

ISSC Guide 34

Height safety in the NSW electricity supply industry

April 2026

Contributions

In the development of this Guide, discussions were held with the following parties:

Network Operators:

Ausgrid

Sydney Trains

Endeavour Energy

Metro Trains Sydney

Essential Energy

Parklife Metro

Transgrid

Regulator: Department of Climate Change, Energy, the Environment and Water (DCCEEW)

The Guide was revised by a working group which consulted with all relevant stakeholders and was subsequently endorsed by the Industry Safety Steering Committee during a 2026 review.

Disclaimer

While due care has been exercised in compiling this guide, much of the content has been sourced from outside the Electricity Industry Safety Steering Committee (ISSC) working group formed to compile the guide. Therefore, the working group cannot accept responsibility for the content.

This guide is designed on the basis that it will be used in its entirety, and people who use or observe parts of the publication without paying heed to its entirety do so at their own risk.

The guide has been prepared on the basis that the user will have a certain minimum level of technical qualifications or experience. The guide is not intended for use by untrained or unqualified people and anyone in that category using the guide does so at their own risk.

This guide does not ensure compliance with all the relevant statutes and regulations such as occupational health and safety laws. Users must satisfy themselves as to the requirements of all relevant laws.

Preface

This Guide was prepared by a committee drawn from the NSW Electricity Supply Industry to assist in the development of Network Operators' Network Management Plans required under the Electricity Supply (Safety & Network Management) Regulation 2014 (The Regulation).

Where practicable, the Guide cites Australian Standards as the basis of a specification and, where no Australian Standards exist, it cites relevant International Standards. All Standards cited in this Guide are listed in the reference section at the end of this document.

Where no relevant Australian or International Standard exists, current Industry practice has been provided as guidance. The Guide's purpose is to ensure the safety of electrical personnel. It is not intended that it be used to inhibit innovation where it enhances work practices and worker safety.

This Guide does not substitute for, or override, any legislation or regulation enacted by

jurisdictional Regulators or safety rules implemented by Network Operators. The ISSC will monitor the use and impact of this Guide and, consequently, may review and amend it from time to time.

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1 Scope

This Guide has been prepared to provide industry specific guidance in the design of safe systems of work. It is for Network Operator personnel, contractors, accredited service providers and any other people accessing and working on or near NSW electricity network assets (network assets) where a fall hazard exists. These assets include all relevant infrastructure, including but not limited to:

- overhead structures, wires and associated cables
- substation structures and equipment
- communication infrastructures
- underground structures.

The guide interprets the framework consistent with relevant standards and codes. These are listed in the reference section at the end of this guide.

This Guide also documents the principles to be used for the development of safe fall protection systems. It documents an industry specific position for height safety issues where general or electricity supply industry standards, guides and regulations do not provide sufficient guidance.

This Guide is not intended to be used as the sole reference by people on or near network assets.

2 Revision

Date - Revision	Changes
<p>June 2009</p> <p>ISSC 34 Guide for Height Safety within the NSW Electricity Supply Industry</p>	<p>First Edition</p>
<p>June 2013</p> <p>ISSC 34 Guide for Height Safety within the NSW Electricity Supply Industry</p>	<p>Minor revisions to Standards and codes referenced.</p>
<p>April 2026</p> <p>ISSC Guide 34 – Height safety in the NSW electricity supply industry</p>	<p>Extensive review including:</p> <ul style="list-style-type: none"> • Included Metro Trains Sydney and Parklife Metro in Guide 34 working group. • Merged information from ISSC Guide 29 Pre-climbing and climbing assessment of poles into ISSC Guide 34 and decommission Guide 29. • Removed duplication with other industry documents such as SafeWork Codes of Practice to minimise risk of conflicting information. • Aligned with current electricity network practices and procedures. • Updated to align with current Australian standards, SafeWork codes of practice and other reference documents.

3 Regulatory basis

This Guide supports the New South Wales Electricity Supply Industry in the prevention of workplace injuries and fatalities of people working at height on their electricity networks, which is consistent with the intentions of the:

- *Work, Health and Safety Act 2011*
- Associated NSW SafeWork codes of practice
- *Electricity Supply Act 1995*
- Electricity Supply (Safety and Network Management) Regulation 2014
- Network Operator’s Electricity Network Safety Management System (ENSMS).

4 Definitions

Adjustable lanyard – A lanyard incorporating a length adjusting device. (AS/NZS1891.1)

Competent person – A person who has acquired through training, qualification or experience, or a combination of them, the knowledge and skills to carry out that task.

Neutral/non-critical axis of pole –The neutral axis of a pole is an imaginary line, drawn through the pole where the timber fibres are neither in tension (being stretched) nor compressed.

Annexure A - Critical axis of poles

Critical axis examples:

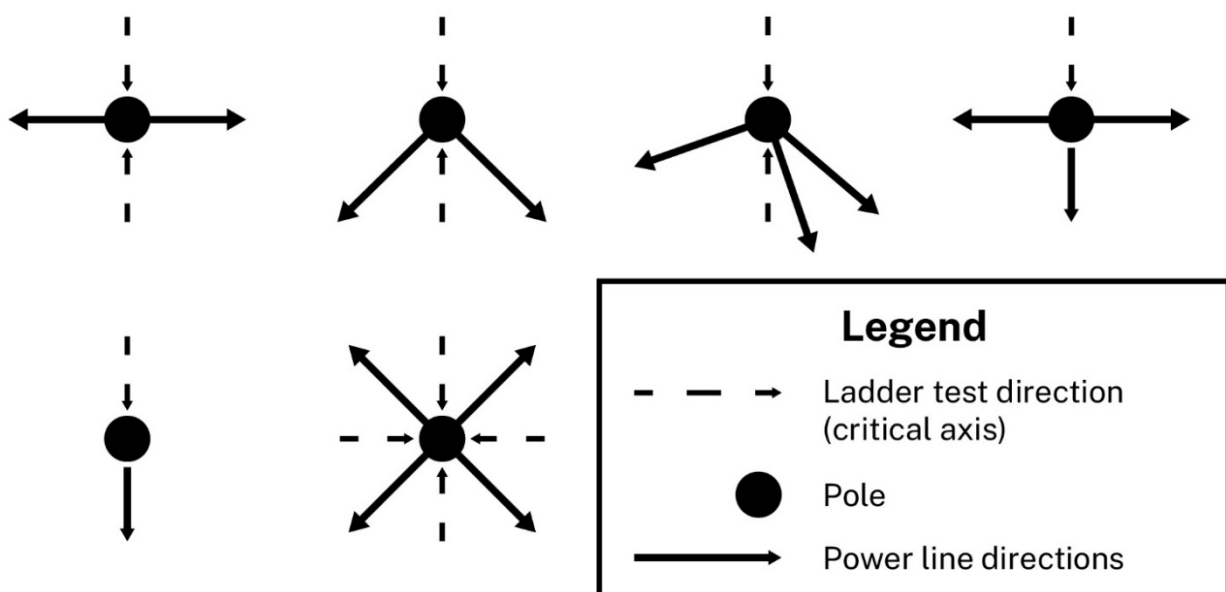


Figure 1 Critical axis of poles

Drop zone – The area where it may be reasonably assumed that material falling from aerial works will impact.

EWP - Elevating Work Platform

Free fall distance – When attached to a fall protection system it is the potential vertical distance that the attachment point on the harness could travel prior to the system commencing control of the fall. When not attached to a fall protection system it is the distance from the level on which the person is standing to the lowest point below to which it is reasonably foreseeable that the person could fall.

Fall protection system – A system which will eliminate a fall or reduce the consequences of a fall.

Fall arrest – A fall or the arrest of a fall where the fall distance before the fall-arrest system begins to take any loading is more than 600 mm. This distance is either vertically or on a slope on which it is not possible to walk without the assistance of a handrail or hand line. (AS/NZS 1891.1)

Fall restraint – A fall or the arrest of a fall where the person suffering the fall is partially restrained by a restraining device such as a pole strap under tension in accordance with AS/NZS 1891.1

Lanyard – An assembly of a line and components which enables a connection between a harness and an anchorage, and which will absorb energy in the event of a fall. (AS/NZS 1891.1)

Limited free fall, limited free fall arrest – A fall or the arrest of a fall either vertically or on a slope on which it is not possible to walk without the assistance of a handrail or hand line where under reasonably foreseeable circumstances the fall distance does not exceed 600mm. (AS/NZS 1891.1)

Pole strap – A fall restraint and work positioning strap designed to be placed around a pole or other vertical structural member and attached at 2 points, one on each side of a harness whilst the wearer is working on the pole. (AS/NZS 1891.1)

Restraint – The control of a person's movement by means of a combination of a harness, a lanyard and an anchorage which will physically prevent the person from reaching a position at which there is a risk of a fall. (AS/NZS 1891.4)

Restraint technique – A technique using adjustable fall arrest rated equipment which focuses on not allowing a fall.

Shall – Indicates that the statement is mandatory.

May – Indicates a recommendation.

Total fall distance – When attached to a fall protection system it is the maximum potential vertical distance that the attachment point on the harness will travel when all energy absorption elements have fully extended.

Work attached – Climbing and or working while using a fall protection system at all times.

Work positioning – Use of a system that enables a person to work supported in a harness in tension in such a way that the risk of a free fall or limited free fall is eliminated or suitably

controlled/ minimised. (AS/NZS 1891.1)

5 Principles

5.1 System design

Designs for electricity network assets must ensure safe access, egress and working at height throughout the asset's lifecycle, including installation, maintenance and removal.

Considerations shall include but shall not be limited to:

- the hierarchy of controls for height safety
- access to work positions
- work activity requirements. For example, frequency/likelihood of activity, duration of activity
- adopting appropriate features into the asset design (for example, anchorage points, defined ladder points, platforms.)
- appropriate emergency and rescue plans
- minimum height safety equipment requirements.

Fall protection systems shall be implemented in all instances when working at or above a height of 2 m.

These factors may justify using alternative height safety systems not detailed in this Guide, provided they do not increase injury risk. Implementation may vary between organisations based on local conditions. The Guide does not restrict the development or adoption of improved height-safety systems.

5.2 Observer

The safety observer must be used whenever the work activity is likely to be performed in the vicinity of live overhead electrical equipment. The safety observer is a person specifically assigned the duty of observing the work in the vicinity of live overhead electrical equipment. They warn personnel working at heights to ensure the approach distances are being maintained and warn of any other unsafe conditions.

The safety observer must work in accordance with the SafeWork NSW Code of Practice for managing the risk of falls at workplaces and the SafeWork NSW Code of Practice work near overhead powerlines. They must also work in accordance with the Network Operator's safety procedures. Observers shall hold the requisite training, including UETDREL005 – Work safely in the vicinity of live electrical apparatus.

5.3 Systems based approach

A systems-based approach shall be adopted in the management of working at heights. The system shall address:

- Management - Site hazards and site management.
- Operators - Operator skills appropriate for the level of works they are undertaking –

including proper supervision.

- Equipment - Appropriate equipment for the work being undertaken (including rescue) (including proper management of equipment itself).
- Techniques - Appropriate techniques for the work being undertaken.

5.4 Continuous improvement

Height safety systems will continue to evolve and this Guide should be updated when new systems become widely adopted. Changes in technology, industry practice, or legislation may also affect the acceptability of existing fall-protection systems.

5.5 Application of fall arrest systems

Fall arrest systems are unsuitable if the distance from the person's feet to the landing level is less than 2 m. If fall arrest systems aren't used, other risk controls may be implemented.

5.6 Egress vs task position

The risk of working at height is generally greater than merely accessing a height, as attention is divided between the task and maintaining safety. Therefore, additional controls are typically required while work is being performed.

5.7 Climbing attached

This section applies to circumstances when PPE-based climbing methods are utilised to gain access to a work position. This includes systems utilising pole steps or tower bolts. Unless required by the risk assessment or situations stipulated in this Guide, climbing attached is generally not required for access via a compliant ladder.

A system that requires a person to climb a ladder to access a structure and then work attached, shall require people to secure themselves to the structure before climbing off the ladder. They must also always remain attached to the structure. When passing around obstructions, a make-before-break process shall be utilised.

A system shall require that when pole straps are used, slack shall be eliminated or always minimised. The position of the strap around the structure shall be kept at or above the attachment point on the full body harness.

A system shall require that when lanyards are used, the position of the attachment point on the structure shall minimise the fall distance to 2 m or less.

6 Risk management

A risk management process undertaken in the development of height safety systems for organisations does not eliminate the need for site specific risk assessments. Both workers and appropriate subject matter experts need to be included in the risk assessment process.

All risks should be managed under an endorsed company risk management process. The risk

assessment approach shall comply with the principles of AS 5577 Electricity network safety management systems.

7 Design of height safety systems within ESI

The design, construction, maintenance and procurement of equipment, and the development of working at heights safe work practices shall be undertaken in accordance with the risk management principles of the Work, Health and Safety Regulation 2025.

- Maintenance documentation shall include details of a safe system of access to undertake tasks.
- Equipment shall be designed where reasonably practicable to eliminate the need for people to work at heights to undertake tasks.
- Equipment design shall make provision for the safe conduct of tasks carried out at heights and consider the requirements necessary to facilitate rescue.

Design and use of infrastructure or equipment shall comply with the relevant Australian Standards for safe access. Existing access infrastructure that does not comply may be redesigned to comply or be replaced where it is reasonably practicable.

Existing workplaces that do not comply with NSW Code of Practice Managing the Risk of Falls at Workplaces shall be redesigned to comply where it is reasonably practicable.

8 Training

Electricity supply industry training requirements are specified in ISSC Guide 39 - Training of personnel working on or near electricity networks.

This training shall cover the following principles:

- Hazard identification, risk management and work methods.
- The correct selection, use, care, inspection, maintenance and storage of height safety equipment
- Control measures for other potential hazards, for example electrical hazards.
- Includes the appropriate rescue procedures.

PCBUs should ensure personnel undergo appropriate competency assessments for work at heights at intervals not exceeding 12 months. PCBUs must keep suitable and accurate records that indicate personnel have demonstrated competence in the appropriate procedures within the previous 12 months.

9 Planning for height safety access and work

Pre-work planning for height safety is critical in ensuring that risks are minimised. The distinct function of pre-work planning shall be recognised as part of the overall work plan. The combination of **prior to the day** and **on the day** planning shall form the basis of the onsite hazard identification, risk assessments and staff briefings.

9.1 Prior to the day

Prior to the day planning can be one of 2 different types. The first type is general, for activities that are undertaken on a regular basis. The second type is more specific for unique jobs.

1. Planning for the general type of work. - This includes consultation and the application of the risk management framework contained within this Guide. This planning shall be documented and available on the day of the task. Documentation examples include organisational procedures and generic safe work method statements. Emergency work will typically be carried out based on such planning documentation.
2. Planning in advance for the specific job - This includes assessment of the requirements for access and work at heights for each stage of the work, and the personnel and equipment needed for each stage. This planning shall be documented and available on the day of the task. Documentation examples include specific work method statements.

9.2 On the day

On the day of the job pre-work planning is also required and shall be documented. This shall include:

- review and implementation of **Prior to the Day** planning outcomes
- task allocation
- identification and use of the anchorage systems
- rescue systems
- extent of and control of drop zones.

10 Anchorage criteria

10.1 Location of anchors

In selecting anchor locations, the following shall be considered:

- stability of the parent structure
- the practicality of good anchorage connections (see Clause 8.4)
- load capabilities of anchorage configurations

- range of movement of personnel while attached
- safe access
- provision for safe rescue.

In the case of anchors used for fall arrest systems, the height of the anchor relative to the total fall distance will also be considered.

10.2 Installed anchors

All installed anchors shall meet the compliance requirements of AS/NZS 1891.4 Industrial Fall Arrest System and Devices Part 4: Selection, Use and Maintenance. Attention is drawn to standard AS/NZS 5532 Manufacturing requirements for single point anchor device used for harness based work at height expected to be issued shortly after this revision.

Anchors to be used for height safety shall have a minimum ultimate strength as follows:

TABLE 3.1
STRENGTH REQUIREMENT FOR ANCHORAGES

kilonewtons	
Purpose of anchorage	Ultimate strength in direction of loading (minimum) (see Notes 1 and 4)
<i>(a) Single point anchorages</i>	
Free fall-arrest—one person	15
Free fall-arrest—two persons attached to same anchor	21
Limited free fall-arrest (including rope access anchorages)	12
Restraint technique	12 or 15 (see Note 3)
<i>(b) Horizontal lifelines</i>	
End anchorages	See Clause 6.5.4
Intermediate anchorages	
—diversion less than 15°	12
—diversion 15° or more	12+ (see Note 2)

NOTES:

- 1 As far as practicable all single point one-person anchorages should meet the 15 kN requirement regardless of primary purpose.
- 2 Horizontal component of forces induced during a fall-arrest (multiplied by a safety factor of 2.0) is to be added as indicated in Clause 6.2.5.
- 3 Anchorage strengths applicable when using a restraint technique, see Clause 2.2.5, are either 15 kN or 12 kN depending on whether the ultimate fall risk is free fall or limited free fall.
- 4 'Ultimate strength' means that the anchorage may yield at the stated load but must not fail.

*Table reference: AS/NZS 1891.4 Industrial Fall Arrest System and Devices Part 4:
Selection, Use and Maintenance*

Note: The 2-person figure is not double the single load rating as it is considered that both

peak forces generated by arresting the 2 falls will not be applied to the anchor at the same instant.

Where a new system requires multiple installed anchors which could be of different ratings, consideration may be given to installing all anchors at the highest rating to avoid confusion.

Where a system requires the use of multiple existing installed anchors which have different ratings, the system design may consider how to avoid inappropriate use of the lower rated anchors.

10.3 Improvised anchors for the electricity supply industry

Where purpose designed anchors are not included in the network equipment design, it may be necessary to utilise suitable structural elements of network equipment as anchorage points. The use of existing asset features used as improvised anchors shall be accompanied by a system which employs:

- approved height safety anchorage points for network use
- procedures for selection of appropriate improvised anchor method based on task to be performed
- training to ensure competence in the selection of suitable attachment points
- identification and inspection of anchorage points by an appropriately competent person before use.

10.4 Anchorage considerations

Connections to anchor points shall consider the following:

- side loading of gates of connection hardware
- side loading of large hooks
- damage to slings or lanyards through contact with sharp or abrasive edges
- components of the anchorage system are compatible with each other to prevent accidental disengagement or failure
- damage to slings, lanyards and other connection devices through excessive loads caused by unequal sharing of loads with multiple anchors
- damage to slings through excessive angles between multiple anchors.

11 Height safety equipment for the electricity supply industry

11.1 Scope

This section applies to all height safety equipment nominated in a height safety system and does not detract from the requirements of other appropriate standards including AS/NZS 1891 series and ISSC 14.

11.2 Equipment approval methodology

A process shall be in place for the evaluation and approval of height safety equipment to be used by a work team. This evaluation shall consider:

- compliance with standards
- fit with the training that personnel have previously received and the requirement for additional or different training
- suitability for the intended work process and rescue
- fit with the organisation's existing arrangements for the whole of life management of height safety equipment.

11.3 Whole of life management of height safety equipment

Systems shall be in place for the tracking and management of height safety equipment. Where applicable, such systems shall be in accordance with ISSC 14. Where classes of equipment are not covered by ISSC 14, equivalent arrangements shall be put in place.

11.4 Strength rating

All components shall have an appropriate strength rating in accordance with an AS/NZS or international standard. Guidance may first be sought from AS/NZS 1891 series of standards and the other standards referenced within.

Note that height safety equipment is usually rated with *minimum breaking load* (MBL) rather than the *safe working load* (SWL) or *working load limit* (WLL) rating normally applied to rigging or lifting equipment.

11.5 Compatibility with work process

Some work processes can damage height safety equipment. Processes involving heat, cutting equipment, or solvents and similar chemicals present special risks. Processes resulting in contamination that could clog items such as spring latches on connecting hardware may also be problematic. Height safety systems shall be assembled from equipment selected in consideration of such risks arising from the work process. It may be necessary to provide suitable protective covering for height safety equipment while in use to control the risk.

11.6 Compatibility of equipment

Equipment from different manufacturers may be mixed in a single height safety system only if it has been established that the equipment is compatible and this has been documented. Establishment of compatibility may be assessed through Failure Modes, Effects and Criticality Analysis, comprehensive physical trials, or through verification of common compliance with standards.

11.7 Climbing helmets

In the event of an arrested fall there is the possibility of the climber's head striking obstructions below or adjacent to the work location. A risk assessment may consider the wearing of climbing helmets that provide improved protection from head strike.

Climbing helmets shall comply with AS/NZS 1801, noting that these helmets are designed primarily to protect from strike by falling objects and are not specifically designed to protect the head in the event of a fall.

Climbing helmets may have the following features appropriate to the design of the safe system of work at heights:

- mounting points for earmuffs and face shield
- head torches
- neck protection.

11.8 Suspension trauma relief devices

A suspension trauma strap is a webbing loop carried on the harness and which allows a person to transfer their weight from the leg loops of their harness to their feet. This is intended to delay the onset of suspension trauma. Other devices may also be available to assist in this way. In developing a height safety system which includes the potential for full fall arrest, the provision of suspension trauma relief devices may be considered.

11.9 Personal anchorage slings

A personal anchorage sling is a sling that may be placed around a pole or similar structure to provide an attachment point for climbing. Personal anchorage slings shall not be used for lifting material or any purpose other than their intended use. A system may be implemented to ensure that personal anchorage slings are not used for any other purpose.

A personal anchorage sling shall have a minimum rating appropriate for the number of people attached to it and the most onerous configuration in which it might be used. Personal anchorage slings shall only be 'choked' if approved for this configuration. If used in a 'basket' configuration and connected directly to a snap hook, care shall be taken to ensure that the angle between the legs of the sling is not excessive.

11.10 Tools

The tools used for the task shall be selected and used such as not to increase the height safety risk. In particular:

- small tools, equipment and materials that can be carried in suitable holders or containers without encumbering the climber may be carried by a climber
- other tools, equipment or materials shall be lifted or lowered to the work position and not carried by a climber
- tool holders or containers shall not include fittings that might inadvertently be confused with the 'D'-rings of the safety harness or interfere with the proper operation of height safety system attachment hardware.

11.11 Rescue equipment

In the selection of devices for cutting webbing or rope in an emergency, consideration shall be given to the risk of injury to the rescuer and the person being rescued from the device.

In conducting a rescue, insulating gloves may be subjected to potential mechanical damage that is different from their normal intended use. This shall be considered in designing the rescue system.

Where the rescue techniques do not require the rescuer to utilise attached climbing techniques, a rescue belt may be used. Where the rescue techniques require the rescuer to utilise attached climbing techniques, a full body harness shall be used.

11.12 Personal energy absorber

When designing a height safety system in which the total fall distance is critical, the full extended length of any personal energy absorber shall be ascertained and documented.

12 Ladders

All work on ladders must be conducted in accordance with Code of Practice Managing the Risk of Falls at Workplaces.

12.1 Use of ladders

- Only one person should be on the ladder at a time, except in emergencies.
- Maintain 3 points of contact when climbing.
- Ensure the ladder top and/or bottom are secure and won't move.
- When placing the ladder against a pole, ensure the ladder is properly secured to prevent twisting or rolling.
- Prevent risks of impact from vehicles by positioning ladders away from traffic areas unless the area is barricaded.
- Fixed ladders should be installed in accordance with AS 1657 - Fixed platforms, walkways, stairways and ladders – Design, construction and installation.

13 Climbing and working from ESI poles

13.1 Pre-climbing checks

If at any time during the assessment process defects are identified that compromise the integrity of the pole, the pole is not to be climbed unsupported, and no further tests are required. The pole condition shall be reported immediately to the asset owner.

If deemed necessary, a check could be made on the Network Operators database for indication of the condition of the pole and when it was last inspected. This check could be done during the planning phase of the work.

All poles shall be visually inspected to ensure that they are safe to approach. Points to consider should include but not be limited to:

Conductors

- Low/damaged conductors.
- Uneven sag or inappropriately designed attachments.
- Lightning, burn or flash marks.
- Integrity of insulators.

Pole condition, degradation and loading

- Check pole identification disc for specifications such as depth indication, strength rating, age, timber type and size.
- Condition identification markers i.e. condemned markings, crosses, rings, discs as outlined in this Guide.
- Splits, knots and checks.
- Fire damage.
- Termites and termite treatment.
- Reinforced poles.
- Visual evidence of decay.
- Change in pole situation. That is leaning, bending, tight/ slack stays or conductors.
- Depth and age of pole.
- Structural damage including impact by motor vehicle.
- Lightning, burn or flash marks.
- Rusting, spalling, discolouration (concrete and steel).
- Visual signs of leakage currents.
- Unsupported or supported poles that may become unsupported.
- Missing/loose hardware pole caps etc.
- Pole step(s) missing.
- Pole foundation condition (including concrete works at ground line).
- Deformed concrete/steel poles.

Site conditions

- Existing traffic conditions, pedestrian/vehicular.
- Changes in the traffic conditions due to work to be carried out.
- Sloping or uneven ground which will affect *pole* stability during work.
- Recent excavations at pole base.
- Erosion due to weather events.
- Storms and/or adverse weather.
- Other work adjacent to the pole affecting stability.

Electrical hazard

- Inspect poles for defects such as electrical voltage due to leakage current using a proximity type voltage detector capable of detecting voltages of 50V and above. Guide 14 provides advice on proving the proximity tester.
- Proximity to live conductors.

Private poles

Private poles (may or may not be marked as such) shall be treated with extreme care as they may not have been subjected to a regular maintenance and inspection regime.

Sounding (timber poles only)

Sounding is a recognised industry method to assist in the determination of the pole condition.

Method: Strike the pole from several directions with an appropriately weighted ball peen hammer or equivalent implement. Starting at the base of the pole, as close as possible to ground-line and starting in the non-critical axis, sound around the circumference, at approximately 100 mm intervals, then progressively upwards around the circumference of the pole, as high as can be conveniently reached whilst listening for changes in the sound the implement makes on contact with the pole.

Below ground

In situations where the pole load will be significantly affected by the works being undertaken or where the condition of the pole is in doubt because of the visual inspection and sounding carried out, personnel may refer to the following below ground inspection method.

Timber poles

- Look for evidence of ground movement in the vicinity of the pole butt.
- Excavation – excavate a slot to 350 mm in the non-critical axis.
- Look for external pole decay or rot.
- Check for decay with a spud bar or similar implement by striking the pole (this may compromise the pole preservative maintenance treatment).
- Check for concrete collar.

Concrete and steel poles

- Look for evidence of ground movement in the vicinity of the pole butt.
- Excavation – excavate the full circumference of the pole to approximately 100 mm. Look for signs of rust, spalling, discolouration.

Composite poles

Composite poles are to be visually inspected above ground line for vehicle or physical damage. Poles showing evidence of significant physical damage should be treated as conditionally serviceable and reported to immediately.

Ladder test

After the pole has been visually inspected and sounded, a ladder test must then be applied to the pole as a final check of its integrity. To carry out a ladder test, an extended ladder is placed against the pole in its critical axis (refer to Definitions). A load is applied to the pole by pushing

against the ladder.

Rope test

Pressure is applied as close as possible to the head of the pole by the attachment of a rope which has been hoisted by an approved operating stick or a ladder to the top of the pole. Pulling is to be done by hand only and is to be in the same direction as the critical axis.

Note: Ensure the rope used is of a sufficient length that should the pole under test fail, the person conducting the test, other persons and structures will not be struck by the pole or conductors. Other persons and motor traffic must be kept well clear during the test.

13.2 Marking of poles

The recommendations for the standardisation of pole markings are listed below. Additional details can be found in the appendices:

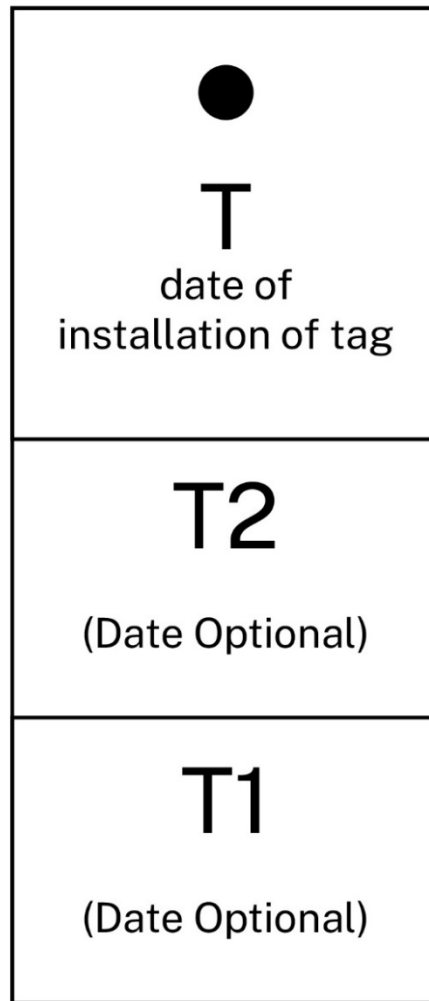
- Suspect Poles – A single highly visible orange band around the pole as indicated below.
- Condemned Poles – Permanently marked 'X' plus a single highly visible orange band as indicated below.
- Termite Treated Poles – A tag with removable sections indicating the date(s) of treatment or follow-up inspection and ending with a permanent T tag as indicated below.
- Private Poles – These are to be marked as indicated in the figure below.
- Localised markings can be determined by individual Network Operators for special circumstances.

Note – Suspect poles that are suitable for reinforcement (for example, nailing, staying) can be marked with the visible orange band that may then be removed after reinforcement has taken place.

Termite treatment pole example tag

Poles shall be permanently marked with a 3 stage (perforated) tag indicating a number of termite treatments/inspections and ending with a permanent 'T' tag. Dates may be etched into the tag.

This tag is to be installed below any tape markings on the non-traffic area of the pole in urban areas at least 2 m above GL, otherwise in the same axis as the pole ID disc.

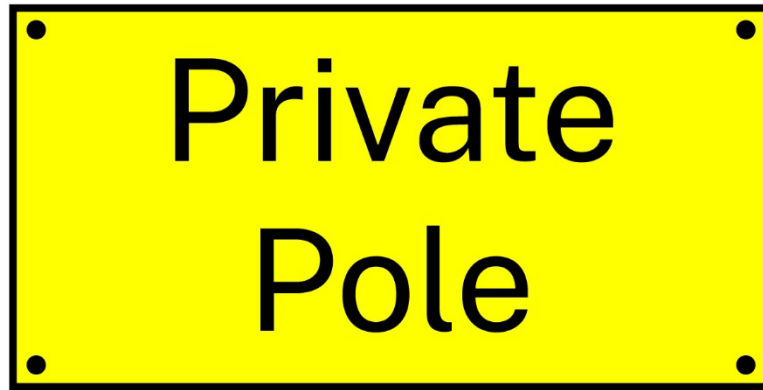


The lowest section of the tag (T1) indicates the initial treatment of termites in the pole. The centre section of the tag (T2) indicates the follow-up inspection and/or treatment of the pole. The upper section of the tag indicates that termites have been identified in this pole.

This tag may be designed such that the lower sections of the tag may be removed, in accordance with the procedures of the respective Network Operator. The topmost section of the tag may be permanent for the life of the pole.

Private pole marking

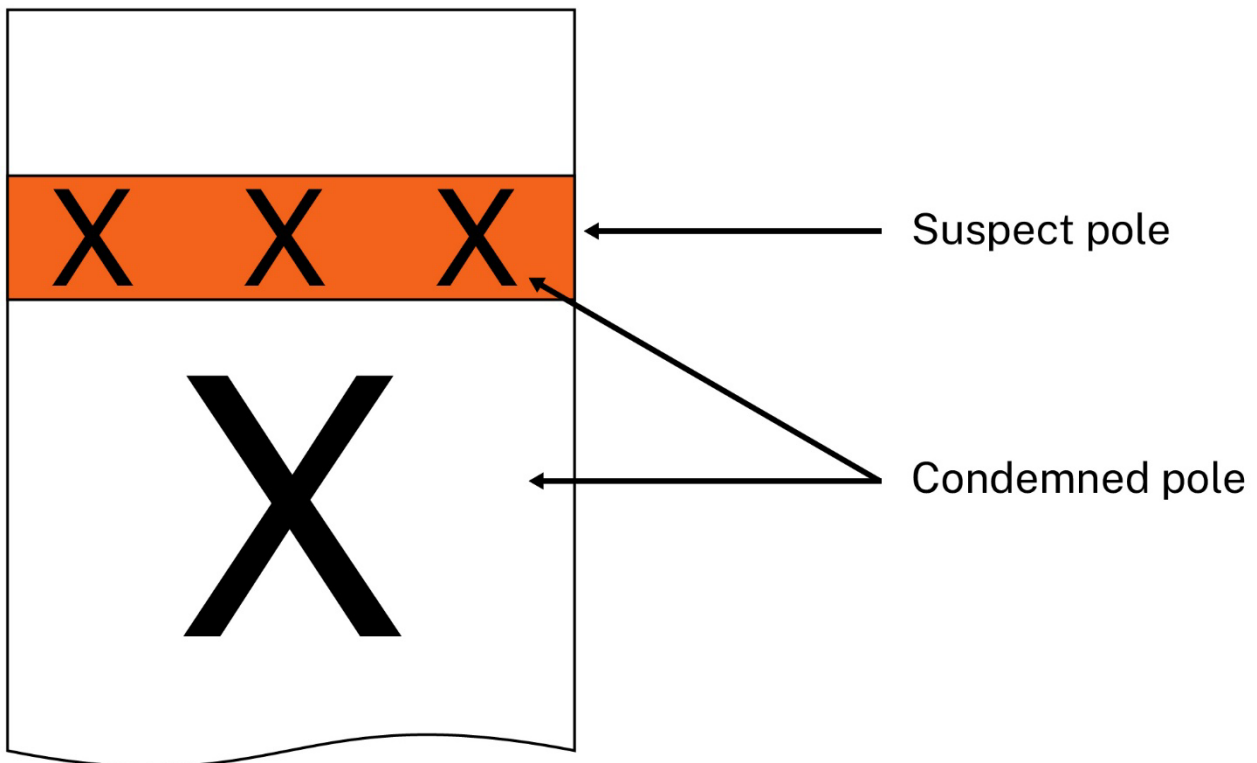
Private poles need to be identified and marked with an appropriate tag as illustrated below. 'Private Pole' shall be printed in black on yellow minimum of 100mm x 75mm wide, installed at least 2 m above ground level on the approach side of the pole, below any other markings. The condemned pole marking(s) on private poles may be consistent with pole marking of network poles but may not damage the private pole (for example, 'X' may be painted on).



Sample pole band and permanent 'X' on a condemned pole

A suspect pole will be marked by a single band of at least 75 mm wide reflective orange self-adhesive tape at least 2.4 m above ground but below 3 m, encircling the whole pole, optionally marked with black 'X X X' and the organisation's name.

A condemned pole must be permanently marked by an 'X' (cut or painted) into the pole. The 'X' must be at least 200 mm high and of a significant depth to ensure permanency. It must be installed below the tape described above.



13.3 Checks while climbing the pole

The following additional items may assist in determining if the pole is at risk after the pre-climbing checks have been completed:

- Noises indicating additional loading and possible failure of the pole.

- Detailed visual inspection for splits, knots, termites and degradation not visible from the ground.
- Sounding whilst ascending where practicable (timber).
- Excessive bending of pole or ladder movement.
- Excessive vibration.
- Loose pole steps.
- Pole footing movement.

13.4 Working from a pole

Height safety systems for working on poles shall take into consideration the following:

- integrity of the pole and associated hardware
- the use of attached climbing techniques at all times
- placement of pole straps and/or fall arrest lanyards
- the need to manage tails of pole straps, lanyards and other equipment to prevent entanglement or inadvertent contact with conductors
- the use of pole platforms in preference to working from a ladder or pole steps when appropriate to aid in the reduction of fatigue and ergonomic stress
- the use of EWP's in preference to pole platforms when appropriate to aid in the reduction of fatigue and ergonomic stress
- location of electrical and communications equipment
- interference between height safety equipment and temporary insulating mats
- appropriate rescue systems
- the need to manage tools and equipment
- manual handling of equipment when working aloft
- drop zones
- changing direction and magnitude of loads on the structure.

Standoff insulators may not be used as personal attachment points or as a work platform.

Continual monitoring of the pole

Personnel working at the pole top should be aware that the load conditions at the pole top may change due to several factors. Therefore, the following points may be monitored, and acted upon if appropriate:

- removing or tensioning mains
- noise, for example, creaking, breaking
- excessive movement of pole, ladder
- excessive vibration
- pole footing movement
- weather changes (wind)
- changed traffic conditions.

If significant load changes are to occur, then the pole shall be supported.

14 Elevating Work Platform (EWP)

14.1 Training

To be authorised to operate from EWPs, personnel must hold the relevant nationally accredited units of competency. An appropriate NSW EWP high risk licence is required when an EWP boom length exceeds 11 m.

14.2 Transfer from EWP to structure

When no safer access method exists per the hierarchy of controls, transfer from EWPs may be used as a means of access.

Where a height safety system includes access via transfer from an EWP the following considerations, in addition to the requirements of AS 2550.10, shall be addressed in the design of the system:

- Transfer shall only be used as part of a documented and approved safe work method or emergency procedure.
- The work position or landing area being accessed is assessed for structural integrity.
- If attachment at the work position is required, attachments to a person's harness shall be undertaken in a make before break sequence. That is when at heights the person shall always be attached to the EWP, the structure or both.
- The duration for which a person is attached to both the EWP and the structure shall be minimised.
- The EWP shall be positioned to minimise the gap to the structure.
- No part of a person's body shall be placed between the EWP and the structure.
- The EWP may be positioned so that the floor of the basket and the transfer point on the structure are approximately level. The transfer may not require the person to move significantly above the anchor point to which they are attached.
- The likelihood that the basket will rise as load is removed and fall as load is added due to the flexure of the boom sections.
- If the EWP is to be allowed to move away from the transfer point after the transfer, the work method shall address the issue of how a person could descend from the structure without the EWP.
- The work method shall address the risk of inadvertent movement of the EWP while the worker is transferring to or from the EWP.

14.3 Mobiling

Mobiling is the practice of people remaining within the basket of a vehicle mounted EWP whilst travelling.

A safe system of work including mobiling EWP's shall consider:

- the provisions of AS 2550.10 such as the limiting of vehicle speed
- work method statements which include mobiling
- resting the basket in a travel position on the support frame with all booms cradled and with the stabiliser legs (if fitted) correctly stowed
- the wearing of approved safety harness, which is correctly attached to an appropriate and designated anchorage point by people remaining in the EWP basket
- people travelling in the basket of an EWP always face forward during mobiling
- activation of all traffic warning lights.

While relocating the EWP within the work site, staff are permitted to stay within the EWP basket whilst travelling short distances. This would include between adjacent poles, trees and the like. Movement would take place on the proviso that the following procedures and Guides have been adhered to and documented in accordance with each distributor's specific hazard identification, risk assessment and controls.

The mobiling exemption would apply only to specific work activities when undertaking repetitive works and is limited to the following:

- street light maintenance
- vegetation management
- installation of low-voltage conductor spreaders
- overhead line minor construction and maintenance activities such as:
 - tightening line hardware
 - work equivalent in nature to the above.

The mobiling exemption would also apply only to short distance travel, provided that:

- appropriate work methodology has been developed and implemented, covering the practice of mobiling
- a thorough worksite hazard and risk assessment shall be completed, identifying the associated hazards and ensuring appropriate control measures are adopted
- the travel element shall be incorporated in this hazard and risk assessment and may consider such factors as incline and terrain
- appropriate traffic control plans shall be used where applicable
- any person travelling in the EWP basket shall wear an approved safety harness correctly attached to an appropriate and designated anchorage point
- tools and equipment shall be secured to prevent falling or snagging on obstacles, all other tools and equipment shall be stowed within the EWP basket
- the basket rests in a travel position on the support frame with all booms cradled and with the stabiliser legs (if fitted) correctly stowed
- at all times the driver shall disengage the PTO before moving the vehicle
- all warning lights are illuminated
- personnel travelling in the basket of an EWP shall face forward and constantly observe for possible obstacles such as services, trees and street signage

- adequate communication between the driver and the personnel in the basket shall be always maintained, when the mobilising activity is in progress
- the road speed of the vehicle is limited to 6 km/h (walking pace) and the driver takes special care to avoid gutters, bumps and dips
- travel within the EWP is confined to a single work site
- the EWP vehicle cannot cross a controlled intersection. For example, traffic lights, controlled boom or an intersection where it does not have right of way. This may include stop and give way signs or roundabouts
- the EWP can only be reversed to position the vehicle, not to move between locations within worksite.

It is the responsibility of the user to conduct a full risk assessment before operating in this manner.

Load capacity

An EWP shall be selected with an adequate load capacity taking account of:

- the provisions of AS 2550.10
- number of people
- tools, equipment or materials to be transported in the EWP
- changes in the loads applied to the EWP because of the work progressing.

A safe system of work shall be implemented to ensure the working load limit of an EWP is not exceeded.

15 Scaffolding

When scaffolding or other portable conductive structures are being erected, moved or used in the vicinity of electrical apparatus, the provisions of the AS/NZS 4576 and SafeWork NSW Scaffolding Industry safety standard shall be observed.

This requires a minimum clearance of 4 m to be maintained unless the **electrical apparatus** being worked on has been isolated, earthed and short-circuited and an Access Authority has been issued.

Conductive scaffolding in the vicinity of electrical apparatus shall be earthed or bonded, capable of carrying the maximum prospective fault current.

16 Lattice structures

16.1 Lattice structures

When developing height safety systems for lattice type structures, consideration shall be given to access to, climbing on, work from, and rescue from these structures. Where the hierarchy of control leads to selection of a climbing system, an approved climbing technique that ensures personnel remain attached always shall be used.

Some modern step bolts on steel work incorporate a rated attachment point for attachment during climbing. Other step bolts without attachment points may be selected as an improvised anchor if their use and associated attachment hardware is assessed and documented as a suitable work method.

The system shall also consider any special requirements for site specific hazards including:

- radio frequency radiation exposure from communications equipment
- live conductors either under or on the lattice structure (fall distance, minimum electrical safe approach distances, and rescue requirements)
- emergency planning in remote locations
- appropriate communications with personnel on the ground given mobile plant noise, wind noise or the excessive height distance.

Work positioning techniques require personnel to maintain 3 points of contact and be appropriate to the task. Where possible, the technique may nominate materials or equipment to help reduce a person's fatigue whilst working.

Work positioning equipment such as pole straps or lanyards shall be selected and used with minimal slack. Attachment points for work positioning may be higher than the harness attachment points where possible to control the pendulum effect in the event of a fall.

Attachment points for fall arrest may be higher than the harness attachment points to control the pendulum effect in the event of a fall. Where this is not possible, attachment points shall be selected so a fall distance more than 2 m cannot occur.

The design of the system shall take account of the following:

- Avoidance of side-loading on scaffold type hooks.
- The availability of rated anchor points on hook ladders, gondolas or other equipment or the alternate need for personnel to maintain attachment to the primary structure.
- The selection of lifting and/or rigging points to ensure that the structural integrity of the structure being worked on will not be compromised.

17 Substation equipment

Wherever practical, the design, construction and or installation of substation equipment shall primarily adopt these guides as prescribed, in sections 4, 5 and 6. This approach suggests that new assets shall be commissioned with safe access and/or work positions with respect to height safety.

17.1 Power transformers typical methodology

Each type of power transformer can be unique in its design. When access to or work on a power transformer is planned, consider all relevant aspects in determining a safe and practical approach to height safety issues.

Power transformers are typically between 2 m and 4 m in height. Full fall arrest PPE methodologies are generally not suitable for these heights due to the fall distance. Full fall

arrest PPE methodologies could be considered where a suitable attachment point above the workers can be provided. The hierarchy of controls shall be applied in determining the most suitable access and/or work positioning systems.

For existing equipment where height safety issues have not been provided for, the work method statements shall plan and identify the elements of the proposed height safety system being selected. Where the hierarchy selects the use of a restraint technique, identification and agreement of suitable improvised anchors may be made as part of the pre-work risk assessment discussion.

For new equipment, height safety risks may be addressed at the design stage by applying the hierarchy of controls to both the power transformers and associated substation work.

Analysis of installation, commissioning and maintenance tasks may identify access requirements and duration of all tasks likely to occur during the asset's service life and provide reasonably practical solutions to height safety issues.

Examples of possible controls could include:

- relocating equipment to ground level
- provision of a platform and railings around diverter access hatches
- ladder points near driveshaft connections
- platforms under Buchholz relays to allow inspection or bleeding
- designated walkways defined with coloured non-slip paint across the tank lid.

Note: Railings may need to be removable to maintain electrical clearances. If this is the case, consideration may be given to use of lightweight temporary rails and PPE attachment points for initial installation.

Bund walls or noise enclosures may physically constrain safe access methods from either an EWP, ladder or scaffold. Layout designs shall consider accounting for suitable space to provide safe access. If a ladder is required for work positioning, an anchorage point shall be provided in the immediate work area.

The likelihood of slippery conditions due to transformer oil may increase risk. Best design practice may incorporate designated ladder access points with adjacent anchorage points that can be readily accessed for PPE attachment prior to departure from the ladder. Ladder access points may allow the ladders to be secured at the top and bottom.

Techniques that use equipment like maypoles or restraint lines that require installation prior to use shall consider safe access and manual handling during installation.

17.2 Other substation equipment

Outdoor switchyard equipment is typically erected on structures to maintain high voltage clearances and consequently have inherent height safety issues. Eliminating height risks by locating gauges or secondary equipment so it can be interpreted from ground level may be considered. Design principles of switchyard layout may consider EWP access to equipment.

Secondary equipment such as lighting or security equipment mounted on structures may be in areas that are readily accessible by EWP whilst also considering high voltage clearance

issues. Preference may be given to the use of telescopic or tilt equipment that can be installed and maintained from ground level.

17.3 Improvised anchor selection example: Transformer

The anchorage point shall be identified and inspected by a competent person. Examples of suitable anchorage points include:

- Transformer lifting eyes and lugs.
- Collared eyebolts attached to the transformer of 12 mm or greater.
- Circular steel tube sections with an outside diameter of 50 mm or greater that is fully welded and attached to the tank at regular intervals over its length.
- Inspection plate steel rod handles 8 mm or greater fully welded at both ends.
- Flat metal plate or angle iron not less than 38 mm wide x 5 mm thick that are fully welded.
- The top of the turret that supports the HV bushing. (base of HV bushing).
- Conservator tanks.

Care must be taken not to damage anchorage devices. Sharp edges can stress or harm anchor slings and hardware. The following must not be used as anchorage points: handrails, kick plates, gratings, stair treads, piping (below the required standard), pipe supports, electrical cables, porcelain items, mechanical equipment and cable trays.

Before a person transfers from the ladder to the transformer, an evaluation of the intended work position anchorage points shall be carried out while attached.

18 Fixed ladders and structures on network poles

As part of the risk assessment carried out on site, staff requiring access via fixed ladders and structures on network poles shall put in place an appropriate fall protection system.

The following additional risks not found in regular pole work may exist on fixed ladders and structures on network poles. These risks shall be addressed through the implementation of a suitable fall protection and rescue system.

- Potential for platform failure.
- Potential for fall over an edge, out of reach of rescuer.
- Potential to fall from vertical ladder.
- Potential to have to rescue a person from or suspended beneath the platform.

19 Tree works including climbing

The following requirements shall be considered when documenting specific tree access

methods in accordance with SafeWork Australia - Guide to managing the risks of tree work and ENA DOC 023 Guidelines for safe vegetation management work near live overhead lines.

20 References

NSW Work Health and Safety Regulation 2025

National Code of Practice for the Prevention of Falls in General Construction

SafeWork Australia - Guide to managing the risks of tree work

SafeWork NSW Code of practice for managing the risk of falls at workplaces

SafeWork NSW Code of Practice work near overhead powerlines

SafeWork NSW Scaffolding Industry safety standard

ISSC Guide 14 - Electrical workers safety equipment

ISSC Guide 39 - Training of personnel working on or near electricity networks

AS 1657:2018 - Fixed platforms, walkways, stairways and ladders - Design, construction and installation

AS/NZS1801:2024 - Occupational protective helmets

AS/NZS 1891.1:2020 - Personal equipment for work at height Manufacturing requirements for full body combination and lower body harnesses

AS/NZS 1891.3:2020 - Personal equipment for work at height Manufacturing requirements for fall-arrest devices

AS/NZS 1891.4:2025 - Personal equipment for work at height Selection, use and maintenance

AS/NZS 1892.5:2020- Portable ladders Selection, safe use and care

AS 2550.1:2011 - Cranes, hoists and winches - Safe use General requirements

AS 2550.10:2025 - Cranes, hoists and winches - Safe use Mobile elevating work platforms

AS/NZS ISO 31000:2018 - Risk management - Guidelines

AS/NZS 4576:2020 - Guides for scaffolding

ENA DOC 023 Guidelines for safe vegetation management work near live overhead lines