AUSTRALIAN CONSTRUCTORS ASSOCIATION

Construction & Building Industry Safety Guideline

Prevention of Overhead Power Line Strikes

Disclaimer

This Guideline contains information regarding work health and safety. It includes some of your obligations under the work health and safety and electrical safety legislation that jurisdictional regulators administer. To ensure you comply with your legal obligations you must refer to the appropriate Acts and Regulations that apply in the jurisdiction where you are conducting your work.

This publication may refer to legislation that has been amended or repealed. When reading this Guideline you should always refer to the latest jurisdictional laws. It is the responsibility of the businesses and the individuals involved to ensure that a safe system of work is employed and that statutory requirements are met.

Australian Constructors Association disclaims any and all liability to any person or persons for any procedure, process or any other thing done or not done, as a result of this Guideline.

Construction & Building Industry Safety Guideline
Prevention of Overhead Power Line Strike

Intent

To eliminate the potential for electrocution or electric shock to persons and damage to equipment caused by coming into contact with energised (live) overhead power lines and associated electrical equipment (power lines).

There are a variety of situations common to construction works that require workers to carry out work or operate plant and equipment in close proximity to power lines where inadvertent contact could occur. These include, but are not limited to:

- Lifting and erecting activities including operating cranes, mobile plant and equipment
- Erection and dismantling scaffolding
- Access to site via gazetted roads with oversize equipment
- Access to site via non-gazetted roads
- Loading and unloading activities
- Working at height (e.g. use of an elevated work platform or ladder ladders)

Scope

This guideline outlines the recommended minimum steps to be taken by construction businesses and construction workers when working in close proximity to live power lines

The safe approach distances outlined within the guidelines are not applicable to work carried out by '*authorised persons'* working on or near an electricity network to a safe system of work as described in an Electricity Supply Authority's – Electrical Safety Rules.

Safety Imperatives

a. A desktop study shall be conducted prior to work commencing to assess the likelihood of risks arising from working in close proximity to any live (or potentially live) power lines, which may cause harm.

b. Review planned activities that may require working within close proximity to live power lines (all power lines are to be assumed live unless an appropriate access /isolation permit system is in place and the power lines proven de-energised). Conduct a risk assessment in consultation with persons involved in the work.

c. Persons at the workplace shall be provided with appropriate information and instruction on the hazards, safe approach distances, no go zones and electrical safety requirements prior to starting work. Electrical awareness training for work in close proximity to power lines should be provided to all staff as part of the site induction. Specific training/licensing may be a requirement in some jurisdictions or of certain asset owners.

d. Conduct an assessment of risk controls that can be adopted and apply the Hierarchy of Control (eliminate, substitute, separation, engineering, administrative and protect by personal protective equipment). Develop and implement safe work method statements for '*high risk construction work'* in close proximity to live power lines. Consult with and communicate risk control measures with persons involved in the

work and ensure compliance on site through supervision, task observations and site auditing.

e. Develop and implement an emergency response plan in the event of injury or contact or arcing with live power lines.

f. Review the risk assessment, work procedures and processes in the event of an incident or when significant changes occur to the work site or work system and when the review date is due.

P = Primary responsibility **S = Support role / Involved**

Electrical Safety Guideline

Imperative Item	Safety Imperative	Element Guidance	Element Timing	Supervisor	Engineer	Workplace Manager	Safety Practitioner	General Manager	Managing director/CEO	Expected Outcome	Regulation / COP Reference
a.	A desk top study shall be conducted prior to work commencing to assess the likelihood of risks arising from working in close proximity to any live (or potentially live) power lines, which may cause harm.	▪ Consult with relevant parties, including the power line asset owner and mobile plant contractors about the planned construction works. ▪ Conduct dial before you dig (DBYD) search for areas where you will be performing work, including any access via non-gazetted roads. (Due to the possibility of overhead power lines or other circuits continuing underground). ▪ Review access to the construction site, including access roads and non-gazetted access tracks in relation to the power lines. ▪ Determine the voltage of the power lines and underground cables and the safe approach distance zones for the planned construction work activity, including cranes and mobile plant and mark up details onto a site specific risk assessment for each work location. ▪ Inspect and physically verify power line locations (include clearance height) and update site risk assessment as required.	Before Activity Commences	S	P	P	S	S	S	All overhead and underground power lines and associated electrical equipment are correctly identified.	General WHS requirements - WHS Act & Regulations or jurisdictional equivalent (Vic & WA) Refer Table 1 WHS Regulations Regulations 32-38 & 166 Safe Work Australia - General Guide : Working in vicinity of electric lines
b.	Review planned activities that may require working within close proximity to live power lines (all assumed live unless an appropriate access / isolation permit system is in place and the power lines proven de-energised). Conduct a risk assessment in consultation with persons involved in the work.	▪ Consult with workers, contractors and mobile plant operators about what plant and systems of work will be used in the construction work and the potential hazards at the workplace. ▪ Identify all likely instances where work activities will take place in close proximity to power lines (including a vehicle or plant and equipment travelling beneath with insufficient clearance). ▪ Determine the design envelope of mobile plant and equipment that will be operating at the workplace along with the size and shape of loads to be moved. ▪ Determine the qualifications and competency of workers that will be involved in the work. Assess known oversize loads against gazette roads that have live power line crossings. ▪ Review jurisdictional safe approach distances (SADs) that apply to a workplace. **Note**: Many State and	Before Activity Commences	S	P	P	S	S	S	All likely instances of working/travelling in close proximity to live power lines are identified before work commences.	WHS Act Sections 46 - 48 WHS Regulations Regulations 32-38 & 166 Safe Work Australia - General Guide : Working in vicinity of electric lines

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Electrical Safety Guideline

Imperative Item	Safety Imperative	Element Guidance	Element Timing	Supervisor	Engineer	Workplace Manager	Safety Practitioner	General Manager	Managing director/CEO	Expected Outcome	Regulation / COP Reference
		Territories have differing SADs – Refer to Appendix B. ▪ Review individual asset owner's guidance with regards to work restrictions in close proximity to their power lines.									
c.	Provide personnel with appropriate information and instruction on the hazards, safe approach distances, no go zones and electrical safety required prior to starting work. Electrical awareness training for work in close proximity to power lines should be provided to all staff as part of the site induction.	▪ Standard training/guidance to be provided to ALL site staff during induction. ▪ Specific formal training may be required for certain roles, e.g. safety observer / spotter. ▪ Specific training or licensing may be required in some jurisdictions or for certain asset owners.	Before Activity Commences	S	S	P	S	S	S	All persons with potential to work in close proximity to live power lines have an appropriate awareness of the associated risks.	WHS Act Section 19 WHS Regulations Regulation 39 Safe Work Australia - General Guide : Working in vicinity of electric lines

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Electrical Safety Guideline

Imperative Item	Safety Imperative	Element Guidance	Element Timing	Supervisor	Engineer	Workplace Manager	Safety Practitioner	General Manager	Managing director/CEO	Expected Outcome	Regulation / COP Reference
d.	Conduct an assessment of risk control measures that can be adopted and apply the Hierarchy of Control, (eliminate, substitute, separation, engineering control, administrative control or personal protective equipment). Develop and implement safe work method statements for 'high risk construction work' in close proximity to live power lines.	▪ **Eliminate** Where contact is highly likely, consult with the asset owner prior to work commencing for power lines to be de-energised or re-routed or placed underground. ▪ **Substitute** Where elimination is not possible/ practicable, review design and work methods to assess the potential to relocate activities or use alternative plant, tools and equipment. ▪ **Separation** Review the potential for isolating the electrical hazard from people e.g. erect a physical barrier to prevent inadvertent contact. ▪ **Engineering Control** Where encroachment within the Safe Approach Distance (SAD) is highly likely, physical control measures shall be required. Earthing requirements should be established in accordance with appropriate standards. Goal posts (visual upright and overhead markers) shall be erected on all access routes Mechanical restrictions shall be engaged for all lifting and access equipment (as per lift plan). ▪ **Administrative Control** Live power lines shall be clearly identified when establishing the work site using warning signs, coloured flagging or similar at ground level, providing guidance/reference for spotters. Develop SWMS for any high risk construction work. ▪ **Personal Protection Equipment** Appropriate PPE should be issued	Before Activity Commences	S	S	P	P	S	S	No work/travelling to take place within SAD of any live power lines. Alternative design or work methods developed for specific site requirements. Remove all persons from risk of electric shock. All work in close proximity to live power lines, with potential to encroach SADs measures has suitable physical controls in place. Relevant earthing requirements implemented. No work to take place in close proximity to live power lines that have not been clearly marked on site. SWMS developed for any high risk construction work. Correct Personal Protective Equipment in use	WHS Regulations Regulations 32-38, 166 , 291 & 299 Safe Work Australia - General Guide : Working in vicinity of electric lines

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Electrical Safety Guideline

Imperative Item	Safety Imperative	Element Guidance	Element Timing	Supervisor	Engineer	Workplace Manager	Safety Practitioner	General Manager	Managing director/CEO	Expected Outcome	Regulation / COP Reference
e.	Consult and communicate risk control measures with persons and ensure compliance through appropriate supervision, task observations and site auditing.	▪ Before commencing any work on site, a thorough pre-start briefing should be conducted, including review of the site specific risk assessment and safe work method statements with power line hazards identified. ▪ Previously unidentified power line hazards to be marked on the site specific risk assessment and feedback given to relevant parties, including Project Engineer / Manager. Site Supervisor to conduct a risk assessment on any unidentified power line hazards before deciding it is safe to proceed with the works. Site Supervisor to supervise the conduct of the work and ensure that task observations and site auditing is carried out regularly.	Start of shift and on-going for the duration of the project	P	S	S	S	S	S	No persons to work in proximity of live power lines unless aware of hazards and risk control measures have been implemented.	WHS Act Sections 46 - 48 WHS Regulations Regulations 32-38 & 166 Safe Work Australia - General Guide : Working in vicinity of electric lines
f.	Develop and implement an emergency response plan in the event of injury, contact or arcing with live parts.	▪ Emergency response requirements are considered when developing the site specific risk assessment. ▪ The suitability, location and accessibility of emergency equipment is assessed by competent persons. ▪ Potential emergency situations are identified and emergency procedures documented. ▪ The organisation allocates overall responsibility for control of emergency situations to specified individuals and communicates this information to all personnel. ▪ Employees receive training in emergency procedures appropriate to their allocated emergency response responsibilities and the degree of risk. ▪ Emergency procedures are regularly rehearsed and reviewed using potential emergency scenario situations. ▪ Emergency instructions and emergency contacts are clearly communicated throughout the organisation.	Before Activity Commences	S	S	P	P	S	S	In the event of an incident, an appropriate response plan is actioned	WHS Regulations Regulation 43 Safe Work Australia - General Guide : Working in vicinity of electric lines Division 3.2.4 Clause 43 WHS Regulation

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Electrical Safety Guideline

Imperative Item	Safety Imperative	Element Guidance	Element Timing	Supervisor	Engineer	Workplace Manager	Safety Practitioner	General Manager	Managing director/CEO	Expected Outcome	Regulation / COP Reference
		Controls include quarantining the plant or equipment for 24hours at a safe distance (300 metres) in the event of contact. Procedures / tool box talks / inductions include instructions on methods of departure (exiting) from plant or equipment in the event of contact with power lines (jump and then hop/shuffle).									
g.	Review the site specific risk assessment, procedures and processes in the event of an incident or if significant changes occur to the work site or work systems and when the review date is due.	▪ Review all components of this Guideline and associated documents taking into consideration any incidents, changes to the work site or work systems. ▪ Consult with all relevant parties and stakeholders. ▪ Implement changes and notify relevant personnel.	After an Incident or at review date	S	S	P	P	S	S	Review and develop procedures and processes to ensure their effectiveness and alignment with current legislation, standards and industry requirements.	WHS Regulations Regulation 38 Safe Work Australia - General Guide : Working in vicinity of electric lines

Key references applicable to this Safety Guideline:

Safe Work Australia

General Guide: Working in the vicinity of overhead and underground electric lines

Guide: Operating cranes and mobile plant near overhead electric lines

Guide: Transporting high loads near overhead electric lines

Guide: Working near low voltage overhead electric lines near structures

Information Sheet: Scaffolding work near overhead electric lines

Information Sheet: Tree and vegetation management near overhead electric lines

Information Sheet: Working in the vicinity of overhead and underground electric lines

Code of practice: Construction Work

Code of practice: How to manage work health and safety risks

Code of practice: Work health and safety consultation, Co-operation and Co-ordination

Code of Practice: First Aid in the Workplace

Australian and New Zealand Standards

AS 2550.5 – 2002: Cranes, hoist and winches – Safe Use Part 5: Mobile Cranes

AS/NZS 4576 -1995: Guidelines for scaffolding

AS/NZS 4836 – 2011: Safe working on or near low-voltage electrical installations and equipment

Jurisdictional Codes and Guidelines – Work near overhead power lines

New South Wales–

Code of practice: Work near power lines -2006

Victoria

Guidelines: Framework for undertaking work near overhead and underground assets - 2006

Queensland

Code of practice: Working near overhead and underground electric lines -2010

Tasmania

Guide to working safely near overhead power lines- 2012

South Australia

Brochure - Working safely near overhead power lines

Western Australia

Brochure - Guidelines for working near overhead power lines

National Electricity Network Safety Guidelines

ENA NENS 04-2006: National guidelines for safe approach distances to electrical and mechanical apparatus – Energy Networks Association

Table 1 - Legislative Summary	
Jurisdiction	**Legislation**
Commonwealth	Work Health and Safety Act, 2011 Work Health and Safety Regulations, 2011
Australian Capital Territory	Work Health and Safety Act, 2011 Work Health and Safety Regulations, 2011 Utility Networks (Public Safety) Regulations 2001
New South Wales	Work Health and Safety Act, 2011 Work Health and Safety Regulations, 2011
Northern Territory	Work Health and Safety (National Uniform Legislation) Act, 2011 Work Health and Safety (National Uniform Legislation) Regulations, 2011 Electricity Reform (Safety and Technical) Regulations
Queensland	Work Health and Safety Act, 2011 Work Health and Safety Regulations, 2011 Electrical Safety Regulation, 2013
South Australia	Work Health and Safety Act, 2012 Work Health and Safety Regulations, 2012
Tasmania	Work Health and Safety Act, 2012 Work Health and Safety Regulations, 2012
Victoria	Occupational Health and Safety Act 2004 Occupational Health and Safety Regulation, 2007 **Note:** WHS Act and Regulations not yet introduced in this jurisdiction. Electricity Safety (Installations) Regulations 2009
Western Australia	Occupational Health and Safety Act 1984 Occupational Health and Safety Regulation, 1996 **Note:** WHS Act and Regulations not yet introduced in this jurisdiction. Electricity Regulations 1947

Table 2: Regulatory Guide – Particular requirements that may be relevant to work near overhead power lines. Note: This is not a complete list of all regulations that may be applicable for the work. Reference must be made to the relevant Work Health and Safety Regulation or jurisdictional equivalent OHS Regulation for a complete list of regulatory requirements.	
Work Health and Safety Regulation	**Subject area**
Regulation 32	Application of Part 3.1
Regulation 33	Specific requirements must be complied with
Regulation 34	Duty to identify hazards
Regulation 35	Managing risks to health and safety
Regulation 36	Hierarchy of control measures
Regulation 37	Maintenance of control measures
Regulation 38	Review of control measures
Regulation 39	Provision of information, training and instruction
Regulation 43	Duty to prepare, maintain and implement emergency plan
Regulation 166	Overhead and underground electric lines - Duty of PCBU
Regulation 291	Meaning of “high risk construction work”
Regulation 299	Safe work method statements required for “high risk construction work”

Appendix A

Prevention of Overhead Power Line Strike - Guidance Notes

1. Identify location and voltage of overhead and underground power lines

Accountability: Project Engineer

Consult with relevant parties, including the power line asset owner and mobile plant contractors about the planned construction works.

Conduct a dial before you dig (DBYD) search for areas where you will be performing work, including any access via non-gazetted roads (due to the possibility of overhead power lines or other circuits continuing underground).

Review the power line asset owner and DBYD information and overlay details onto a site specific risk assessment for each site/access route.

Determine the voltage of the power lines and the safe approach distance zones for the planned construction work activity, including cranes, mobile plant and equipment, and mark up details onto a site specific risk assessment including its access route. Verification of power line locations (including clearance) is to be carried out on site and a site specific risk assessment is to be updated accordingly as required. (Refer to Appendix A for example of work process steps)

When determining safe approach distances to overhead power lines, consideration shall be given to the extra sag of cables from temperature changes (i.e. clearance measurements are taken during the hottest time of day).

Due to possible conductor movement by wind or inadvertent contact with supports, measurement of the conductor sag shall be included when determining the Safe Approach Distances (SAD), (Refer to Figure 1).

Note: Do not attempt to directly measure the height of overhead power lines. Do not use conductive metallic objects or measuring devices such as metal tape measures for estimating the height of overhead power lines.

2. Identify areas of risk

Accountability: Project Engineer

Conduct a review of planned activities where there will be a requirement to work in close proximity to live power lines (all are assumed live unless an appropriate access / isolation permit system is in place and the power lines proven de-energised). Conduct a site specific risk assessment, in consultation with persons involved in the work following the Hierarchy of Control principles (eliminate, substitute, separation, engineering control, administrative or personal protective equipment).

Construction work carried out on or near live power lines is defined under the Work Health and Safety Regulations as ‘high risk construction work’. As such, a safe work method statement (SWMS) must be prepared before works starts and control measures put in place to ensure high risk construction work is carried out as specified in the SWMS for the work.

Risk of contact with power lines crossing gazetted roads should be limited to any known oversize loads and be managed by approved Traffic Management Plans (TMP). (Refer to Figure 2)

Reference is to be made to individual asset owner regulations and jurisdictional requirements but as a general guide, a minimum of 3m for Low Voltage (LV) (up to 1000vac) and 8m for High Voltage (above LV) clearance should be maintained to any power lines when no form of electrical isolation, access permit or authorisation is in place.

Refer to Appendix B - Jurisdictional Approach Distances.

Note: No work is permitted to be performed in the No Go Zone over any LV or HV uninsulated energised overhead power lines unless written approval has been given by the asset owner or the Electrical Supply Authority.

3. Identify training requirements

Accountability: Project Manager / Person conducting business or undertaking (PCBU)

Electrical awareness training should be provided to all staff as part of their induction process. Formal training may be deemed appropriate for certain staff roles such as a spotter.

Individual asset owners and jurisdictional regulators may have their own rules and regulations, which require specific training to be conducted or qualifications/licenses to be held by persons working in close proximity to overhead power lines.

4. Assessment of risk control measures

Accountability: Project Engineer / PCBU

When assessing the risks associated with contacting live power lines, the following Hierarchy of Control should be considered:

Elimination

- Can the power lines be de-energised, moved or placed underground before work commences?
- Can the power lines be electrically isolated and an access authority issued?

Substitution

- Can an alternative access route or work site be chosen?
- Can alternative work methods or plant and equipment be used?

Separation

- Can personnel be removed from the risk?

Engineering Control

- Can physical/mechanical means of ensuring that personnel and equipment are unable to encroach on Safe Approach Distances (SAD) be implemented?

Administrative Control

- Apply safe systems of work and safe work methods statements to mitigate risk of contact with live power lines

Personal Protection Equipment (PPE)

- Use of electrically insulated PPE and equipment

5. Elimination

Accountability: Project Manager / PCBU

Where there is a high risk of making contact with live power lines through work activities, it is vital that the asset owner is consulted with as much prior notice as possible to assess the potential for de-energising, moving or undergrounding the power lines in advance of the work activity taking place. Where possible this should be discussed during a tender stage risk assessment.

6. Substitution

Accountability: Project Engineer / Project Manager / PCBU

If elimination is not possible, a review must be undertaken of the design and construction methodology to assess potential for relocating activities to a safe distance from the live power lines. If substitution is not practicable, and there is still a requirement to work inside of SAD for the live power lines, then works should not proceed.

7. Separation

Accountability: Project Engineer /Project Manager / PCBU

Review the potential for isolating the electrical hazard from personnel, e.g. erect a physical barrier to prevent inadvertent contact thereby removing the need for personnel to be placed at risk.

8. Engineering Control

Accountability: Project Engineer /Project Manager / PCBU

Where there is a high likelihood that plant, equipment or personnel could encroach within SAD of live power lines when performing normal activities, physical control measures need to be implemented.

Clearance beneath live power lines **on access routes** should be controlled with 'goal posts' that need to be set-up across any access routes leading to the live power lines, with clear signage stating maximum allowable height of vehicle to safely pass beneath without encroaching on SAD(Refer to Figure 1). Where multiple live power lines cross an access, the lowest clearance height shall be considered. Goal posts should be constructed such that they alert personnel if their vehicle makes contact with them, but should not cause damage when contacted. Consideration should also be taken when locating goal posts to ensure that vehicles have a safe means of retreating from the site if found to be too high. (Refer to Figure 3)

Clearance to power lines at work sites should be controlled by defining locations for loading/unloading materials and equipment, crane pads, elevating work platform pads, concrete pumping or other activities to maximise clearance to live power lines – this should be documented on either site specific risk assessment or the crane lift plan. Where available, cranes/EWPs should engage mechanical slew/jib locks to restrict the ability of the plant or equipment to encroach SAD.

9. Administrative Control

Accountability: Project Manager / PCBU /Site Supervisor

Live power lines are to be clearly identified when establishing a work site. Coloured demarcation flagging and signage should be deployed at ground level to highlight where the SAD for the power line is located (measured horizontally from the nearest live power line). The demarcation should clearly state whether you are entering or leaving a safe area (Refer to Figure 5). Visual tape bunting should be considered as well (Refer to Figure 6)

The demarcation can then be used as a reference point for spotters (refer to Appendix A) on the ground when directing lifting activities.

It should be noted that the SAD for a live power line is defined as radial, therefore by maintaining the same distance at ground level, a further factor of safety can be introduced.

10. Personal Protection Equipment

Accountability: Project Engineer / PCBU/ Site Supervisor

Earthing requirements should be established and implemented in accordance with appropriate industry standards and the Electricity Supply Authority or asset owner instructions.

All staff are to be provided with PPE that is fit for purpose such as Flame Retardant (FR) clothing where there is a requirement to work within the safe approach distance / exclusion zone of live power lines. (Refer to AS/NZS 4836 for guidance)

11. Communication

Accountability: Site Supervisor / PCBU/

Before commencing work, a thorough pre-start briefing should be conducted and all staff informed of known hazards on site (including proximity of power lines and risk control measures) via the details outlined in the site specific risk assessment (SSRA).

Where it is found that power lines are present on site, but have not been included in the SSRA, it is vital that this information is provided to the relevant project engineer/manager for review and inclusion. It is then the responsibility of the site supervisor to conduct a risk assessment to establish if the risks associated with the power lines can be mitigated.

12. Emergency response plans.

INJURY, CONTACT OR ARCING WITH OVERHEAD OR UNDERGROUND ASSETS

Should contact be made with an overhead or underground asset or arcing occurs between a cable and an item of plant or equipment or a worker, the following actions shall be taken:

• All work should cease immediately.

• Operator (or Driver) should remain inside the cabin and try to break the crane or mobile plant's contact with the energised power line or underground asset by moving the jib or driving clear only if safe to do so. If it is essential to leave the cab or operator's station due to fire or other life threatening reasons, jump clear of the equipment. Do not touch the equipment and ground at the same time. When moving away from the equipment, the operator should hop slowly, shuffle or jump away from the plant or equipment (with feet together) until at least 10 metres from the nearest part of the plant or equipment item. (Refer to Figure 8)

• Warn all other personnel / public to keep at least 10 metres clear from the plant or equipment. Do not touch any part of the plant, equipment or load and do not attempt to approach or re-enter the plant or equipment until the relevant Electricity Supply Authority or asset owner have determined the site is safe.

• Facilitate first aid treatment and seek medical aid as required.

• Advise your organisations emergency contact and request they immediately notify the relevant authorities, including the appropriate Electricity Supply Authority or asset owner.

• Initiate the emergency response plan.

Warning: Unauthorised persons should not attempt to rescue a person receiving an electric shock. Secondary deaths have occurred because other persons get electrocuted trying to help earlier victims. Ensure the electricity supply has been isolated and the work area or workplace is made safe before giving help.

FIRST AID

The Code of Practice: First Aid in the Workplace should be used to determine the requirements at a workplace.

A First Aid Kit must be available for a workplace. It should contain materials appropriate to the workplace and be regularly inspected and maintained.

Post – incident inspection by a competent person

When a crane or item of mobile plant, equipment or materials has been in contact with a live overhead power line, it should be checked by a competent person for any damage to the components of the crane, mobile plant, equipment or material. Any actions recommended by the competent person are to be completed prior to the crane, mobile plant, equipment or material returning to service.

Tyres on cranes, mobile plant or equipment that have been in contact with overhead power lines where electrical flash over and current flow occurs through the rubber tyres should be considered as a potential hazard.

These rubber tyres may catch fire, with the obvious potential for them to explode. Additionally, a lesser known danger may occur, which results when combustion takes place within the tyre, with no apparent external signs. When excessive heat is developed in or applied to a tyre as in the case from contact with overhead power lines, it can initiate a process known as pyrolysis, which is the decomposition of a substance by heat. This can generate a build up of flammable gases and pressure within the tyre, which may ultimately rupture or explode. Vast amounts of energy can be released by a tyre explosion, often leading to significant equipment damage, serious injuries or fatalities. Pyrolysis related explosions are very unpredictable, and have been known to occur immediately or up to 24 hours after initiation. An explosion can occur where no fire is visible and the danger area can be up to 300 metres from the tyre.

Any rubber tyred crane, plant item or equipment involved in an incident where contact is made with overhead power lines which results in discharges or flash-over of electrical current through the tyres should be considered as a potential hazard. If any personnel suspect there is a danger of a tyre explosion (e.g. in the case of the mobile crane contacting overhead power lines) then the procedure should include:

• parking the crane in an isolation zone, with a minimum 300 metre radius,

• removing all personnel from the area, and not allowing access to the isolation zone for 24 hours, and

• alerting firefighting services.

Definitions:

Authorised person

A person with technical knowledge or sufficient experience, who has been approved by the network operator to work within the safe approach distance of their asset.

Conductor

A wire, cable or form of metal designed for carrying electric current.

De-energised

Means not connected to any source of electrical supply but not necessarily isolated, earthed, discharged or out of commission.

Earthed

Means directly electrically connected to the general mass of earth so as to ensure and maintain the effective dissipation of electrical energy.

Envelope

Means the space encapsulating a plant or equipment item, including attachments such as rotating/ flashing lights or radio aerials and is categorised as:

- Design: the space encapsulating all possible movements of the plant or equipment and any load attached under maximum reach.
- Transit: the area encompassing the normal height and width of a vehicle, plant or equipment when travelling to or from a work site.

High voltage (HV)

Means a nominal voltage exceeding 1,000 V a.c. or exceeding 1,500 V d.c.

Insulated

Means separated from adjoining conducting material by a non-conducting substance which provides resistance to the passage of current, or to disruptive discharges through or over the surface of the substance at the operating voltage, and to mitigate the danger of shock or injurious leakage of current.

Isolated

Means disconnected from all possible sources of electricity supply by means which will prevent unintentional energisation of the apparatus and which is assessed as a suitable step in the process of making safe for access purposes.

Live

Means connected to any source of electrical supply or subject to hazardous induced or capacitive voltages.

Low voltage (LV)

Means a nominal voltage exceeding 50 V a.c. or 120 V d.c. but not exceeding 1000 V a.c. or 1500 V d.c.

No Go Zone

The area around overhead power lines into which no part of a person or material or cranes or vehicles or items of mobile plant or equipment may encroach without the approval of the Electricity Supply Authority or asset owner.

PCBU

Person conducting a business or undertaking has the same meaning as in Section 5 of the Work Health and Safety Act.

Safe Approach Distance (SAD)

The minimum separation in air from an exposed conductor that shall be maintained by a person, mobile plant or equipment, object or thing held by or in contact with that person.

Spotter – also referred to as “Safety Observer”

Means a person whose sole responsibility is to monitor the plant or equipment or person for the risk of coming within the safe approach distance or any other risk, and has the authority and ability to halt work immediately.

Guidance Figures

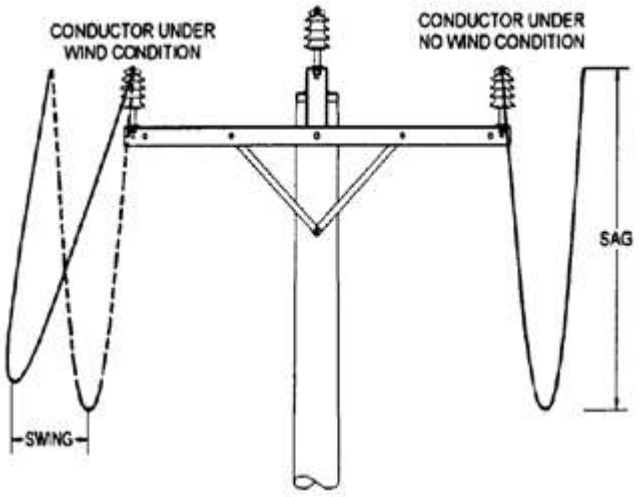


Figure 1: Example of conductor sag or swing affecting the Safe Approach Distance (SAD)

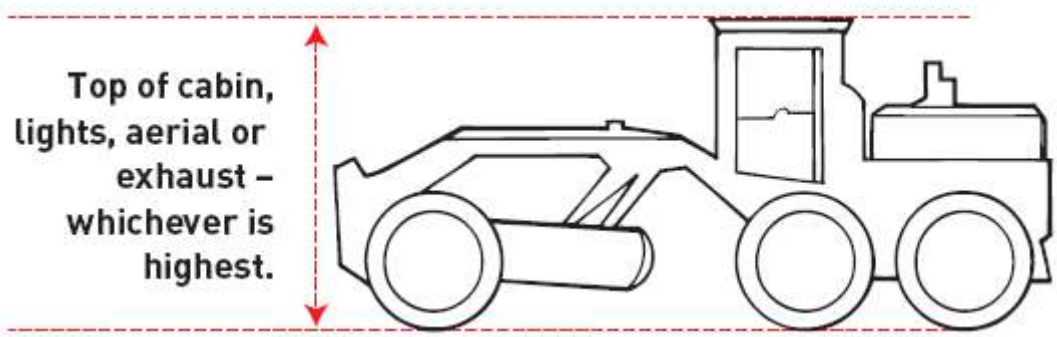


Figure 2: Transit Envelope – Maximum overall height

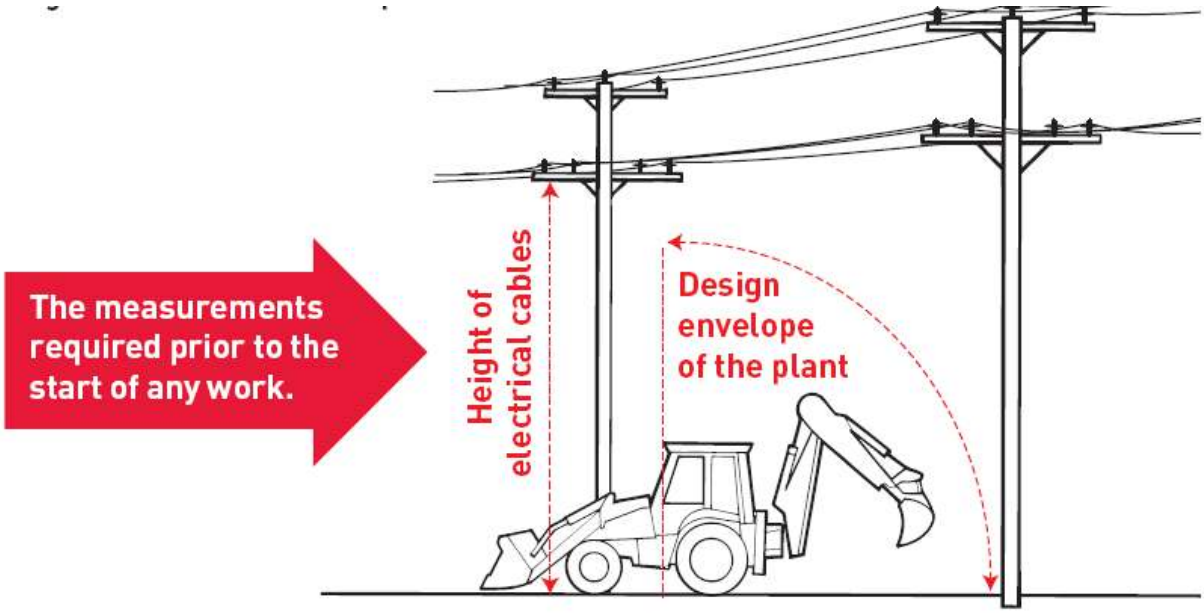


Figure 3: Measurement required for each workplace or work site

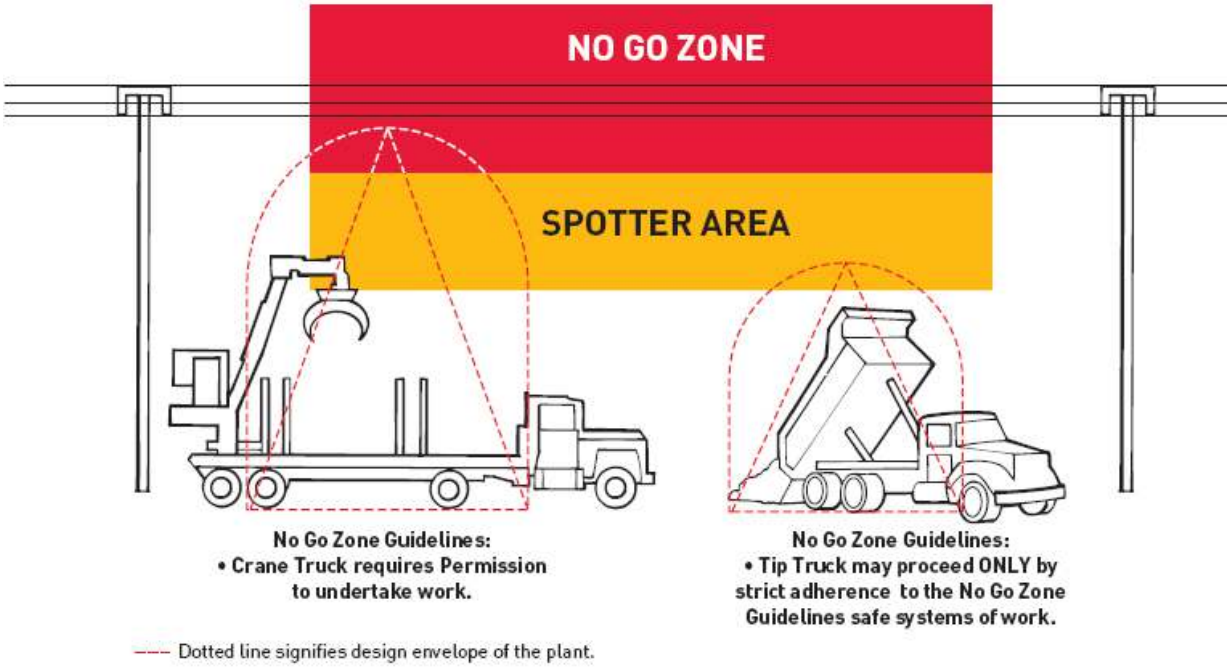
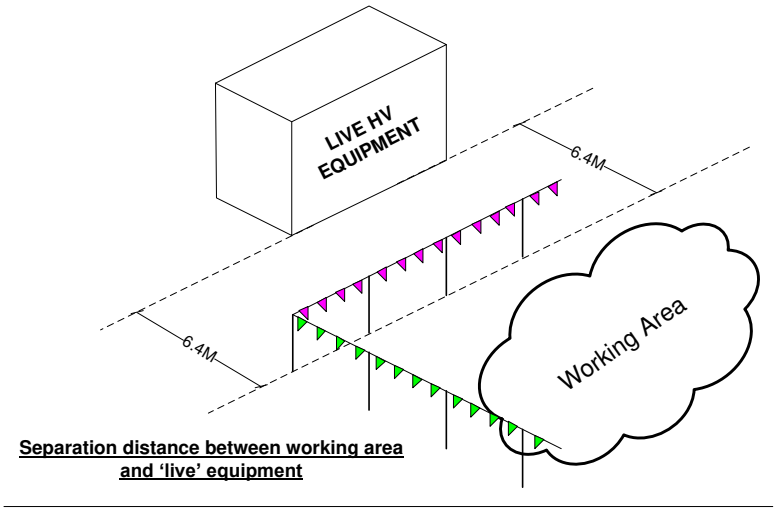


Figure 4: Example of design envelope



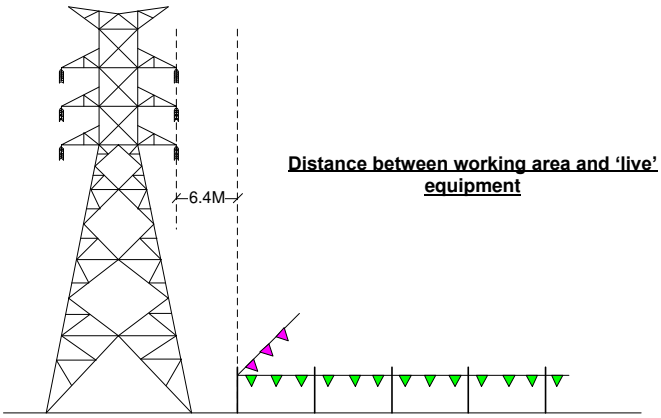
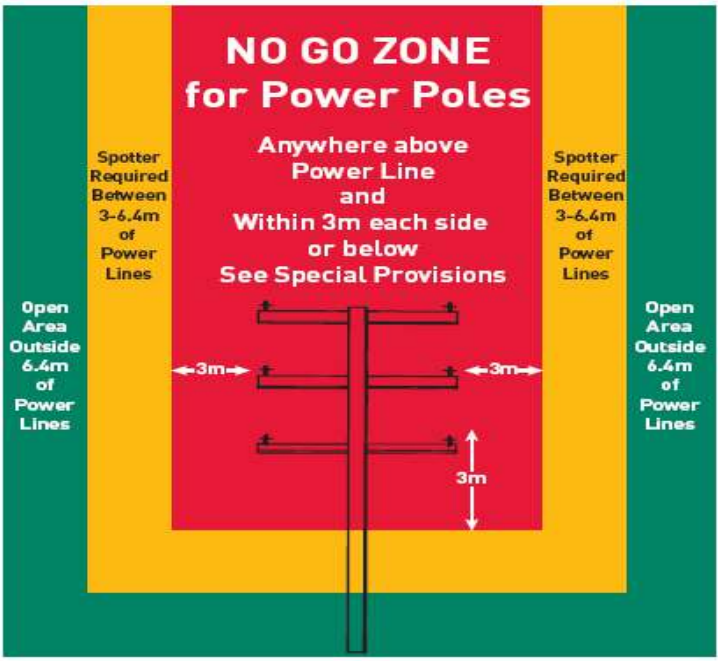


Figure 5: Example of coloured demarcation flagging or signage

Figure 6: Example of visual tape bunting fitted under overhead power lines.



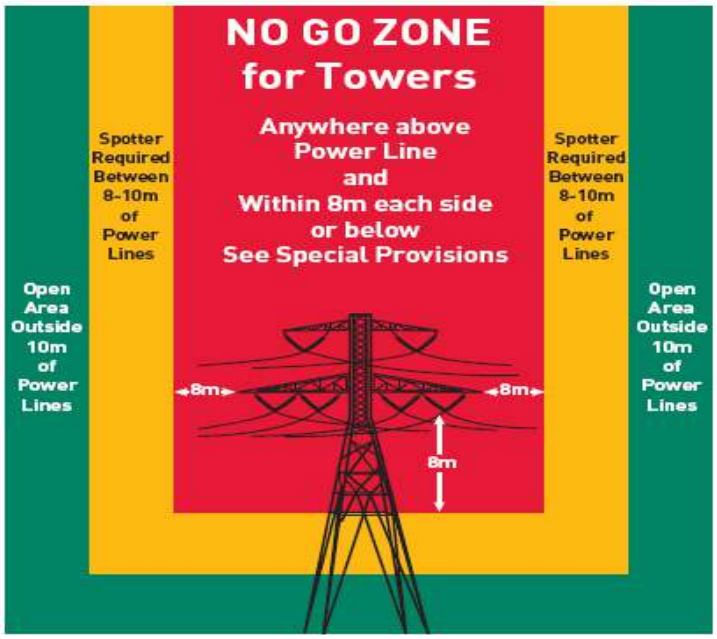


Figure 7: Example of No go / Exclusion / SAD zones and safety observer / spotter requirements

Note: As States, Territories and Asset owners have differing individual requirements, the distances described within these illustrations are determined from using the worst case scenario between States.

Refer to Appendix B for the safe approach distances specified in the various jurisdictions.

The Electricity Supply Authority or **asset owner shall be contacted for instructions and advice on any special conditions that maybe required for the work.**

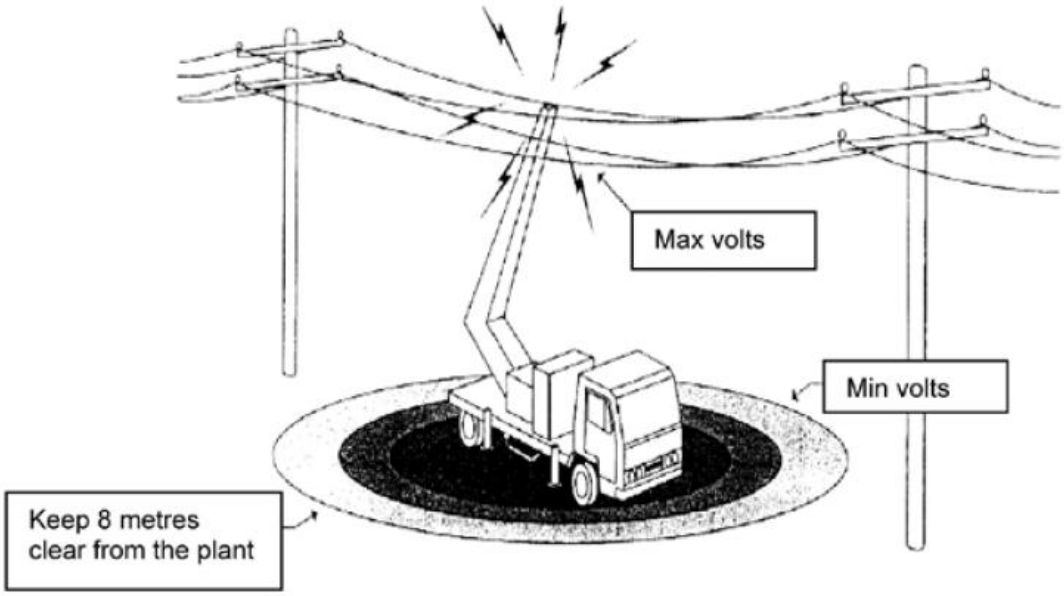
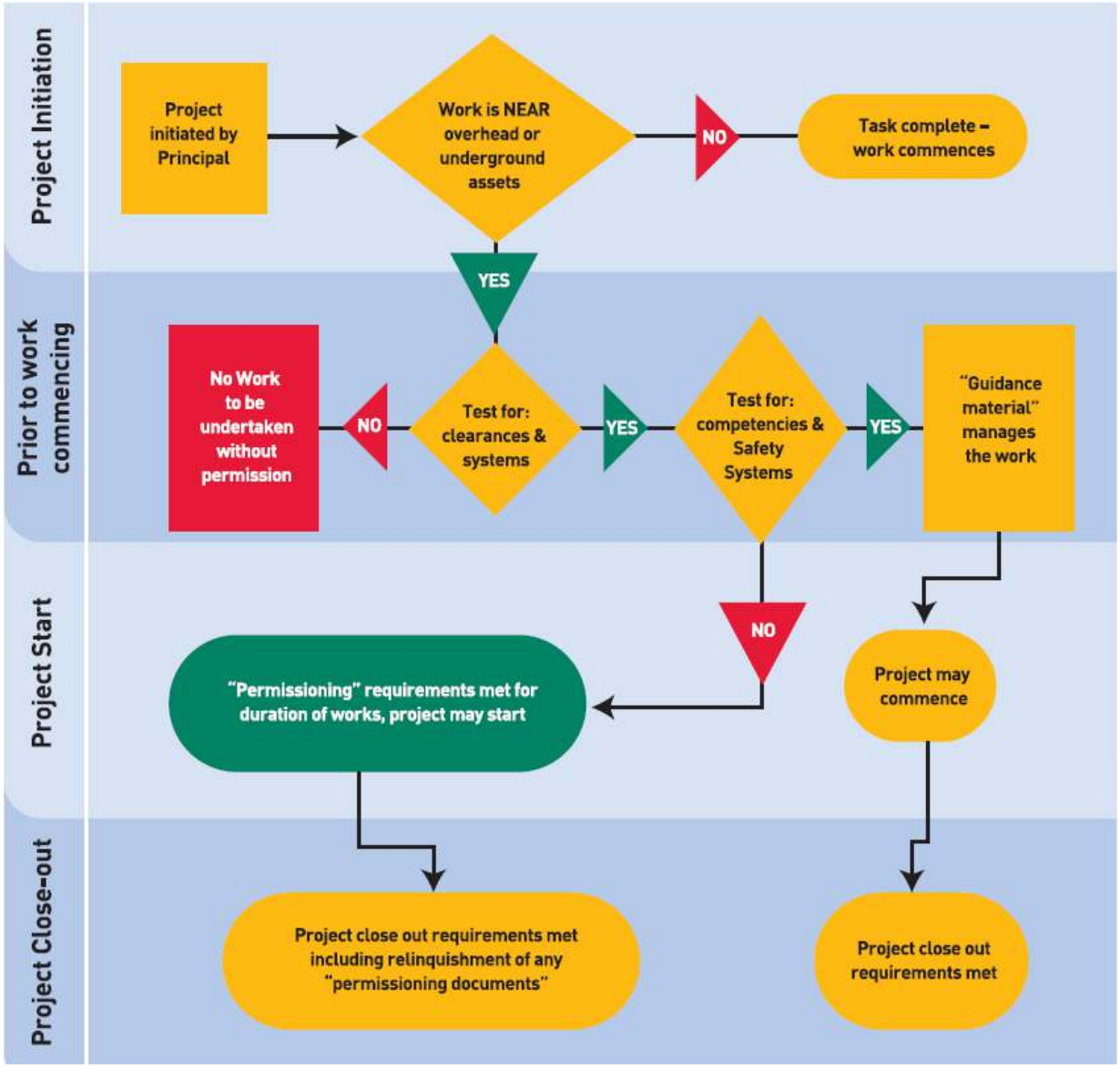


Figure 8: Example of step potential (voltage radiants) on contact with live parts.

Appendix B

Work process flow chart from the Victorian Guidelines - Framework for undertaking work near overhead and underground assets - 2006



APPENDIX C – JURISDICTIONAL APPROACH DISTANCES

AUSTRALIAN CAPITAL TERRITORY: CLEARANCES FROM POWER LINES

Source: *Utility Networks (Public Safety) Regulations 2001*

Table B1: Clearances from Aerial Lines – People - Regulation 18

Nominal Voltage (Kv)	Minimum Distance (metres) in any direction
Insulated aerial cable or insulated aerial service line, ≤ 1 kV	0.1
Aerial conductor or covered aerial cable, where U ≤ 1 kV	1.5
Aerial conductor or aerial cable, where 1 kV < U ≤ 33 kV	2.0
Aerial conductor or aerial cable, where 33 kV < U ≤ 132 kV	4.0

Table B2: Clearances from Aerial Lines – Vehicles - Regulation 23

Nominal Voltage (Kv)	Minimum Distance (metres) in any direction
Insulated aerial cable or insulated aerial service line, where U ≤ 1 kV	0.3
Aerial conductor or covered aerial cable, where U ≤ 1 kV	0.6
Aerial conductor or aerial cable, where 1 kV < U ≤ 33 kV	0.9
Aerial conductor or aerial cable, where 33 kV < U ≤ 132 kV	2.1

Table B3: Clearances from Aerial Lines – Mobile Plant - Regulation 24

Nominal Voltage (Kv)	Minimum Distance (metres) in any direction
Insulated aerial cable or insulated aerial service line, where U ≤ 1 kV	1.0
Aerial conductor or covered aerial cable, where U ≤ 1 kV	1.0
Aerial conductor or aerial cable, where 1 kV < U ≤ 33 kV	3.0
Aerial conductor or aerial cable, where 33 kV < U ≤ 132 kV	3.0

Table B4: Clearances from Aerial Lines – Vegetation - Regulation 25

Nominal Voltage (Kv)	Minimum Distance (metres) in any direction
Insulated aerial cable or insulated aerial service line, where U ≤ 1 kV	1.0
Aerial conductor or covered aerial cable, where U ≤ 1 kV	1.5
Aerial conductor or aerial cable, where 1 kV < U ≤ 33 kV	2.0
Aerial conductor or aerial cable, where 33 kV < U ≤ 132 kV	3.0

NEW SOUTH WALES: CLEARANCES FROM POWER LINES

Source: WorkCover NSW - *Work Near Overhead Power Lines Code of Practice 2006*

Table B5 Approach Distances for Work Performed by Ordinary Persons

Nominal phase to phase a.c. voltage (volts)	Approach distance (metres)
Up to and including 132,000	3.0
Above 132,000 up to and including 330,000	6.0
Above 330,000	8.0
Nominal pole to earth d.c. voltage (volts)	**Approach distance (metres)**
Up to and including +/- 1500 Volts	3.0

Note: Special provisions apply to scaffolds – Minimum 4 metre clearance

Table B6 Approach Distances for Work Performed by Accredited Persons, with a Safety Observer

Nominal phase to phase a.c. voltage (volts)	Approach distance (metres)
Insulated low voltage cables up to 1000, including LV ABC	0.5
Un-insulated low voltage conductors up to 1000	1.0
Above 1000 up to and including 33,000	1.2
Above 33,000 up to and including 66,000	1.4
Above 66,000 up to and including 132,000	1.8
Above 132,000 up to and including 220,000	2.4
330,000	3.7
500,000	4.6
Nominal pole to earth d.c. voltage (volts)	**Approach distance (metres)**
Up to +/- 1,500	1.0

Table B7 Approach Distances for Vehicles

Nominal phase to phase a.c. voltage (volts)	Approach distance (metres)
Low voltage conductors up to 1000	0.6
Above LV, up to and including 33,000	0.9
Above 33,000 up to and including 132,000	2.1
Above 132,000 up to and including 220,000	2.9
330,000	3.4
500,000	4.4
Nominal pole to earth d.c. voltage (volts)	**Approach distance (metres)**
Up to and including +/- 1500 Volts	0.9

Table B8 Approach Distances for Work Near Low Voltage Overhead Service Lines

Ordinary Persons (metres)				
Hand held tools	**Operating a crane or mobile plant**	**Handling of metal materials (Scaffolding, roofing, guttering, pipes, etc)**	**Handling of non-conductive materials (Timber, plywood, PVC pipes and guttering, etc)**	**Driving or operating vehicle**
0.5	3.0	4.0	1.5	0.6

NORTHERN TERRITORY: CLEARANCES FROM POWER LINES

Source: *Electricity Reform (Safety and Technical) Regulations*

Approach Limits for a Person

Regulation 12 and Schedule 1 – Approach limits for a person includes an article of clothing work by a person, or a conductive object held or carried by the person.

Approach limit A applies to a person suitably qualified and trained to work in proximity to exposed high and low voltage conductors or exposed parts of high and low voltage electrical equipment.
Approach limit B applies to a person who has been instructed in the identification of high and low voltage overhead conductors and safety aspects of work near power lines.
Approach limit C (i) applies to a person using power operated tools.
Approach limit C (ii) applies to a person using manually operated tools.

Table B9 Approach Limits for a Person

Voltage of conductor or equipment	**Approach limit A** (metres)	**Approach limit B** (metres)	**Approach limit C** (metres)	
			(i)	(ii)
Not more than 1000 V	0	0.3	3.0	1.0
More than 1000 V but less than 6.6 kV	0.3	0.6	3.0	2.0
6.6kV but not more than 33 kV	0.6	1.2	3.0	3.0
66 kV	1.0	2.0	4.0	4.0
132 kV	1.8	3.6	5.0	5.0
275 kV	2.5	5.0	6.0	6.0

Clearance Distance between Operation of Machine, Vehicle or Vessel with Elevating Component or Shear Legs and Power Lines

Regulation 24 and Table 2 of Schedule 3 – includes loads carried by the machine, vehicle or vessel

Table B10 Clearance Distance between Operation of Machine, Vehicle or Vessel with Elevating Component or Shear Legs and Power Lines

Type of voltage or aerial line	**Clearance distance in all directions** (metres)
U ≤ 1 kV ABS	0.5
U ≤ 1 kV bare and covered conductor	1.0
U > 1 kV U ≤ 33 kV	1.5
U > 33 kV U ≤ 132 kV	3.0
U > 132 kV U ≤ 275 kV	4.0
U > 275 kV U ≤ 330 kV	6.0
U > 275 kV U ≤ 500 kV	8.0

Clearance Distance between Load being Transported and Power Lines

Regulation 28 and Table 5 in Schedule 3 – vehicle includes carrying a load or equipment on the vehicle or on a trailer attached to the vehicle that exceeds the height limit established under the *Motor Vehicles Act*.

Table B11 Clearance Distance between Load being Transported and Power Lines

Nominal System Voltage (U)	**Clearance distance** (metres)	
	Vertical	**Horizontal**
Other cable system or insulated conductor U ≤ 1 kV	0.33	0.33
1 kV < U ≤ 132 kV	2.4	1.5
132 kV < U ≤ 275 kV	3.2	4.6
275 kV < U ≤ 330 kV	3.7	4.6
330 kV < U ≤ 500 kV	4.7	5.5

QUEENSLAND: CLEARANCES FROM POWER LINES

Source: *Electrical Safety Regulation 2013* and Code of practice: Working near overhead and underground electric lines -2010

Table B12 Exclusion Zones for Exposed Parts for UNTRAINED PERSONS and for Operating Plant and Vehicles Operated by Untrained Persons

Nominal phase to phase voltage of exposed part	Untrained person for the exposed part (mm)	Operating plant operated by untrained person for the exposed part (mm)	Vehicle operated by untrained person for the exposed part (mm)
Low voltage (with consultation with person in control of exposed part)	1 000	3 000	600
Low voltage (without consultation with person in control of exposed part)	3 000	3 000	600
Above low voltage, up to 33 kV (with consultation with person in control of exposed part)	2 000	3 000	900
Above low voltage, up to 33 kV (without consultation with person in control of exposed part)	3 000	3 000	900
Above 33 kV up to 50 kV	3 000	3 000	2 100
Above 50 kV up to 66 kV	3 000	3 000	2 100
Above 66 kV up to 110 kV	3 000	3 000	2 100
Above 110 kV up to 132 kV	3 000	3 000	2 100
Above 132 kV up to 220 kV	4 500	6 000	2 900
Above 220 kV up to 275 kV	5 000	6 000	2 900
Above 275 kV up to 330 kV	6 000	6 000	3 400
Above 330 kV up to 400 kV	6 000	8 000	4 400
Above 400 kV up to 500 kV	6 000	8 000	4 400
Nominal pole to earth dc voltage of exposed part			
+/- 25 kV	3 000	3 000	900
+/- 85 kV	3 000	3 000	2 100
+/- 150 kV	3 000	3 000	2 100
+/- 270 kV	4 500	6 000	2 900
+/- 350 kV	5 000	6 000	2 900
+/- 400 kV	6 000	6 000	3 400

Table B13 **Exclusion Zones for Exposed Parts for AUTHORISED AND INSTRUCTED PERSONS and for Operating Plant and Vehicles Operated by Authorised or Instructed Persons**

Nominal phase to phase voltage of exposed part	Authorised person or instructed person for the exposed part (mm)	Operating plant operated by authorised person or instructed person for the exposed part, with safety observer or another safe system	Vehicle operated by authorised person or instructed person for the exposed part (mm)
Low voltage (with consultation with person in control of exposed	(No exclusion zone prescribed)	1 000	600
Low voltage (without consultation with person in control of exposed	(No exclusion zone prescribed)	1 000	600
Above low voltage, up to 33 kV (with consultation with person in control of exposed part)	700	1 200	700
Above low voltage, up to 33 kV (without consultation with person in control of exposed part)	700	1 200	700
Above 33 kV up to 50 kV	750	1 300	750
Above 50 kV up to 66 kV	1 000	1 400	1 000
Above 66 kV up to 110 kV	1 000	1 800	1 000
Above 110 kV up to 132 kV	1 200	1 800	1 200
Above 132 kV up to 220 kV	1 800	2 400	1 800
Above 220 kV up to 275 kV	2 300	3 000	2 300
Above 275 kV up to 330 kV	3 000	3 700	3 000
Above 330 kV up to 400 kV	3 300	4 000	3 300
Above 400 kV up to 500 kV	3 900	4 600	3 900
Nominal pole to earth dc voltage of exposed part			
+/- 25 kV	700	1 200	700
+/- 85 kV	1 000	1 800	1 000
+/- 150 kV	1 200	1 800	1 200
+/- 270 kV	1 800	2 400	1 800
+/- 350 kV	2 500	3 200	2 500
+/- 400 kV	2 900	3 600	2 900

Table B14 **Exclusion Zones for Low Voltage Overhead Insulated Electric Line for UNTRAINED PERSONS and for Operating Plant or Vehicles Operated by Untrained Persons**

Low voltage overhead insulated electric line	Untrained person (mm)	Operating plant operated by untrained person for the electric line (mm)	Vehicle operated by untrained person for the electric line (mm)
With consultation with, and insulation verified by, an authorised person for the electric line	(No exclusion zone prescribed)	1 000	300
Without consultation with, and without insulation verified by, an authorised person for the electric line	3 000	3 000	600

Table B15 **Exclusion Zones for Low Voltage Overhead Insulated Electric Line for AUTHORISED OR INSTRUCTED PERSONS and for Operating Plant or Vehicles Operated by Authorised or Instructed Persons**

Low voltage overhead insulated electric line	Authorised person or instructed person for the electric line (mm)	Operating plant operated by authorised person or instructed person for the electric line, with safety observer or another safe system	Vehicle operated by authorised person or instructed person for the electric line (mm)
With consultation with, and with insulation verified by, an authorised person for the electric line	(No exclusion zone prescribed)	(No exclusion zone prescribed)	(No exclusion zone prescribed)
Without consultation with, and without insulation verified by, an authorised person for the electric line	(No exclusion zone prescribed)	(No exclusion zone prescribed)	600

Table B16 **Exclusion Zones for High Voltage Overhead Insulated Electric Line for UNTRAINED PERSONS and for Operating Plant or Vehicles Operated by Untrained Persons**

Nominal phase to phase voltage of high voltage overhead insulated electric line	Untrained person for the electric line (mm)	Operating plant operated by untrained person for the electric line (mm)	Vehicle operated by untrained person for the electric line (mm)
Above low voltage, up to 33 kV (with consultation with person in control of electric line)	2 000	3 000	900
Above low voltage, up to 33 kV (without consultation with person in control of electric line)	3 000	3 000	900
Above 33 kV up to 50 Kv	3 000	3 000	2 100
Above 50 kV up to 66 kV	3 000	3 000	2 100
Nominal pole to earth dc voltage of electric line			
+/- 25 kV	3 000	3 000	900
+/- 85 kV	3 000	3 000	2 100

Table B17 **Exclusion Zones for High Voltage Overhead Insulated Electric Line for AUTHORISED AND INSTRUCTED PERSONS and for Operating Plant and Vehicles Operated by Authorised or Instructed Persons**

Nominal phase to phase voltage of high voltage overhead insulated electric line	Authorised person or instructed person for the electric line (mm)	Operating plant operated by authorised person or instructed person for electric line, with safety observer or another safe system (mm)	Vehicle operated by authorised person or instructed person for the electric line (mm)
Above low voltage, up to 33 kV (with consultation with person in control of electric line)	700	700	700
Above low voltage, up to 33 kV (without consultation with person in control of electric line)	700	700	700
Above 33 kV up to 50 kV	750	750	750
Above 50 kV up to 66 kV	1 000	1 000	1 000
Nominal pole to earth dc voltage of electric line			
+/- 25 kV	700	700	700
+/- 85 kV	1 000	1 000	1 000

Table B18 Exclusion Zones and No-touch Guidance for Low Voltage Lines Near Buildings and Structures

Types of electrical service lines near buildings and structures	Insulated Low voltage (examined for visual defect – see Part 6)	Covered low voltage	Insulated low voltage lines – NO visual examination conducted	Bare low voltage
Designated zones	No-touch zone. Go as close as you need to but do not touch.	Without consultation* with electricity entity, exclusion zone is 3000 mm from the live electrical line. With consultation*, see Appendix B for allowable safe approach distances.		

* The purpose of the consultation is to determine the voltage of the line and inform the owner of the line that you are carrying out work near the line.

SOUTH AUSTRALIA: CLEARANCES FROM POWER LINES

Source: *Electricity (General) Regulations 2012*

Approach Limits for a Person

Regulation 64(3) Work in Proximity to Conductors etc. Approach limits for a person including an article of clothing worn by a person, or a conductive object held or carried by the person.

Approach limit A applies to a person to whom none of approach limits B, C or D applies

Approach limit B applies to a person who has conducted a risk assessment before carrying out the work

Approach limit C applies to a person who has been instructed in the identification of high and low voltage overhead conductors and the safety aspects of work near live electric lines and who has conducted a risk assessment before carrying out the work

Approach limit D applies to a person suitably qualified and trained to work in proximity to exposed high and low voltage conductors or exposed parts of high and low voltage electrical equipment and who has conducted a risk assessment before carrying out the work.

Table B19 Approach Limits for a Person

Voltage of conductor or equipment	**Approach limit A**	**Approach limit B**	**Approach limit C**	**Approach limit D**
	(Distance in metres)			
Insulated aerial line, not more than 1 000 V	0.6	0.1	0	0
Not more than 1 000 V	3.0	1.0	0.3	0
More than 1 000 V but not more than 11 kV	3.0	2.0	0.6	0.3
More than 11 kV but not more than 33 kV	3.0	3.0	0.9	0.45
66 kV	4.0	4.0	1.4	0.7
132 kV	5.0	5.0	2.4	1.2
275 kV	6.0	6.0	4.0	2.0

Table B20 Clearance Distance between Operation of Machine, Vehicle or Vessel with Elevating Component or Shear Legs and Aerial Lines

Type and voltage or aerial line	U ≤ 1 kV ABC	U ≤ 1 kV Bare and covered conductor	U >1 kV U ≤ 33 kV	U > 33 kV U ≤ 132 kV	U > 132 kV U ≤ 275 kV	U > 275 kV U ≤ 330 kV	U > 330 kV U ≤ 500 kV
Clearance distance in all directions in metres	0.5	1.0	1.5	3.0	4.0	6.0	8.0

Table B21 Clearance Distance Between Load Being Transported and Aerial Lines

Nominal System Voltage (U)	Clearance distance in all directions (in metres)
Low voltage aerial lines, service lines or other cable systems U ≤ 1 kV	0.33
1 kV < U ≤ 11 kV	0.6
11 kV < U ≤ 33 kV	0.9
33 kV < U ≤ 66 kV	1.4
66 kV < U ≤ 132 kV	2.4
132 kV < U ≤ 275 kV	3.2
275 kV < U ≤ 330 kV	4.6
330 kV < U ≤ 500 kV	5.5

TASMANIA: CLEARANCES FROM POWER LINES

Source: WorkCover Tasmania – *A Guide to Working Safely Near Overhead Power Lines Electricity*

Table B23 Clearances from Live Overhead Power Lines

	Overhead power lines on a pole	Overhead power lines on a tower
No go zone	3 metres either side 3 metres below Anywhere above the power line*	8 metres either side 8 metres below Anywhere above the power line*
Safety observer required	3 – 6.4 metres	8 – 10 metres

Note: The no go zone extends above the overhead power lines, with no boundaries - therefore prohibiting any work over the power lines.

VICTORIA: CLEARANCES FROM POWER LINES

Source: Victoria – *Electrical Safety (Installations) Regulations 2009*

Regulation 318 and Table 318

Table B24 Minimum Distances from a Person to Aerial Lines

Type of aerial line - Nominal voltage ("U")	Minimum distances (mm)
Insulated low voltage conductors	100
Bare or covered low voltage conductors	1500
High voltage conductors U ≤ 66 kV	2000
High voltage conductors 66 kV < U ≤ 220 kV	4000
High voltage conductors 220 kV < U ≤ 500 kV	6000

Regulation 315 and Table 315

Table B25 Minimum Distances from any part of a Vehicle, Plant or Machinery to Aerial Lines

Aerial line	Minimum distance from the aerial line in all directions (mm)
U ≤ 1500 V d.c. traction conductor	2000
U ≤ 66 kV	2000
66 kV < U ≤ 132 kV	4000
132 kV < U ≤ 500 kV	6400

Regulation 316 and Table 316

Table B26 Minimum Distances from Transported Loads to Aerial Lines

Aerial line	Minimum distance from the aerial line in all directions (mm)
U ≤ 1 kV a.c. bare conductor and U ≤ 1500 V d.c. traction conductor	600
U ≤ 1 kV a.c. insulated conductor	300
1 kV < U ≤ 66 kV a.c. and 1500 V < U ≤ 66 kV d.c.	1000
66 kV < U ≤ 132 kV	1500
132 kV < U ≤ 275 kV	4600
275 kV < U ≤ 330 kV	5500
330 kV < U ≤ 500 kV	6400

Regulation 319 and Table 319

Table H27 Minimum Distances from Falling Trees or Parts of Trees to High Voltage Electrical Installations and Aerial Lines of a Small Gauge Railway or Tramway System

Nominal voltage ("U")	Minimum distance in all directions (mm)
U ≤ 66 kV alternating current or U ≤ 1500 V d.c. traction conductor	2000
U > 66 kV alternating current or U > 1500 V direct current	6000

Source: Worksafe Victoria - Framework for Undertaking Work Near Overhead and Underground Assets 2006 -

Table B28 Clearances from Overhead Electric Cables: Power Poles

Zones	Voltage	Anywhere above power line and each side or below (metres)
No go zone	≤ 66 kV	3.0
Spotter required	≤ 66 kV	3.0 – 6.4

Table B29 Clearances from Overhead Electric Cables: Towers

Zones	Voltage	Anywhere above power line and each side or below (metres)
No go zone	> 66 kV	8.0
Spotter required	> 66 kV	8.0 – 10.0

Table B30 Types of Assets and Limits of Approach

Types of overhead electrical and communications assets - Nominal voltage ("U") both alternating current and direct current	Minimum clearances for the design envelope of plant and equipment before permission from the asset owner is required (mm)
Insulated low voltage electricity conductors	500
Uninsulated low voltage electricity conductors	1000
High voltage electricity conductors up to and including 66 kV	2000
High voltage electricity conductors above 66 kV	6400
Communications cabling – Broadband and telephony	300

Note: Special provisions apply to scaffolds.

WESTERN AUSTRALIA: CLEARANCES FROM POWER LINES

Source: *Occupational Health and Safety Regulations 1996*

Regulation 3.64.

Table B31 Overhead Power Lines Danger Zone

Nominal Voltage (volts)	Danger zone (metres)
Live insulated overhead power line or aerial bundled conductor line of a voltage of not more than 1000 volts	0.5
Live uninsulated overhead power line of a voltage of not more than 1000 volts	1.0
Live overhead power line, whether insulated or not, of a voltage exceeding 1000 volts but not more than 33 000 volts	3.0
Live overhead power line, whether insulated of not, of a voltage exceeding 33 000 volts	6.0

Source: *Electricity Regulations 1947*

Regulation 316A.

Table B32 Vegetation Control Work Near Overhead Power Lines

Nominal Voltage (volts)	Danger zone (metres)
Not more than 33 000 volts	3.0
More than 33 000 volts	6.0

APPENDIX D - ELECTRICITY SUPPLY AUTHORITIES

Electricity Supply Authorities operate in each state and territory jurisdiction. They own, control or operate electricity networks and may also be known as Network Operators or Electricity Distributors. Electricity Supply Authorities and their contact details are in Table 2.

Table 2 - Electricity Supply Authorities

Jurisdiction	Electricity Supply Authority	Contact
Australian Capital Territory	ActewAGL * supplies all of the ACT and south-east NSW.	Ph: (02) 6293 5705 Web: www.actewagl.com.au
New South Wales	**Ausgrid** (formerly Energy Australia) supplies most of Sydney, the Central Coast and Hunter regions of NSW.	Ph: 13 15 25 or 13 15 35 Web: www.ausgrid.com.au
	Endeavour Energy (*formerly Integral Energy*) supplies Sydney's greater west, the Southern Highlands and the Illawarra.	Ph: 131 081 or (02) 9853 6666 Web: www.endeavourenergy.com.au
	Essential Energy (*formerly Country Energy*) supplies the rest of rural and regional NSW.	Ph: 13 23 91 Web: www.essentialenergy.com.au
Northern Territory	**PowerWater *** supplies all of the Northern Territory.	Ph: 1800 245 092 Web: www.powerwater.com.au
Queensland	**Energex** supplies south eastern Queensland - Brisbane to Ipswich, Gold Coast and Sunshine Coast.	Ph: 13 12 53 Web: www.energex.com.au
	Ergon Energy * supplies rural and regional Queensland.	Ph: 13 10 46 Web: www.ergon.com.au
South Australia	**ETSA Utilities** supplies all of South Australia.	Ph: 13 12 61 or (08) 8404 5667 Web: www.etsautilities.com.au
Tasmania	**Aurora Energy *** supplies all of Tasmania.	Ph: 1300 13 2007 Web: www.auroraenergy.com.au
Victoria	**CitiPower Pty.** supplies Melbourne CBD and inner suburbs.	Ph: 1300 301 101 Web: www.citipower.com.au
	Jemena Electricity Network (*formerly Alinta Energy*) supplies north west Melbourne.	Ph: 1300 131 871 Web: www.jemena.com.au
	Powercor Australia Ltd. supplies Melbourne's outer western suburbs and central and western regional Victoria.	Ph: 13 22 06 Web: www.powercor.com.au
	SP AusNet supplies eastern metropolitan Melbourne	Ph: 1300 360 795 or (03) 9695 6000 Web: www.sp-ausnet.com.au

Jurisdiction	Electricity Supply Authority	Contact
	and eastern regional Victoria.	
	United Energy Distribution Pty. Ltd. supplies south eastern metropolitan Melbourne and Mornington Peninsula.	Ph: 1300 131 689 or (03) 8846 9900 Web: www.ue.com.au
	Basslink Pty. Ltd. High voltage direct current cable under Bass Straight supplies Tasmania and Victoria during energy shortages and times of peak demand.	Ph: (03) 9607 4700 Web: www.basslink.com.au
Western Australia	**Horizon Power *** supplies regional and remote Western Australia.	Ph: (08) 9159 7250 Web: www.horizonpower.com.au
	Western Power supplies south west corner of Western Australia.	Ph: 13 10 87 Web: www.westernpower.com.au