit exposure through canopies, tinting, and non-reflective surfaces ● Work in shade where practicable ● Rotate workers to reduce individual exposure ● Reschedule work to early morning or late afternoon if possible ● Use PPE including sun protective clothing and hats, sunscreen, sunglasses, long pants and long sleeves 		<ul style="list-style-type: none"> ● Safe Work Australia <i>Guide on exposure to solar ultraviolet radiation (UVR)</i> ● Safe Work Australia <i>approved Code of Practice Managing the work environment and facilities</i>
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14.16 Extreme weather

EXTREME WEATHER

Extreme weather in forestry operations includes extreme heat, low temperatures, snow, ice, fog, and high winds. These extremes both affect the body and create hazards for all workers.

 <ul style="list-style-type: none"> ▲ Extreme heat ▲ Extreme cold ▲ Heavy rain, snow, and ice reducing traction ▲ High winds creating falling object hazards ▲ Fog creating poor visibility 	 <ul style="list-style-type: none"> ● Air temperature – how hot or cold the surrounding air is ● Humidity – the moisture content in the air – higher humidity will increase the effects of high air temperature ● Radiant heat – from the sun or from the plant or a work process ● Rain – a combination of weather conditions may contribute to reduced core body temperature causing hypothermia ● Air movement – air or wind speed and air circulation can reduce the effect of high air temperature ● Wind – strength and effect on trees (e.g. breaking branches) ● Ice – impact on traction for both ground workers and machines and access to and from the forest ● Fog – impact on visibility and the ability to maintain separation distances and safe access to and from the forest ● Time – how long workers will be exposed to extreme conditions 	 <ul style="list-style-type: none"> ● Adopt agreed procedures for stopping work because of extreme weather ● Adopt agreed procedures for restarting work, including risk assessment ● Establish communication protocols for poor visibility ● Adjust of machinery and methods where traction and slippage are an issue ● Provide climate control in machines ● Follow work–rest regimes to manage heat and cold extremes ● Schedule high exertion tasks at times of the day when weather is less extreme ● Provide of suitable clothing for conditions ● Make cold and hot liquids available, relevant to conditions ● Provide suitable weather protection in breaks ● Use PPE to protect from weather, aid visibility, and reduce slipping
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EXTREME WEATHER

Additional information



- Safe Work Australia approved Code of Practice *Managing the work environment and facilities*
- Safe Work Australia *Managing the risks of working in heat guidance material*

Guidelines for working under and around trees in windy conditions				
Observed wind effects	Wind category	Beaufort Wind Force (scale)	Wind speed (km/h)	Response
Dust is raised from the ground. Paper is blowing about. Small branches are moving.	Moderate breeze	4	20 to 28	In most situations, wind will not pose a hazard to forestry operations, including manual felling.
Small trees begin to sway.	Fresh breeze	5	29 to 38	Stop manual felling of small trees (coppice thinning). Review the work against the conditions and if necessary, move to an alternative location.
Large branches are moving. Signs are hard to put up and they blow over.	Strong breeze	6	39 to 49	Stop all manual felling. Move to an alternative task at least two tree lengths from standing trees.
Whole trees (the trunk of larger trees) are moving. The wind makes walking difficult.	Constant breeze	7	50 to 61	Stop all forestry work. Seek shelter at least two tree lengths from standing trees.
Twigs are falling from the trees. The wind hinders progress when walking.	Fresh gale	8	62 to 74	Leave the forest immediately. Do not enter the forest until gale conditions subside.

15 FURTHER INFORMATION

15.1 Protective structures for forestry machines

Forestry machines require the following protective structures. See also the NIFPI Best Practice Guide.

Machine	Type	ROPS	FOPS	OPS
Dozers	Enclosed cabin	✓	✓	✓
	Open – canopy with attachments	✓	✓	✓
Hydraulic excavators	Landing unit – log grab & cut off saw	✓	✓	✓
	Landing unit – log grab only	✓	✓	
	Off-landing shovel logging	✓	✓	✓
	Feller buncher – processing head	✓	✓	✓
	Construction excavator – hydro hitch, buckets, rock drill, and rock grab	✓	✓	✓
Purpose-built forestry units	Tracked or wheeled feller buncher	✓	✓	✓
	Tracked or wheeled harvester	✓	✓	✓
	Grapple skidder	✓	✓	✓
	Cable skidder	✓	✓	✓
	All forwarders	✓	✓	✓
Wheel loaders	Wheeled loader fitted with a falling or bunching head	✓	✓	✓
	Articulated, enclosed cabin, quick coupler, and attachments	✓	✓	
	Articulated, enclosed cabin, pin or multi-purpose bucket	✓	✓	
	Articulated, enclosed cabin, pin or general-purpose bucket	✓	✓	
Skid steer loaders	Enclosed cabin, multi-purpose bucket	✓	✓	
	Open canopy, multi-purpose bucket	✓	✓	
Compact truck loaders	Enclosed cabin, multi-purpose bucket	✓	✓	
	Open canopy, multi-purpose bucket	✓	✓	
Backhoe loaders	Enclosed cabin, multi-purpose bucket, 4x4 extendable dipper, quick hitch, and buckets	✓	✓	
Bobcat and attachments		✓	✓	✓
Motor graders	Enclosed cabin	✓	✓	
Agricultural tractors		✓		
All-terrain vehicles (ATVs), including quad bikes		Crush protection		

The most recent editions of the following standards (including any amendments) apply for protective structures, depending on the type of machinery.

Protective structure	Relevant standard	Hydraulic excavator	Purpose-built forestry equipment	Earth-moving machinery	Yarder
ROPS	ISO 8082 (series) Self-propelled machinery for forestry OR AS 2294.1 Earth-moving machinery – Protective structures – Part 1: General and AS 4100 Steel structures	✓	✓	✓	
	J1194 Rollover protective structures (ROPS) for wheeled agricultural tractors		✓		
	AS 1636.1 Tractors – Roll-over protective structures – Criteria and tests – Part 1: Conventional tractors		✓		
FOPS	ISO 8083 Machinery for forestry – Falling-object protective structures (FOPS) – Laboratory tests and performance requirements	✓	✓	✓	✓
OPS	ISO 8084 Machinery for forestry – Operator protective structures – Laboratory tests and performance requirements OR AS 2294.1 Earth-moving machinery – Protective structures – Part 1: General	✓	✓	✓	✓
	ISO 10262 Earth-moving machinery – hydraulic excavators – Laboratory tests and performance requirements for operator protective guards	✓			
	AS 4988 Earth-moving machinery – Hydraulic excavators – Laboratory tests and performance requirements for operator protective guards (superseded by ISO 10262)	✓			

15.2 Personal protective equipment (PPE) for forestry operations

The most recent editions of the following standards (including any amendments) apply for PPE in forestry operations, depending on the worker’s role.

Type of PPE	Relevant PPE standards	Everyone	Chainsaw operator	Machine operator	Herbicide applicator	Fire fighter
High visibility clothing	AS/NZS 4602.1 High visibility safety garments – Part 1: Garments for high risk applications	✓	✓	✓	✓	✓
Protective clothing for firefighting	AS/NZS 4824 Protective clothing for firefighters – Laboratory test methods and performance requirements for wildland firefighting clothing					✓
Safety helmet	AS/NZS 1800 Occupational protective helmets – Selection, care and use AS/NZS 1801 (series) Occupational protective helmets (DIN 7948/EN 12492 is a suitable alternative to helmets complying with AS 1801 (series) for pruning operations.)	✓	✓	✓	✓	✓

FIFWA Forestry Safety Code

Type of PPE	Relevant PPE standards	Everyone	Chainsaw operator	Machine operator	Herbicide applicator	Fire fighter
Safety footwear	<i>AS/NZS 2210 (series)</i> Footwear should be of a standard that provides ankle support.	✓	✓	✓	✓	
Firefighting boots	<i>AS/NZS 4821 Protective footwear for firefighters – Requirements and test methods</i>					✓
Hearing protection	<i>AS/NZS 1269 (series) Occupational noise management</i> <i>AS/NZS 1270 Acoustics – Hearing protectors</i>	✓	✓	✓	✓	
Eye protection	<i>AS/NZS 1336 Eye and face protection – Guidelines</i> <i>AS/NZS 1337 (series) Personal eye protection</i>		✓	✓	✓	✓
Safety gloves	<i>AS/NZS 2161 (series) Occupational protective gloves</i>		✓	✓	✓	✓
Leg protection	<i>AS/NZS 4453.3 Occupational protective gloves – Part 3: Protective legwear</i>		✓			
Respiratory protection	<i>AS/NZS 1715 Selection, use and maintenance of respiratory protective devices</i> <i>AS/NZS 1716 Respiratory protective devices</i>				✓	✓
Sun protective clothing	<i>AS/NZS 4399 Sun protective clothing – Evaluation and classification</i>	✓	✓	✓	✓	✓

15.3 First aid kits

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For most workplaces, a first aid kit should include the following items.

Item	Quantity
Instructions for providing first aid – including cardiopulmonary resuscitation (CPR) flow chart	1
Notebook and pen	1
Resuscitation face mask or face shield	1
Disposable nitrile examination gloves (nitrile is a latex-free rubber suitable for people with latex allergies)	5 pairs
Gauze pieces 7.5 x 7.5 cm, sterile 3 per pack	5 packs
Saline, 15 ml	8
Wound cleaning wipe, single 1% Cetrimide BP	10
Adhesive dressing strips—plastic or fabric, packet of 50	1
Splinter probes, single use, disposable	10
Tweezers/forceps	1
Antiseptic liquid/spray 50 ml	1
Non-adherent wound dressing/pad 5 x 5 cm (small)	6
Non-adherent wound dressing/pad 7.5 x 10 cm (medium)	3
Non-adherent wound dressing/pad 10 x 10 cm (large)	1
Conforming cotton bandage, 5 cm width	3
Conforming cotton bandage, 7.5 cm width	3
Crepe bandage, 10 cm, for serious bleeding and pressure application	1
Scissors	1
Non-stretch, hypoallergenic adhesive tape—2.5 cm wide roll	1
Safety pins, packet of 6	1
BPC wound dressings No. 14, medium	1
BPC wound dressings No. 15, large	1
Dressing—Combine Pad 9 x 20 cm	1
Plastic bags—clip seal	1
Triangular bandage, calico or cotton minimum width 90 cm	2
Emergency rescue blanket for shock or hypothermia	1
Eye pad, single use	4
Access to 20 minutes of clean running water or, if this is not available, hydrogel 3.5 gm sachets	5 sachets
Instant ice pack for treatment of soft tissue injuries and some stings	1

Medication including analgesics like paracetamol and aspirin should not be included in first aid kits because of their potential to cause adverse health effects in some people, including pregnant women and people with medical conditions like asthma. The supply of these medications may also be controlled by drugs and poisons laws. Workers requiring prescribed and over-the-counter medications should carry their own medication for their personal use as necessary.

However, workplaces may consider including an asthma-relieving inhaler and a spacer to treat asthma attacks and epinephrine auto-injector for the treatment of anaphylaxis or severe allergies. These should be stored according to the manufacturers' instructions and first aiders should be provided with appropriate training.

Some types of workplaces may require extra items to treat specific types of injuries or illnesses. These may also require your first aiders to have additional training.

Outdoor module

If work is performed outside and there is a risk of insect or plant stings or snake bites, assess whether a first aid kit should include:

- a heavy duty 10 cm crepe bandage for snake bites
- sting relief cream, gel, or spray.

Remote module

Where people work in remote locations, a first aid kit should include:

- 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, and
- torch/flashlight.

The appropriate contents will vary according to the nature of the work and its associated risks.

Burn module

If workers are at risk of receiving burns, a first aid kit should include:

- burn treatment instructions on two waterproof instruction cards: one for the first aid kit and the other to be located on the wall next to the emergency shower or water supply
- hydrogel, 8 x 3.5 gram sachets
- hydrogel dressings
- clean polythene sheets, small, medium, and large, and
- 7.5 cm cotton conforming bandage.

15.4 ‘Safe and Skilled’ units of competency for hazardous activities

Safe and Skilled forestry organisations have agreed all workers must hold a statement of attainment for approved, nationally recognised units of competency when undertaking any hazardous activity. In forestry, hazardous activities are tasks that involve:

- driving heavy plant or trucks
- using handheld motorised equipment
- working on the ground near heavy plant or tree felling operations.

To ensure they are generally aware of hazards in forest operations, all workers involved in these tasks are expected to hold the following units of competency:

Workplace health and safety	Follow WHS policies and procedures in forest and wood products operations	FWPCOR2210
OR		
Alternative competencies in workplace health and safety for workers who have obtained or are pursuing a Certificate III in Forest Operations or higher qualification.		

As well as this general requirement, workers are expected to hold a statement of attainment for a unit of competency related to the activity they are conducting. For guidance, the current national units are listed below.

For further details on predecessor units and updated national units, refer to the Training.gov.au site (<https://training.gov.au/Training/Details/FWP>) or ForestWorks (www.forestworks.com.au).

SITE ACCESS AND ROADING		
Dozer	Operate Crawler Tractor	FWPHAR3224
Wheeled loader	Operate Loader	FWPHAR3228
TIMBER HARVESTING		
Single grip harvester	Operate Single Grip Harvester	FWPHAR3229
Processor	Conduct Mechanical Processor Operations	FWPHAR3234
Feller buncher	Operate Feller Buncher	FWPHAR3226
Commercial manual felling or felling hazardous trees	Harvest Trees Manually (advanced)	FWPHAR3209
Trim and cut fallen trees	Trim and Cut Harvested Trees	FWPHAR2209
LOG EXTRACTION AND LOADING		
Forwarder	Operate Forwarder	FWPHAR3227
Skidder	Operate Skidder	FWPHAR3230
Dozer	Operate Crawler Tractor	FWPHAR3224
Excavator – for shovelling logs and loading	Operate Excavator with Log Grapple	FWPHAR3225
Truck-mounted loaders	Licence to Operate a Vehicle Loading Crane (capacity 10 metre tonnes and above)	TLILIC0024
IN-FIELD PROCESSING AND TRANSPORT		
Static mobile chipper based on workplace equipment	Operate Integrated or Split Flail and Wood Chipper with Crane	FWPHAR3203 or
	Operate Split Flail and Wood Chipper Fed by Mobile Machine	FWPHAR3204
Log truck	Transport Forestry Logs Using Trucks	FWPCOT3315
Chip truck	Transport Forestry Produce Using Trucks	FWPCOT3316
SILVICULTURE		
Manual felling associated with plantation silviculture or road and firebreak maintenance operations	Fell Trees Manually (basic)	FWPCOT2274
	Harvest Trees Manually (intermediate)	FWPHAR3205
Tractor	Conduct Tractor Operations	RIIMPO315E

15.5 Cross-referencing Safe and Skilled Life Saving Commitments

Forestry organisations have endorsed a set of 12 behaviours to increase worker awareness and improve compliance with basic safety rules. This is part of the broader agenda of developing and attaining essential training standards across the industry.

The Code aims to improve the management of risk not only by raising worker awareness but also by emphasising the building blocks of a health and safety management system. The commitments have been cross-referenced to the structure and content of the Code in *Figure 21*.

Figure 21 – Health and safety management system references in Code

<p>Safe & Skilled</p> <p>ALWAYS speak up if you feel safety is being compromised</p>   <p>3.2 Consultation with workers 3.6 Communication at crew level 6.3.2 Induction 6.3.4 Supervision</p>	<p>Safe & Skilled</p> <p>ALWAYS assess the risk before starting work</p>   <p>4 Risk management in overview 6 Risk management essentials</p>	<p>Safe & Skilled</p> <p>ALWAYS ensure you are trained and competent to complete the task</p>   <p>6 Risk management essentials 6.2 Essential risk controls</p>
<p>Safe & Skilled</p> <p>ALWAYS wear a seat belt when driving or operating a vehicle or machinery, where fitted</p>   <p>12.2.1 Mechanical site preparation 8.3 Mechanical felling</p>	<p>Safe & Skilled</p> <p>ALWAYS isolate energy sources before working on vehicles, plant and equipment</p>   <p>8.3 Mechanical felling 11 In-field processing</p>	<p>Safe & Skilled</p> <p>ALWAYS ensure any load is secure throughout the journey</p>   <p>10.2 Loading</p>

Figure 21 (cont) – Health and safety management system references in Code

<div data-bbox="183 257 472 730">  <p>ALWAYS keep the required safe distance from hazardous operations</p>  </div> <div data-bbox="268 768 384 882">  </div> <p data-bbox="169 913 485 1003">6 Risk management essentials 6.2.2 Exclusion zones and safe work areas</p>	<div data-bbox="619 257 908 730">  <p>ALWAYS wear the required personal protective equipment for the job</p>  </div> <div data-bbox="703 768 820 882">  </div> <p data-bbox="600 913 927 1010">6 Risk management essentials 6.2.3 Safe work practices 15.2 PPE for forestry operations</p>	<div data-bbox="1051 257 1340 730">  <p>NEVER use a hand-held mobile phone while driving a vehicle or operating machinery</p>  </div> <div data-bbox="1134 768 1251 882">  </div> <p data-bbox="1043 913 1353 976">14.13 Driving to and from site 8.3 Mechanical felling</p>
<div data-bbox="183 1144 472 1617">  <p>NEVER tamper with or over ride safety features on vehicles, plant or equipment</p>  </div> <div data-bbox="268 1659 384 1774">  </div> <p data-bbox="196 1805 458 1868">6.2 Essential risk controls 6.3.1 Training</p>	<div data-bbox="619 1144 908 1617">  <p>NEVER work under the influence of drugs or alcohol</p>  </div> <div data-bbox="687 1659 804 1774">  </div> <p data-bbox="608 1805 916 1868">14.12 Drugs and alcohol 14.13 Driving to and from site</p>	<div data-bbox="1051 1144 1340 1617">  <p>NEVER work near hazardous trees</p>  </div> <div data-bbox="1134 1659 1251 1774">  </div> <p data-bbox="1043 1805 1353 1928">6 Risk management essentials 6.2.2 Exclusion zones and safe work areas 14.2 Hazardous trees</p>

15.6 Specialist felling techniques

15.6.1 Delimiting

Delimiting involves removing limbs and branches from a tree. This work can be done manually or mechanically.

Where done manually, the risk controls for manual felling in *Section 8.1* apply. Further measures include the following:

- Do not carry out delimiting or cross cutting from the downhill side of the log if the log has the potential to roll.
- Wherever practical, avoid standing on the log when delimiting or crosscutting.
- Approach all branches with caution, examine the branch to see if it is under tension, up or down, or bent sideways, and determine the correct method of work. Request machine assistance if in doubt.
- Cut overhung or suspended logs only using recommended methods (e.g. *Chainsaw Operators Manual and Tree Fallers Manual*).
- Do not crosscut logs suspended above shoulder height.
- In steep or undulating terrain, do not crosscut immediately above or below operations or people.

15.6.2 Machine-assisted manual tree felling

This task is considered high risk and should only be done by appropriately trained and experienced machine operators and fellers (see FWPHAR3213: Conduct Mechanically Assisted Tree Felling Operations, commonly referred to as 'machine assisted falling' or MAF). The machine operator and feller should be competent in this unit.

Before work starts, everyone involved must be consulted about the operation and agree to the sequence of events. The consultation must include an assessment of the tree to be pushed and surrounding trees for any visible hazards.

Machinery used in felling operations must:

- have the capacity to push or back-pull the tree safely
- be able to clear the under-storey around the tree and create a safe footing for the manual feller to work on
- have an operator protective structure (OPS) and falling object protective structure (FOPS) suitable for forestry operations
- have sufficient height reach and be able to safely control the felling direction of the tree.

Hazardous trees should be cleared from within two tree lengths of the tree to be felled.

The feller should always have control of the felling operation and be in radio and visual contact with the machine operator. There needs to be a degree of trust between the feller and operator.

15.6.3 Pushing

Where a machine will push the tree in a direction other than its natural lean, the machine should be placed in position before the feller approaches the tree.

The machine attachment to push the tree should be:

- in contact with the trunk of the tree with only enough push force applied to prevent the tree sitting back during the felling operation
- high enough above the ground that the machine can provide enough force to push the tree after the felling cuts are made.

When the machine is in position, the controls should be isolated to stop the machine or attachments from moving unexpectedly. Once the controls have been isolated, the tree feller may approach the tree and place the scarf cuts. The depth of the scarf should be approximately one-third of the tree's diameter and not exceed one-half.

After the scarf is removed, the feller should place a back cut in the tree but leave sufficient even holding wood to stop the tree moving backwards.

At no time while the back cut is being made should the machine operator apply extra force to the trunk of the tree, unless told to by the feller, as the tree may split or cap up.

Once the scarf cuts and the back cuts are done, the tree feller should leave the area by the safest route to a safe zone. This zone should be agreed between the feller and the machine operator before starting work.

The machine operator may then push the tree steadily and in a controlled way until it is committed to fall. If the tree will not fall, the machine operator should isolate the controls with the attachment still in contact with the tree trunk and ask the feller by radio to return to the tree and remove more hinge wood.

Once the tree feller removes more hinge wood, the tree feller should go back to the safe zone before the machine operator starts to push the tree again.

The feller should ensure the width of the hinge wood is not reduced below 5% of the diameter of the tree. If the hinge wood has been progressively reduced to 5% and the tree will still not fall, the feller should stop the operation and assess the risk of continuing.

15.6.4 Tree driving

This method involves felling a tree into one or more trees to bring those trees down. This is not a recommended method and should only be considered in very limited circumstances. These include:

- Tree is weakly lodged – i.e. lodged on one side of another tree or between two crowns held only by small limbs and the tree supporting the hang-up is not under great strain
- no suitable machine available to bring the hung-up tree to the ground.
- It is not reasonable to create an exclusion zone until a machine can be bought on site.
- Two accredited advanced fallers are available, one to do the work and the other to work as a spotter while the work is being done.

Further information can be found at this New Zealand Worksafe link

<https://www.worksafe.govt.nz/topic-and-industry/tree-work/tree-felling-one-onto-two-tree-driving-operational-guidance/>

More technical information on all these techniques can be found in the Tree Fallers Manual: Techniques for Standard and Complex Tree-Felling Operations published by ForestWorks.

15.6.5 Wind throw

Wind-thrown trees have been brought down by strong winds.

All the common risk controls of manual felling in *Section 8.1* apply (e.g. chainsaw safety). However, further measures are required because of the presence of partial or complete breaks, and of shatter and tension in trees that may be standing but weakened, leaning, or fallen.

The pattern and method of work may be dictated by the direction of wind throw rather than the topography, and this adds to the difficulty and dangers.

The following additional risk controls are recommended:

- Use mechanical methods of salvaging wind-thrown trees where practicable.
- Approach all trees with caution, and then examine the tree to see if it is under tension, up or down, or bent sideways, and determine the correct method of work.
- When a tree is resting on its roots, ensure the cut is such that nobody is in danger from movement of the stump or log.
- Uproot bent or heavy leaning trees with a machine. Where this is not practicable, use other safe systems of felling.

15.7 Tree climbing

When growing and managing forests, tree climbing may be necessary for tree measurement and seed collection activities. It is a specialist skill and the main risk is the potential to fall from height.



Planning

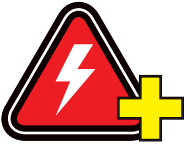

Part 4.4 of the WHS Regulations sets out obligations to manage risks of falling from one level to another where there is the likelihood of injury. For more information, refer to the Safe Work Australia approved Code of Practice *Managing the risk of falls at workplaces*.

The regulation states that if it is not practicable to eliminate the risk of falling, a hierarchy of controls must be followed. A fall prevention device (e.g. elevating work platform) is preferred, then a work positioning system (e.g. rope access system), and finally a fall-arrest system (e.g. individual fall-arrest system).

Before a climber begins a climbing activity, a written climber rescue plan should be developed and communicated to everyone involved.

If a fall-arrest system is used, emergency and rescue procedures must be maintained. In line with the WHS Regulations the practicability of an alternative to climbing should be examined in the risk assessment stage.

Tree climbing is carried out in an environment in which most of the **critical hazards** and **common risk factors** are present.



	<p>The following activity-specific hazards need to be considered:</p> <ul style="list-style-type: none"> ▲ Falls from height ▲ Ants, bees, wasps, snakes, and other biting or stinging hazards ⚠️ ▲ Adjacent trees, dead limbs, and intertwining branches ⚠️ ▲ Working near power lines ⚠️
	<p>The following activity-specific factors also need to be considered:</p> <ul style="list-style-type: none"> ● Individual tree integrity, including: <ul style="list-style-type: none"> – age and species – health – condition of the crown – decay – proximity of other trees ● Nature of adjacent operations ● Expected weather conditions




Risk controls for tree climbing are outlined below. They apply if an assessment shows that eliminating the risk is not reasonably practicable.

For example, a risk assessment might show that elevating work platforms cannot be used safely in the terrain or remote sensing technologies (e.g. laser scanning and photogrammetry) for tree measurement are impracticable because of the nature of the species and forest.

These options should be considered in other circumstances.

The **essential risk controls** are all relevant to tree climbing.

	<p>Activity-specific controls are listed below:</p>
 <p>Safe climbing practices</p>	<ul style="list-style-type: none"> ● Assess the tree to determine whether it is suitable for climbing and whether extra precautions or special techniques are required ● Assess the weather conditions to determine if it is safe to climb ● Ensure tree climbing is only done by workers who hold a statement of attainment for the relevant unit of competency (see <i>Section 15.4</i>) – in particular: <ul style="list-style-type: none"> – AHCARB319: Use Arborist Climbing Techniques – AHCARB318: Undertake Aerial Rescue ● Ensure a minimum of two people are present: <ul style="list-style-type: none"> – one climber – one ground worker who is also assessed as competent to the above units and able to climb if the first climber is injured and unable to descend the tree ● If a climber must disconnect the climbing rope or strap to move by an obstacle, use a second climbing rope or strap to ensure continuous protection while passing the obstacle ● Ensure no more than one climber is working in a tree (in most situations, this is the safest method)

 <p>Climbing equipment</p>	<ul style="list-style-type: none"> ● Use an approved tree climbing harness conforming to AS/NZS 1891.1:2020 <i>Personal equipment for work at height – Part 1: Manufacturing requirements for full body combination and lower body harnesses</i> and AS/NZS 1891.4:2009: <i>Industrial fall-arrest systems and devices – Part 4: Selection, use and maintenance</i> ● Check all climbing equipment for safety and ensure it is in good condition before use and throughout the day ● Ensure the climber uses: <ul style="list-style-type: none"> – a safety belt – a climbing rope or strap – climbing spurs ● If a climbing rope or strap could be severed in the conditions at a climbing work site, ensure: <ul style="list-style-type: none"> – the rope or strap is made of material that cannot be severed – the climber uses a second climbing rope or strap ● Correctly set and visually inspect all points of attachment before placing weight on them (e.g. knots correctly tied and checked, and carabiners are closed and locked) ● Ensure anchor points are healthy, sound, and suitably strong ● Position anchor points in such way that a slip or fall would swing the worker away from power lines or other potential hazards ● Make a duplicate set of climbing equipment available for immediate use at the climbing work site for emergency rescues
 <p>Exclusion zones and safe work areas</p>	<ul style="list-style-type: none"> ● Maintain a separation distance of more than two tree lengths between the climbing activity and other operations such as tree felling or road construction ● Establish a safe zone underneath the climber ● Ensure safety observers confirm safe separation distances from overhead power lines.
 <p>Communication</p>	<ul style="list-style-type: none"> ● Establish communication methods between the two workers before work starts ● Provide access to a mobile phone or other reliable communication device for any emergency calls

16 GLOSSARY

All-terrain vehicle (ATV) – vehicle, usually with four wheels, designed to handle a wider range of terrains than most vehicles. The term includes side-by-side ATVs (also known as light utility vehicles) and quad bikes (four-wheeled motorbikes).

AS/NZS – Australian/New Zealand Standard, described by numerals and a title, published by Standards Australia and Standards New Zealand, including any replacement or amended editions.

Competent person – person with sufficient knowledge and skills acquired through qualification, training, or experience to perform the task to which the term relates.

Contractor – person engaged by a PCBU to perform specific work usually described in a written agreement. A contractor has the duties of a worker but may also hold PCBU responsibilities to any workers they engage.

Coppice – regrowth of new stems from an existing root system following harvest.

Coupe – area of forest of variable size, shape, and orientation, on which harvesting takes place, usually to be harvested and regenerated over one or two years.

Driving trees – felling a tree into one or more trees to bring those trees down.

Exclusion zone – designated area from which everyone except the operator is excluded, established by using separation distances (usually two tree lengths), setting up physical barriers, or scheduling activities at different times.

Falling object protective structure (FOPS) – structure attached to, or forming part of, mobile equipment to reduce the possibility that an operator seated in the driving position will be harmed if an object falls onto the equipment.

Feller (faller) – person who cuts or chops a standing tree or part of a standing tree to bring down that tree.

Felling – cutting, chopping, pushing, or pulling down a standing tree or part of a standing tree, or bringing down a tree using explosives.

Forestry operations – all activities necessary for establishing, maintaining, harvesting, and processing wood products within WA forests.

Forwarding – extracting logs from the logging area using mobile plant that carries the logs clear off the ground.

Hazard – something in the work environment that has the potential to cause harm to the health and safety of people.

Hazardous chemical – any substance, mixture or article that satisfies the criteria of one or more hazard classes in the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), as modified by Schedule 6 of the WHS Regulations.

Health – physical and psychological health.

Health and safety management system – methodical way of managing, documenting, and verifying how risk is managed by a PCBU.

Note that different terms – such as safety management plan, safety system, and safety plan – may be used to describe a health and safety management system.

Health monitoring (of a person) – monitoring a person to identify changes in their health status because of exposure to certain substances.

Lashing – load fastening device that restrains loads, such as a chain, cable, rope, or webbing.

Log – tree segment suitable for subsequent processing into sawn timber, pulpwood, chip wood, or other wood products.

Log landing – area such as a log dump, skidway, or log yard used for the cutting up, debarking, measuring, or sawing logs.

Manual felling – felling of a tree by a method that requires the feller to stand at the base of the tree.

Must – modal verb that denotes a mandatory requirement of the WHS Act or the *Workplace Health and Safety Regulations 2022*, giving no other option than to do what the clause requires.

Notifiable incident – incident involving the death, serious injury or illness of a person, or a dangerous incident that is notifiable under Part 3 of the Act.

Operator protective structure (OPS) – structure attached to equipment to protect the operator from flying objects intruding into the machine.

Person conducting a business or undertaking (PCBU) – person or entity, usually the employer, who has the primary duty of care under the WHS Act to ensure the health and safety of workers and others at the workplace, so far as is reasonably practicable (PCBUs can include sole traders, corporations, associations, and partnerships).

Plant – any machinery, equipment, appliance, container, implement, or tool, including:

- any component of any of those things
- anything fitted or connected to any of those things.

PPE – the abbreviation for personal protective equipment. Refer to *Section 15.2* for details.

Risk – chance (or likelihood) that a hazard will cause harm to the health and safety of people.

Risk assessment – way of estimating the nature and level of risk.

Risk control – prevention measure that eliminates a workplace health and safety hazard or risk, or if this is not reasonably practicable, reduces the risk so far as reasonably practicable.

Road – path or way with specially prepared surface, used by vehicles or pedestrians.

Rollover protective structure (ROPS) – system of structural members on mobile equipment that reduces the possibility of a seat-belted operator being crushed if the equipment rolls over.

Safe work area – designated area outside another operator's exclusion zone, established using distance, physical barriers, or time. For example, a safe work area might be an area on a log landing where maintenance happens, where a log truck driver is located during loading, where a choker setter stands before signalling the turn to be hauled, or where logs are measured.

Side Wash – the use of trees, stumps, ground or other objects to change the direction of the steep slope machine's tether line

Site safety plan (SSP) – written plan developed to protect the health and safety of workers, visitors, contractors, and other individuals at a specific forestry operation work site.

Skidding – pulling a log to a landing by wheeled skidders, bulldozers or tracked loaders.

Snigging – pulling a log by wire, rope chain or grapple.

Statement of attainment – formal certification in the vocational education and training sector by a registered training organisation that a person has achieved:

- part of an Australian Qualifications Framework (AQF) qualification, or
- one or more units of competency from a nationally endorsed training package, or
- all the units of competency or modules in an accredited short course.

Substance – any natural or artificial substance, whether a solid, liquid, gas, or vapour.

Thinning – felling and removal of part of the forest crop.

Unit of competency – nationally agreed and recognised statement of the skills and knowledge required for effective performance in a particular job or job function. Units identify the skills and knowledge as outcomes that contribute to the whole job function. They are an endorsed component of training packages.

Visitor – person who is not directly employed or engaged at the workplace and enters the workplace.

Widow maker – limb or branch of a tree that may unexpectedly dislodge from a tree and presents a high risk of injuring a person.

Worker – person who carries out work in any capacity for a person conducting a business or undertaking, including work as:

- an employee
- a contractor or subcontractor
- an employee of a contractor or subcontractor
- an employee of a labour hire company who has been assigned to work in the business or undertaking
- an outworker
- an apprentice or trainee
- a student gaining work experience
- a volunteer
- a person of a prescribed class.

The person conducting the business or undertaking is also a worker if they are an individual who carries out work in that business or undertaking.

Workplace – 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. A workplace could be a vehicle, vessel, aircraft, or other mobile structure on land or water.

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Steering committee members

Contractors

Bernie Dawson, Dawson Contracting (Chair)
Shawn Smeathers, Southwest Haulage
Jeff Loton, Plantation Logging
Brett Waugh, Southern Forests Services
Damien Benson, Total Harvesting

Forest Owners / Managers

Murray Anning, Australian Bluegum Plantations
Justine West, Forest Products Commission
Alan Seymour, Forest Products Commission
Stewart Tutton, PF Olsen
Kees Visser, Simcoa
Matt Giles, WAPRES

Processors

Brad Barr, Wespine
Chaz Newman, WAPRES

Others

Dan McCaig, AWU
Bill Towie, Towie Timber Training
WorkSafe WA, as observers

Project Manager

Adele Farina, Chief Executive Officer of FIFWA and Beth Johnston of FIFWA's Communication Officer

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