Tree Lopping

Document no.	Work description
SMS-06-SW-0261	Safety requirements for amenity tree lopping and pruning, trimming, repairing, maintaining, transplanting and removing trees and for wood chipping, stump grinding.
	Scope This guide also provides advice on selecting the right systems of work, the right personnel and the right equipment. Key practices within the amenity tree industry and common hazards of tree work are identified to provide a starting point for the development of SWMS/SWIs. This SWI is to be read in conjunction with, and in addition to the Tree Lopping guide.
Review date	**References** • OHS Reg 2001 • WorkCover CoP: Amenity Tree Industry • AS 4373:1996 Pruning of Amenity Trees • AS/NZS 4488 Industrial rope access systems • SMS-06-GD-0240 Working at Heights • SMS-06-GD-0241 Fall Arrest Systems • SMS-06-GD-0250 Tree Lopping • SMS-06-SW-0256 Fall Arrest Systems (Harnesses, Lanyards and Attachment Hardware) • SMS-06-SW-0257 Fall Arrest Systems (Industrial Rope Access) • SMS-06-SW-0262 Tree Service Chainsaws • SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms • SMS-06-SW-0269 Electric Shock Protocol • SMS-06-SW-0277 Work on or near Overhead Lines and Cables • SMS-06-SW-0310 Elevating Work Platforms

Responsible supervisor *Insert name in BLOCK letters*	PPE and precautions	Competencies or qualifications	Licences or permits required
	See below	Industrial rope access workers must hold a current certificate of competency issued by a relevant industry association (e.g. IRAA, IRATA, etc)	Licence to operate chainsaw issued by State Forests

Tools and equipment required

See below

IF CONTROL MEASURES ARE NOT SUITABLE AND MAJOR CHANGES ARE NEEDED, CONDUCT A RISK ASSESSMENT AND DEVELOP NEW CONTROLS ACCORDING TO SMS-06-PR-0104 WORKPLACE RISK MANAGEMENT.

Planning	Before work starts, a competent person is to be nominated to plan and control the work. This person is to consult with the personnel who are doing the work (or their representative) about work safety. When planning the work, the nominated competent person is to develop and implement Safe Work Method Statements (SWMS) in accordance with the Safe Work Methods Statement and Safe Work Instruction procedure. Key issues to consider include: • the equipment needed to do the work safely, and its availability • the experience, fitness and skills needed by the personnel doing the work • the number of personnel needed to do the work safely, particularly taking account of work site safety in public places • the control of pedestrian and vehicular traffic • the location of above and below ground services • the size of the area to be designated as a safe working zone.

General safety

Risks are different on every site and are to be eliminated if possible. If it is not practical to eliminate risks, they are to be reduced to as low as reasonably practicable (ALARP). The issues to be addressed include:

- **fitness** - Tree workers and their supervisors are to be physically fit and mentally alert, and are **not** to work if they are under the influence of alcohol or non-prescribed drugs
- **first aid** –Suitable first aid kits approved by WorkCover are to be available on site and at least one person on site must have a current first aid certificate
- **emergency procedures** - Documented emergency procedures are to be kept on site at all times. All personnel on the site must be familiar with the emergency procedures and have any necessary training
- **traffic control** - Effective means for the control of pedestrian and vehicle traffic are to be established on every job site where necessary
- **training and instruction** - Before work starts, the nominated competent person must make sure that all personnel doing the work are adequately trained and have been given specific instructions on how to do the work safely
- **flammable liquids** - such as petrol - are to be stored, handled and dispensed from approved containers or safety cans. Appropriate precautions are to be taken if there is a risk of fire; for example, when cutting trees in bushland. These precautions include the provision of fire extinguishers.

When using petrol powered equipment:

- stop the equipment before refuelling
- remove any spilt fuel before restarting the equipment
- do not operate the equipment within three metres of a refuelling area.

PPE

Personal protective equipment (PPE) is any equipment which a person uses to protect them from a risk of illness or injury and can include the following:

- head and eye protection - all personnel engaged in amenity tree work are to wear head and eye protection
- noise - excessive noise levels can occur when using machinery such as chainsaws, woodchippers and stump grinders. Information about the noise rating of all equipment is to be available to employees. Hearing protection is to be worn if it is not practicable to reduce the noise of a machine.
- leg protection such as cut-resistant trousers or chaps are to be worn where appropriate
- high visibility clothing is to be worn where appropriate
- all personnel engaged in tree work are to wear strong footwear, preferably steel capped with ankle support and deep non-slip tread
- climbers and chainsaw operators are to wear cotton or natural fibre clothing in preference to synthetics
- sun protection including SPF15+ sunscreen, long sleeved shirts and hats are to be worn
- clothing and footwear is to be appropriate to the work location and conditions. Avoid loose clothing.

Electrical safety

Special precautions are to be taken when work is done in the vicinity of powerlines whether they are overhead or underground. The same applies to work done near any electrical conductor or electrical apparatus or plant such as a transformer or sub-station. Refer to the Work on or near Overhead Lines and Cables SWI.

- the "danger zone" is a defined zone around a powerline, electrical conductor, cable or electrical apparatus. The minimum clearance or safe working distance which defines the boundary of the zone depends on the voltage of the powerline or conductor.
- identify the supply authority:
  - the type and the operating voltage of the cable is to be established where work has to be carried out in the vicinity of live powerlines or other electrical conductors or apparatus. If there is any doubt, the relevant electricity supply authority or the owner of the cable is to be contacted.
  - before doing any electrical hazard tree work, the relevant authority is to be contacted to make sure that suitable arrangements can be made for the work to be carried out safely and without risks. This is to be done even in cases of emergency and in storm situations.
  - where the work involves excavation, stump removal or installation of root barriers, the relevant authority is to be contacted to identify and locate any underground mains that may be nearby.
- no-one is to work inside the ‘danger zone’ or do any electrical hazard tree work unless the following conditions are met:
  - the person doing the work is appropriately trained
  - an observer is present while the work is being done.
- emergencies - special procedures are to be developed whenever an electrical accident or incident happens or someone receives an electric shock and becomes disabled. Refer to the Electric Shock Protocol SWI

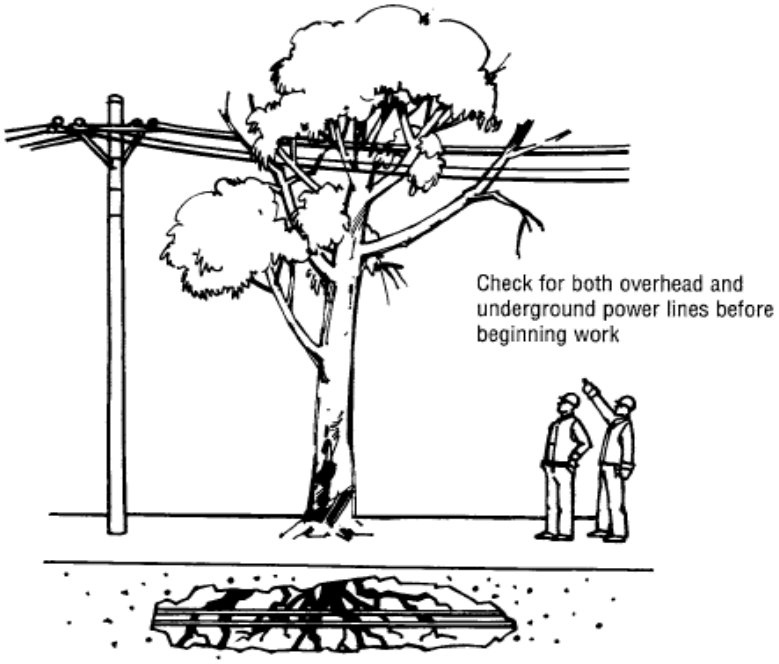

Figure 1 **Check for powerlines**

Elevating Work Platforms (EWP)	The general requirements defined in the Elevating Work Platforms SWI are to be followed when using EWPs for Tree Lopping: • major hazards associated with EWPs include overhead electrical conductors, underground services, roadways, traffic, sloping and soft ground • correct tyre pressure is critical for stability of EWPs when outriggers are not being used. If outriggers are required for stability, they are to be engaged before operating the boom.
Chainsaws	The general requirements defined in the Tree Service Chainsaws SWI are to be followed. In addition, however, when using chainsaws for Tree Lopping the following are to also apply: • chainsaws used on the ground are to be started on the ground. They are to not be drop started. Chainsaws may be started while being held between the knees • the chain saw is to be warmed up on the ground, then stopped before being sent up to the climber • when working in a tree, chainsaws can be drop started • when using a chainsaw in an EWP, the saw is to be started outside the bucket and is to be attached to the operator or the bucket by a tool strop with a weak link.
Wood chippers	Before using a woodchipper the operator is to check that: • the machine has been properly maintained • guards are securely in place • blades are sharp and secure • the safety trip works • the feed chute or feed table of the wood chipper has sufficient height on its side members to prevent the operator coming into contact with the blades or knives during operation • the outer edge of the chute is at least 1450 mm from any moving part in which the operator could be entangled • the woodchipper is used according to the manufacturer's specifications and instructions. The operator is to wear appropriate PPE such as head and eye protection and hearing protection. Loose clothing is **not** to be worn because it could be drawn into the machine. When using a woodchipper, the operator is **not** to: • expose the chipper rotor or disc while it is moving, for example by lifting the chute • allow anyone to walk in front of the discharge chute while the disc or rotor is moving. Wood chippers are to be fed from the side of the centre line. The operator is to immediately turn away from the feed table when the brush is taken into the rotor.

Stump grinders

The operator is to wear appropriate PPE such as eye protection and hearing protection. Loose clothing that could be drawn into the machine is **not** to be worn. When using the stump grinder or root pruner, the operator:

- is to be trained and competent in the use of the machine
- is **not** to leave the controls while the cutting wheel is moving
- is to avoid working down hill from the machine wherever possible
- is to make sure that the cutting wheel is not moving before cleaning excess grindings away from the grinding area.

The operator is to consider:

- all workers in the vicinity of the grinder
- using a protective screen around the stump as a preventative measure
- that noise generated by the grinder can place other workers at risk
- manual handling aspects of the job because the grinder itself, and the size, shape or position of the stump, can lead to difficulties in positioning and operating the machine.

Before stump grinding or root pruning check:

- services - dial before you dig around the stump
- for loose stones, pipes, concrete or other debris around the stump
- that the stump grinder guards are securely in place
- that the teeth on the cutting wheel are sharp and secure
- that the safety trip works.

Climbing equipment

Climbers are to be trained in the use of climbing equipment.

Mechanical climbing attachments or devices such as ascenders, descenders or karabiners are:

- not be used if they have been dropped
- to have a built in safety catch to prevent accidental release from the rope.

Ascending devices are to be self-locking. Descending devices are to be self-locking or used with another device which is self-locking.

All climbing equipment is to be thoroughly inspected before use to make sure that it is in a serviceable condition and that it is safe to use. Rope is not to be used if it is:

- damaged
- defective
- made unsafe by wear and tear, or for any other reason.

Rope ends are to be sealed, spliced or whipped to prevent fraying or unravelling. The breaking strain and the safe working load are to be calculated before use.

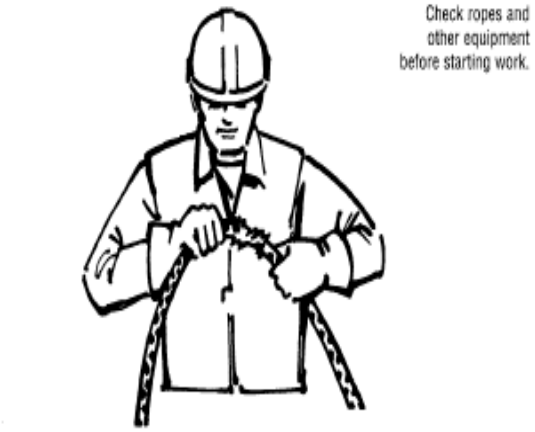

Figure 2 **Check ropes before starting work**

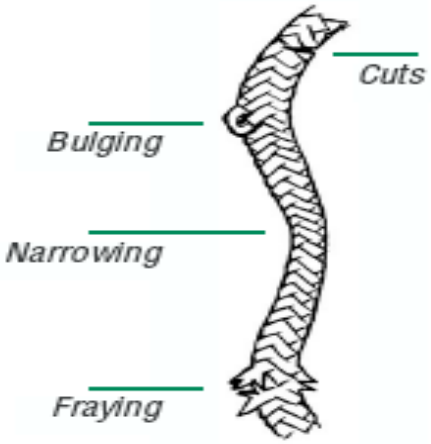

Figure 3 **Rope defects**

Climbing equipment

Climbers are to be trained in the use of climbing equipment.

Mechanical climbing attachments or devices such as ascenders, descenders or karabiners are:

- **not** be used if they have been dropped
- to have a built in safety catch to prevent accidental release from the rope.

Ascending devices are to be self-locking.

Descending devices are to be self-locking or used with another device which is self-locking.

Climbing rope

Climbing ropes are to meet the following minimum requirements:

- minimum diameter of 11 mm
- minimum breaking strain of 3000 kg
- made from nylon and/or polyester fibres
- three-strand, plaited, braided or kermantle construction.

Climbing ropes are **not** to be:

- used for any purpose other than to support a climber
- spliced to make a repair or to lengthen.

Lowering ropes

When determining the size of the rope to be used consider:

- the weight of the branch
- the distance it free falls until the load is arrested.

As a rough measure, a branch more than doubles in weight for every metre it falls.

Lowering ropes are to not be joined to extend their length unless consideration has been given to:

- the compatibility of the ropes
- the method of joining and the correct knot
- the lowering system being used (including pulleys and other devices)
- the compatibility of the join with the lowering system, so that the join is able to pass through the system without impeding or compromising the system.

Climbing spikes

Only use climbing spikes:

- with a work positioning harness and associated equipment
- designed for tree climbing
- that are adjusted to suit the leg-length of the climber using them.

Spikes are to be properly maintained and stored.

Harnesses

Harnesses are to be used and maintained in accordance with:

- Working at Heights guide,
- Fall Arrest Systems guide
- Fall Arrest Systems (Harnesses, Lanyards and Attachment Hardware) SWI.

Work positioning harnesses are **not** to be used if there is a risk of a free fall of more than 600 mm.

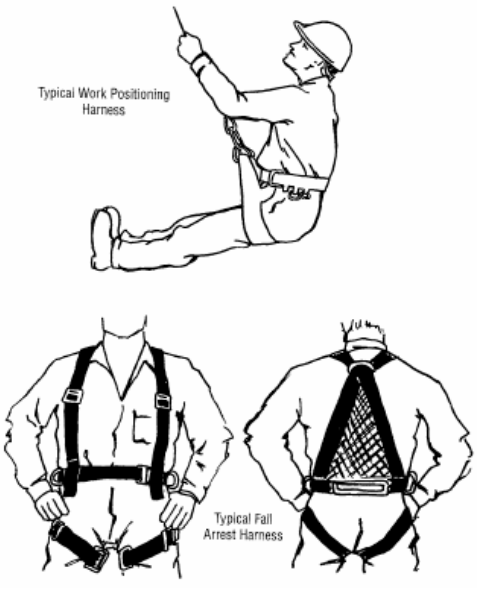

Figure 4 Harness types

Climbing equipment cont	**Ladders**	If it is necessary to work from a ladder, the requirements of the Portable Ladders, Stepladders and Step Platforms SWI are to be followed. When using a ladder: • to access a tree, a climbing harness and system are to be used • the climber is to establish a suitable anchor point before leaving the ground • the ladder is to be steadied by a ground worker and be removed once the climber leaves it • the ladder is to be significantly taller than the branch being cut to allow for any sudden upwards movement of the branch after it is cut.

Climbing	An accepted climbing system is to be used. Defective climbing equipment is to be identified, labelled as defective and destroyed. A climbing rope is to: • have a stopper knot tied at the loose end. A bowline is **not** to be used in any part of the climbing system unless a stopper knot is used • be passed around a structurally sound anchor point which has sufficient strength to allow for a safe working load • be kept taut at all times. Climbers are to be attached to the tree at all times including when changing positions or attachment points. The anchor point is to be above the work area or as close as possible to it. It is to provide the safest working angle and position. If the tree does not have suitable natural anchor points (eg palms and other trees with similar growth habits), use alternative methods of access or artificial points of attachment.	 **Figure 5 An anchor point is to provide the safest working angle and position**

Work in trees	Before anyone starts work in a tree: • set up and maintain a safe working zone • make sure that ground staff prevent any pedestrian traffic or vehicles from entering the zone. When transferring equipment to the climber in the work position, make sure that the equipment does not inadvertently cause damage to ropes. If a climber carries equipment, make sure that the total weight of the climber and the equipment is within the safe working load of the climbing system. When working with equipment in a tree, a climber is to have two points of attachment. When working near electrical conductors, an anchor point which would cause the worker to swing into the conductors or any other hazards is not to be selected. A clear warning is to be given to ground workers that a branch is going to be cut, dropped or lowered. Only appropriate knots are to be chosen. Lowering ropes are to be attached to branches that cannot be dropped safely or that are too heavy to be controlled by hand. If necessary an additional pull rope is to be attached to help steer the branch to the ground. The climbing rope is never to be used to lower branches. Cut branches are never to be left hanging in a tree.

Cliff and difficult sites	Tree workers may need to work on difficult sites such as cliff faces, steep slopes and retaining walls. On these difficult sites the practices set out in the sections on ‘Climbing’ and ‘Work in Trees’ in this SWI, are to be followed. Reference is to also be made to the Fall Arrest Systems (Industrial Rope Access) SWI. If rope is being used for support, two independent ropes can be required in some cases.

Ground work

Ground workers are responsible for:

- setting up and maintaining a safe working zone and controlling traffic
- communicating with climbers
- keeping the climber's rope free of debris and entanglements
- providing the climber with equipment
- helping to lower branches and equipment
- helping the climber to assess anchor points and work systems
- keeping the site clear of debris.

Ground workers are:

- **not** to wrap ropes around any part of the body
- **not** to stand under a load
- **not** to stand in the direct line of a tensioned winch cable or tow-rope
- to make sure that the lowering ropes are long enough
- to maintain visual and verbal contact with the climber and maintain visual contact with any loads being lowered or raised
- to determine the working load limit before winching, lifting or lowering a load
- to use lowering devices and systems when handling loads.

Felling

When felling a tree a safe working zone is to be set up and maintained.

The safe working zone is to:

- extend for at least twice the height of the tree
- be cleared of any debris and an
- include an identified escape route for an area 45^0 behind the line of fall of the tree.

Trees are **not** to be felled by means of powered mobile plant unless a risk assessment has determined that risks have been controlled.

Mobile plant is to be appropriately guarded and operated by a competent person.

A competent person is to be nominated to control the work and assess the risks.

Risk assessment is to consider:

- the soundness of the tree
- the shape and weight distribution of the canopy
- the presence of hangers in the canopy
- the lean of the tree
- the wind force, direction and consistency of wind
- the proximity of the tree to services such as overhead powerlines
- the nature of the terrain
- the location of structures, people and traffic

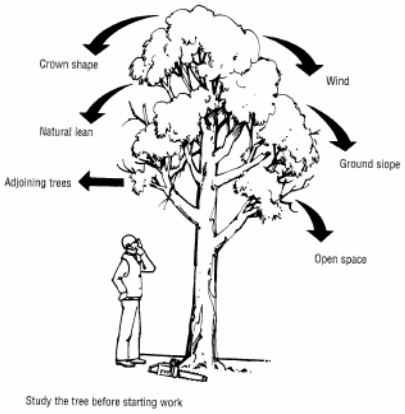

Figure 6 **Study the tree before starting work**

Figure 7 **Prepare an escape route when felling a tree**

Limbing and bucking

The tree worker is to stand on the uphill side of the work.

Any log that might roll is to be chocked into position.

Make sure that workers are aware of tension and compression factors.

Training	Before working at heights, RailCorp Employees and Contractors are to be properly trained in:
	• the method of working at heights to be used
	• an understanding of the particular task requirements and any hazards and risks involved
	• correct selection, fitting, use, care and storage of:
	  - fall prevention systems and arrest equipment
	  - personal protective equipment
	  - tools and equipment to be used
	• procedures in the event of an emergency such as rescue, accident or injury.
	Users of fall arrest systems and equipment are to be trained and assessed as competent before being allowed to work without direct supervision in accordance with training requirements defined in the Working at Heights guide.
	Line Managers are to make sure that employees are properly trained and possess the above competency.

Additional controls