

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

## 1. OVERVIEW

The Flinders Ranges Council as part of its commitment under its Hazardous Work Policy, recognises its obligation to manage risks to health and safety associated with electrical risks at the workplace and to make sure that, as far as is reasonably practicable, persons at work are safe from the risk of death, electrical shock or other injury caused indirectly or directly by electricity or fire caused by an electrical fault.

This Procedure aims to make sure that:

- Legislative compliance is maintained.
- Electrical risks at the workplace are identified, assessed, and where elimination is not possible, minimised and controlled.
- Electrical installations and electrical equipment is maintained in safe working order, inspected and tested.
- Electrical work performed on an electrical installation or electrical equipment is carried out by a competent person.

This Procedure applies to Council workers who manage, supervise or undertake activities that involve electricity, electrical installation or electrical equipment.

SIGNED .....  
Chief Executive Officer

.....  
Chairperson, WHS Committee

Date: 24 / 7 / 2014

Date: 24 / 7 / 2014

## 2. CORE COMPONENTS

The core components of our Electrical Safety Procedure require that:

- Electrical hazards have been identified.
- Risk assessments have been conducted for identified electrical hazards.
- Where reasonably practicable, electrical risks have been eliminated.
- Where elimination is not reasonably practicable, appropriate risk controls have been implemented, maintained and reviewed in accordance with WHS Hazard Management Procedure.
- Competent persons are used for electrical work.
- Records are maintained and available.
- A program of, and procedures for, appropriate inspection/testing is in place.

A program of, and procedures for, testing and tagging of electrical equipment is implemented.

## 3. DEFINITIONS

AS/NZS 3760	Australian/New Zealand Standard AS/NZS 3760:In-service safety inspection and testing of electrical equipment
Competent person	<p>(a) For electrical work on energised electrical equipment or energised electrical installations. (other than testing referred to in regulations 150 and 165): a person registered to undertake the work under the Plumbers, Gas Fitters and <i>Electricians Act 1995</i>;</p> <p>(b) For any other case, a person who has acquired through training, qualification or experience and the knowledge and skills to carry out the task.</p> <p>[as defined by the WHS Regulations 2012, Regulation 4, p. 31].</p>

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

Contractor	A person conducting a business or undertaking (PCBU) that carries out work or performs services under a contract for service. This includes their workers.
Electrical equipment	<p>Means any apparatus, appliance, cable, conductor, fitting, insulator, material, meter or wire that:</p> <ul style="list-style-type: none"> <li>(a) Is used for controlling, generating, supplying, transforming or transmitting electricity at a voltage greater than extra-low voltage; or</li> <li>(b) Is operated by electricity at a voltage greater than extra-low voltage; or</li> <li>(c) Is part of an electrical installation located in an area in which the atmosphere presents a risk to health and safety from fire or explosion; or</li> <li>(d) Is, or is part of, an active impressed current cathodic protection system within the meaning of AS 2832.1:2004 (Cathodic protection of metals—Pipes and cables).</li> </ul> <p>Electrical equipment does not include any apparatus, appliance, cable, conductor, fitting, insulator, material, meter or wire that is part of a motor vehicle if:</p> <ul style="list-style-type: none"> <li>(a) The equipment is part of a unit of the vehicle that provides propulsion for the vehicle; or</li> <li>(b) The electricity source for the equipment is a unit of the vehicle that provides propulsion for the vehicle.</li> </ul> <p>Motor vehicle means a vehicle that is built to be propelled by a motor that forms part of the vehicle. [as defined by the WHS Regulations 2012 (144)]</p>
Electrical installation	<p>Means a group of items of electrical equipment that:</p> <ul style="list-style-type: none"> <li>(a) Are permanently electrically connected together; and</li> <li>(b) Can be supplied with electricity from the works of an electricity supply authority or from a generating source.</li> </ul> <p>[as defined by the WHS Regulations 2012 (145)]</p>
Electrical work	<p>Means—</p> <ul style="list-style-type: none"> <li>(a) Connecting electricity supply wiring to electrical equipment or disconnecting electricity supply wiring from electrical equipment; or</li> <li>(b) Installing, removing, adding, testing, replacing, repairing, altering or maintaining electrical equipment or an electrical installation.</li> </ul> <p>[as defined by the WHS Regulations 2012 (146)(1) and subject to the exclusions contained in WHS Regulations 2012, (146)(2)]</p>
Energised (live)	Means connected to a source of electrical supply or subject to hazardous induced or capacitive voltages. [as defined by the COP: Managing Electrical Risks in the Workplace July 2012, p. 50]
Isolated	Means disconnected from all possible sources of electricity supply and rendered incapable of being made energised without premeditated and deliberate action. [as defined by the COP: Managing Electrical Risks in the Workplace July 2012, p. 50]

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

Hierarchy of control	<p>If it is not reasonably practicable for risks to health and safety to be eliminated, risks must be minimised, so far as is reasonably practicable, by doing one or more of the following:</p> <ul style="list-style-type: none"> <li>(a) Substituting (wholly or partly) the hazard giving rise to the risk with something that gives rise to a lesser risk.</li> <li>(b) Isolating the hazard from any person exposed to it.</li> <li>(c) Implementing engineering controls.</li> </ul> <p>If a risk then remains, the duty holder must minimise the remaining risk, so far as is reasonably practicable, by implementing administrative controls.</p> <p>If a risk then remains the duty holder must minimise the remaining risk, so far as is reasonably practicable, by ensuring the provision and use of suitable personal protective equipment.</p> <p>[as defined by the Work Health and Safety Regulations 2012, Regulation 36]</p>
Hostile operating environment	<p>An environment where:</p> <ul style="list-style-type: none"> <li>• Electrical equipment is used in an environment in which the normal use of electrical equipment exposes the equipment to operating conditions that are likely to result in damage to the equipment or a reduction in its expected life span, including conditions that involve exposure to moisture, heat, vibration, mechanical damage, corrosive chemicals or dust.</li> <li>• Electrical equipment is moved between different locations in circumstances where damage to the equipment or to a flexible electricity supply cord is reasonably likely.</li> <li>• Electrical equipment is frequently moved during its normal use.</li> <li>• Electrical equipment form part of, or is used in connection with, an amusement device.</li> </ul> <p>[see the Work Health and Safety Regulations 2012, Regulation 164] Note: this extends to construction or demolition sites.</p>
PCBU	<p>Person Conduction a Business or Undertaking [as defined in the WHS Act 2012(5)]</p>
Personal protective equipment (PPE)	<p>PPE is specialised clothing or equipment worn by workers for protection against health and safety hazards and is designed to protect many parts of the body, eg: eyes, head, face, hands, feet, and ears.</p>
Plant	<p>Includes—</p> <ul style="list-style-type: none"> <li>(a) Any machinery, equipment, appliance, container, implement and tool; and</li> <li>(b) Any component of any of those things; and</li> <li>(c) Anything fitted or connected to any of those things.</li> </ul> <p>[as defined by the WHS Act 2012(4) p.16]</p>
RCD	<p>Residual Current Device. Means a residual current device as defined in AS/NZS 3760 In service safety inspection and testing of electrical equipment. [as defined by the WHS Regulations 2012(5), p.46] A mechanical switching device designed to make, carry and break currents under normal service conditions, and to cause the opening of the contacts when the residual current attains a given value under specified conditions. The RCD may be fixed or portable. [as defined by AS/NZS 3760]</p>

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

## 4. PROCEDURE

### 4.1. Register of electrical equipment

- 4.1.1. The WHS Coordinator will maintain a register of electrical equipment at the workplace.
  - a. The register may be a section of the plant register or a separate register of electrical equipment.
  - b. The register should include electrical equipment that is supplied with electricity through an electrical socket outlet and is used in a hostile operating environment, matched to a:
    - Record of formal inspections and tests.
    - Repairs register.
    - Record of all faulty equipment showing details of services or corrective actions.
- 4.1.2. The register should be readily available in a central location. Each worksite should have access to the part of the register relevant to the electrical equipment that is supplied with electricity through an electrical socket outlet and is used in a hostile operating environment at that location.
- 4.1.3. Department managers should notify the WHS Coordinator when plant (which is under their control) is introduced, modified, altered or disposed of and the register should be updated to reflect the changes made.

### 4.2. Identification of electrical hazards

- 4.2.1. Electrical hazards should be identified in accordance with the WHS Hazard Management and Plant procedures and in consultation with workers, their representatives and other duty holders (if relevant). This includes, but is not limited to, identification of electrical hazards associated with work undertaken:
  - a. At Council workplaces.
  - b. By volunteers.
- 4.2.2. Hazards arising from electrical equipment or installations may arise from:
  - a. The design, construction, installation, maintenance and testing of electrical equipment or electrical installations.
  - b. Design change or modification.
  - c. Inadequate or inactive electrical protection.
  - d. Where and how electrical equipment is used e.g. there is a greater risk of damage if used outdoors or in a workshop environment.
  - e. Electrical equipment being used in an area in which the atmosphere presents a risk to health and safety from fire or explosion, eg in confined spaces.
  - f. The type of electrical equipment eg 'plug in' electrical equipment that is moved around from site to site, including extension leads, is particularly liable to damage.
  - g. The age of electrical equipment and electrical installations.
  - h. Work carried out on or near electrical equipment or electrical installations, including electric overhead lines or underground electric services.
  - i. Exposure to high electromagnetic fields for workers with some medical conditions eg pacemakers.
- 4.2.3. The hazard identification process should be undertaken before:
  - a. The connection and supply of electricity to a new electrical installation at a workplace.
  - b. The modification, maintenance or repair of an existing supply of electricity to or at a workplace, or of any existing electrical installations or equipment at a workplace.
  - c. Any electrical equipment is installed or operated.
  - d. The introduction or modification of a work practice or procedure associated with electrical equipment that may present a risk to health and safety.

Note: The Preventative Actions Checklist in Appendix 2 will assist in the identification of hazards associated with electrical work.

# ELECTRICAL SAFETY PROCEDURE

<b>Version No</b>	3.0
<b>Issued</b>	24 <sup>th</sup> July 2014
<b>Next Review</b>	July 2017
<b>GDS</b>	12.63.1.1

## 4.3. Risk assessment

- 4.3.1. The department manager should form a team to undertake the risk assessment. The team should consist of a competent person to lead the risk assessments/JSA process, workers who are involved in the activity to be assessed, a HSR (where one exists), the manager or supervisor and other stakeholders or experts where relevant.
- 4.3.2. The risk assessment should be undertaken in accordance with the WHS Hazard Management and Plant Procedures.

## 4.4. Risk control

- 4.4.1. Controls should be implemented to eliminate, so far as is reasonably practicable, identified risks to health and safety.
- 4.4.2. If it is not reasonably practicable to eliminate risks, risk controls will be selected in descending order from the hierarchy of control, and in accordance with the WHS Hazard Management Procedure.
- 4.4.3. The risk assessment/JSA must clearly indicate what control measures are to be used.
- 4.4.4. Examples of risk control include, but are not limited to:

Elimination	The most effective control measure is to remove the hazard or hazardous work practice. By designing-in or designing-out certain features, hazards may be eliminated.	Remove electrical equipment. Design in or out certain features.
Substitution	Replacing a hazardous process or material with one that is less hazardous will reduce the hazard, and hence the risk. For example, it may be reasonably practicable to use extra low voltage electrical equipment such as a battery-operated tool rather than a tool that is plugged into mains electricity.	Replace electric tools with battery operated or pneumatic tools in wet environments. Use non-conductive scaffolding or ladders instead of metal.
Isolation	Preventing workers from coming into contact with the source of an electrical hazard will reduce the relevant risks.	Isolate, lock out and tag out the source of electrical energy during operations or maintenance functions. Erect a physical barrier around the work area. Restrict access to electrical switchboards and electrical equipment rooms.
Engineering	Use engineering control measures to minimise the risk, for example installing residual current devices to reduce the risk of receiving a fatal electric shock.	Use residual current devices (RCDs).
Administrative	Administrative controls involve the use of safe work practices to control the risk, for example establishing exclusion zones, use of permits and warning signs. Administrative controls and PPE do nothing to change the hazard itself. They rely on people behaving as expected and require a high level of supervision. Exclusive reliance on administrative controls and PPE must only occur where other measures are not reasonably practicable or as an interim control while the preferred control measure is being implemented.	Tag and test electrical equipment. Identify electrical services before work commences e.g. dial before you dig, cable locator use for walls. Ban the use of electrical equipment in the rain. Use tiger tails. Apply minimum safe approach distances when working near overhead power lines. Use permits and warning signs.
Personal protective equipment	PPE includes protective eyewear, insulated gloves, hard hats, aprons and breathing protection. Most forms of PPE are not relevant to minimising electrical risks in workplaces, except in relation to energized electrical work.	This includes, for example, choosing insulating gloves, mats and tools, hard hat, aprons and breathing protection.



# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

- 4.4.5. Implement the controls identified by the risk assessments/JSA before work commences.  
Any hazards that are unable to be immediately controlled within the risk assessment process should be transferred to the Corrective & Preventative Action (CAPA) register for further action and management. Work should not commence until all selected controls are in place.
- 4.4.6. Each person involved in the job should sign their acknowledgement of the risk assessment/JSA prior to work commencing.
- 4.4.7. The department manager or delegate should inform relevant persons about the control measures selected or corrective actions that have been implemented as a result of the hazard identification and risk assessment process for electrical safety. Department meeting minutes and/or JSAs (where relevant) should demonstrate that this has occurred.
- 4.4.8. The department manager or delegate should check that any new hazards that may have been introduced by the selected controls methods are identified by:
- Monitoring and evaluating controls for effectiveness.
  - Recommencing the risk assessment process, outlined at section 4.3 above, if:
    - New electrical hazards are identified.
    - The measure does not control the risk it was implemented to control so far as is reasonably practicable.
    - There is a proposed change at the workplace that is likely to give rise to a new or different risk to health or safety that the measure may not effectively control.
    - The results of consultation indicate that a review is necessary or a health and safety representative requests a review.
  - Communicating the outcomes of the risk assessment process within the department or work group and to the WHS committee, as required.
  - Retaining completed risk assessments / JSAs.
- 4.4.9. The department manager should consult and coordinate activities with other PCBUs who are undertaking electrical work, so far as is reasonably practicable, if their duty of care overlaps.

## 4.5. Electrical installation

- 4.5.1. The Works Coordinator should confirm that the safety of Council electrical installations is maintained in accordance with legislative requirements and the relevant Australian Standards (see References).
- 4.5.2. Electrical work performed on any electrical installation at the workplace shall be carried out by a competent person licensed under the *Plumbers, Gas Fitters and Electricians Act 1995*. The competent person must provide a signed certificate of compliance.
- 4.5.3. Examinations and tests of the electrical installation shall be carried out as required by the Electricity (General) Regulations 2012 and records retained.
- 4.5.4. Access to electrical switchboards, electrical equipment rooms and any other nominated areas shall be locked and restricted to authorised persons.

## 4.6. RCD protection

- 4.6.1. The Senior Leadership Team should make sure, so far as is reasonably practicable, that electrical risk associated with the supply of electricity to 'plug in' electrical equipment (ie through a socket outlet) is minimised by the use of an appropriate RCD in hostile work environments. Common examples of electrical equipment requiring an RCD include:
- Hand-held electrical equipment, for example drills, saws, hair dryers, curling wands and electric knives.
  - Electrical equipment that is moved while in operation, including jackhammers, electric lawn mowers, floor polishers and extension cords.

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

- c. Electrical equipment that is moved between jobs in ways that could result in damage to the equipment, for example electric welders, electric cement mixers, portable bench saws and extension cords.
- 4.6.2. The requirement for an RCD does not apply where:
  - a. The supply of electricity is to an extra low voltage system that is electrically separated from earth and from other systems in such a way that a single fault cannot give rise to the risk of electric shock; or
  - b. The supply of electricity is to electrical plant and is
    - Direct current (DC), or
    - Provided through an isolating transformer that complies with AS/NZS 61558 Safety of power transformers, power supply units and similar; or
    - Provided from a portable generator that complies with AS 2790 Electricity generating sets—*Transportable (up to 25 kW)*.
- 4.6.3. The Works Coordinator is responsible to make sure that a process for RCD testing is undertaken by a competent person, and where relevant, in accordance with the intervals outlined in AS/NZS 3760 and the following requirements:
  - a. Persons using portable RCDs should be instructed in their use and maintenance.
  - b. If an RCD is found to be faulty it should be taken out of service and replaced as soon as possible.
  - c. The tripping function of portable RCDs should be checked before use by operating the RCD test button.
  - d. Records of the results of the testing process (other than the daily push button test for portable RCDs) should be retained.
- 4.7. Purchase and use of electrical equipment
  - 4.7.1. The purchase and use of electrical equipment should be subject to specific risk assessment, which should specifically include the identification and assessment of electrical hazards including the environment in which it is to be used.
  - 4.7.2. The Works Coordinator should make sure a competent person undertakes inspection and testing activities for electrical equipment, as follows:
    - a. When new electrical equipment is purchased, the supplier is deemed responsible for the initial electrical safety. New electrical equipment does not require testing. However, the department manager responsible for its purchase should make sure it is visually inspected to ensure that no damage has occurred during transport, delivery, installation or commissioning.
    - b. If the new electrical equipment is to be used in a hostile operating environment, it shall be inspected as outlined in point 4.6.3 and fitted with a tag stating:
      - That the equipment is 'new to service'.
      - The date of entry into service.
      - The date when the first electrical safety test is due.
      - That the equipment has not been tested.
    - c. Electrical equipment intended for use in a hostile operating environment and connected to the electrical supply through an electrical socket outlet should be regularly inspected, tested and tagged by a competent person after taking into account:
      - Information provided by the designer or manufacturer of the electrical equipment;
      - Any hazard identification and risk assessment process that is relevant to the use of the electrical equipment in its intended work environment.
      - Guidance from AS/NZS 3760.
    - d. Second hand electrical equipment requires inspection and testing before its first use.

# ELECTRICAL SAFETY PROCEDURE

<b>Version No</b>	3.0
<b>Issued</b>	24 <sup>th</sup> July 2014
<b>Next Review</b>	July 2017
<b>GDS</b>	12.63.1.1

- 4.7.3. The use of electrical equipment without a current test tag in a hostile operating environment is not permitted.
  - a. Prior to use of electrical equipment, the operator must check that the electrical equipment has a current test tag and, when required, record this check on the pre-start checklist.
  - b. If a test tag is not fitted or is out of date, follow the requirements of step 4.7.6 below.
- 4.7.4. Persons managing contracts and/or contractors should confirm that any electrical equipment used by contractors has been tested and tagged prior to work commencing.
- 4.7.5. Workers operating electrical equipment are required to follow the training and instructions in place (eg following manufacturer's requirements and/or safe operating procedures, undertaking pre-operational checks, use of permits if indicated, etc).
- 4.7.6. All workers should check the physical condition of electrical equipment they use, including the lead and plug connections, prior to starting work. If a hazard is identified prior to or during use such as, but not limited to, frayed or damaged electrical cords, faults in functioning, or no current test tag:
  - a. The electrical equipment should be turned off or otherwise isolated and tagged with an Out of Service tag, in accordance with the Isolation, Lock Out, Tag Out Procedure and removed from service, until a competent person determines that it is safe for use.
  - b. The worker shall make sure, as far as is reasonably practicable, that the department manager or supervisor is advised of electrical equipment that has been withdrawn from service.
- 4.7.7. Inspection, testing, maintenance or repair activities, shall be undertaken by competent persons in accordance with legislative requirements, manufacturer's instructions, Council work instructions and documented maintenance schedules. Records of inspection, testing, maintenance or repair activities should be retained.
- 4.7.8. When identified as a requirement in the risk assessment process, a permit for work shall be issued prior to work commencing.
- 4.8. Controls for work in the proximity of overhead or underground electric lines
  - 4.8.1. Any person required to carry out work that may involve a reasonably foreseeable danger of accidental direct contact with exposed live conductors or exposed live parts of electrical equipment should meet the training requirements of section 5.4 of this procedure.
  - 4.8.2. When working, using cranes (including earthmoving machinery and elevating work platforms), operating machinery or erecting buildings and structures including scaffolds near overhead powerlines, SA Power Networks should be contacted to install Tiger Tails on the closest low voltage lines. [Note: Tiger Tails are only visual indicators and do not insulate the powerline. They cannot be used on high voltage lines]. When using Tiger Tails on powerlines, legal clearance distances must be maintained.
  - 4.8.3. To operate cranes and elevating machinery safely near powerlines at the minimum clearance required by the Electricity (General) Regulations 2012 and referenced in the Working Safely Near Overhead Powerlines pamphlet from the Office of The Technical Regulator:
    - a. The voltage must be identified, and
    - b. A spotter (competent person who is suitably qualified (whether by experience, training, or both) with the sole duty of observing and warning against unsafe approach of the crane, its lifting attachment or its load to powerlines) carries out spotting duties at all times, and
    - c. A documented risk assessment is carried out before any work commences, in consultation with all relevant parties involved in the work, and



# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

- d. The electricity network operator is notified before commencing work, and
- e. Any conditions specified by the electricity network operator or Technical Regulator must be complied with.
- 4.8.4. In addition to the minimum clearance distances set out in the Electricity (General) Regulations 2012 for machinery and structures, there are safe approach limits to be maintained by people working near powerlines (Appendix 1: Working safely near overhead powerlines, p.3).
  - a. The minimum safe approach limit is measured from the closest conductor on the powerline to the closest part of the person. This includes any article of clothing worn by the person or conductive object held or carried by the person.
- 4.8.5. In some circumstances the clearances specified in AS/NZS 4576 – Guidelines for Scaffolding may be less than those prescribed in the Electricity (General) Regulations 2012, in which case the prescribed distances of the Regulations must be complied with.
- 4.8.6. All underground power supply lines are to be accurately located before any excavation work commences.
  - a. The person supervising the task should make sure Dial Before You Dig has been contacted on 1100 for details of underground cables.
  - b. A Network Access Permit may be required when digging in proximity to underground cables.
- 4.8.7. If a task requires digging deeper than 30 centimetres within three metres of a stobie pole, the supervisor must obtain a written permission from the electricity network operator.
- 4.8.8. The ground level directly under powerlines must not be raised if it reduces the ground clearance to less than that prescribed by the Regulations.
- 4.9. Accidents or incidents involving electricity
  - 4.9.1. A first aid officer must not put themselves at risk to deliver first aid when electricity is involved. If the situation is hazardous and cannot be made safe for the delivery of first aid, the first aid officer should contact emergency services to take control of the situation.
  - 4.9.2. Any person suspected of receiving an electrical shock should be taken for medical assessment regardless of how well they feel.
  - 4.9.3. Any Council worker involved in an incident involving electricity should report the incident to their manager as soon as reasonably practicable. The department manager should immediately notify the WHS Coordinator, who will ascertain whether statutory reporting to SafeWork SA or the Office of the Technical Regulator is required.
  - 4.9.4. If an a notifiable incident occurs that involves an electric shock, namely:
    - The death or a person; or
    - A serious injury or illness of a person; or
    - A dangerous incident.
 a report must be made by the WHS Coordinator as follows:
    - a. SafeWork SA
      - Report by the fastest available means. The report can be made by phone or in writing (such as by fax, email or other electronic means).
      - If the notification is by phone this must be followed up in writing within 48 hours if SafeWork SA requests it.
      - The 24 hour Emergency Telephone number is 1800 777 209.
    - b. Office of the Technical Regulator
      - All incidents involving electricity must be reported to the Office of the Technical Regulator by the electrical worker or the occupier of the premises where the incident occurs.
      - Death must be reported immediately via telephone. Phone: 8226 5500 - Business Hours (1800 558 811 After Hours)

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

- Any accident where a person requires medical assistance must be reported within one working day.
- All other accidents involving electricity must be reported to the Office of the Technical Regulator within 10 working days of the day of the accident.

4.9.5. The Incident Reporting & Investigation Procedure should be complied with, including the requirement that the site where the incident occurred is not disturbed until an inspector arrives at the site or any earlier time that an inspector directs.

## 4.10. Monitoring and evaluation

4.10.1. Department managers should review and revise any existing risk control measures related to electrical safety, using the same methods as the initial hazard identification process:

- When the control measure does not minimise the risk so far as is reasonably practicable.
- Before a change at the workplace that is likely to give rise to a new or different health and safety risk that the control measure may not effectively control.
- If a new hazard or risk is identified.
- If the results of consultation indicate that a review is necessary or a health and safety representative requests a review.

4.10.2. Any electrical installation, electrical equipment, materials, equipment or apparatus used in hostile operating environments or when indicated by the manufacturer, should be subject to regular inspection and testing.

4.10.3. The WHS Committee should monitor the Corrective & Preventative Action (CAPA) Register (including any issues of an electrical nature) during its meetings. A report should be presented to the Senior Leadership Team listing outstanding items requiring their direction or enforcement.

4.10.4. The Senior Leadership Team should:

- Review electrical hazard and incident statistics, audit results, legislative changes and other information relating to the electrical safety process and direct action when required. Minutes should record outcomes of discussion and actions undertaken.
- Include the electrical safety procedure as part of the ongoing management review process and report the findings of internal audits into the electrical safety procedure, as relevant.
- Set, monitor and review objectives, targets and performance indicators for any electrical safety program as relevant.

## 5. TRAINING

5.1. The Flinders Ranges Council training needs analysis should identify the electrical safety training needs of workers, including having regard to:

- The nature of the work carried out by the worker.
- The nature of any risks associated with the work at the time the information, training or instruction is provided.
- Any control measures implemented.

5.2. The following types of training should be considered for inclusion on the TNA:

- Induction training - workers and contractors, where relevant, should have Council's requirements for electrical safety explained to them during the induction process
- Risk assessment - workers undertaking risk assessments should have specific training that includes legislative requirements for electrical safety.

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

- 5.2.3. Work-specific training - to ensure that workers carrying out particular work are trained on any electrical and other risks specific to the work, as appropriate.
- 5.2.4. Use of portable RCDs - workers using portable RCDs should be instructed in their use and maintenance.
- 5.2.5. Supervisor and management training - to ensure that safety issues are appropriately managed at the workplace.
- 5.2.6. Emergency procedure training - to ensure workers know what to do in the event of an emergency, for example procedures to follow if a person receives an electric shock.
- 5.2.7. First aid training - to ensure appropriate procedures are followed for administering first aid, for example proper treatment for electric shock.
- 5.2.8. Electrical rescue and resuscitation training for safety observers.
- 5.2.9. Ongoing or refresher training - to ensure that any training on work health and safety matters is repeated as appropriate on a periodic basis.
- 5.3. Any person required to carry out electrical work should be a competent person who must be, if required by the *Plumbers, Gas Fitters and Electricians Act 1995*, licensed under that Act.
- 5.4. Work involving a danger of accidental direct contact with exposed live conductors
  - 5.4.1. In the case of work involving a danger of accidental direct contact with exposed live conductors or exposed live parts of electrical equipment:
    - (a) The work must only be carried out by a person who is competent and qualified to carry out the work; and
    - (b) Except where the contrary is shown by reference to generally accepted industry practices or the particular circumstances of the case, it will be presumed that safe work practices require the person to carry out the work with a competent assistant suitably trained in the work and—
      - (i) In resuscitation; and
      - (ii) In releasing persons from live electrical apparatus; and
      - (iii) If appropriate, in rescuing persons from poles, structures, elevated work platforms or confined spaces.
  - [as prescribed by the Electricity (General) Regulations 2012 (63)].
  - 5.4.2. Persons required to carry out or help in carrying out, electrical work must be suitably trained in rescue and resuscitation in accordance with the requirements of the Technical Regulator [as prescribed by the Electricity (General) Regulations 2012 (68)].

## 6. RECORDS

The following records should be maintained:

- 6.1. Electrical register.
  - 6.2. Electrical equipment risk assessments.
  - 6.3. JSAs, SWIs and SOPs.
  - 6.4. Purchase or hire documentation, including operation manuals.
  - 6.5. Training records, licences and other competency records.
  - 6.6. Electrical equipment inspection, testing and maintenance records.
  - 6.7. Electrical equipment registration and certification records.
- All records must be retained in line with the current version of GDS20.

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

## 7. RESPONSIBILITIES

### 7.1. The *Senior Leadership Team* is accountable for:

- 7.1.1. Monitoring compliance to the Council's legislative responsibilities for electrical safety.
- 7.1.2. Budgetary expenditure for electrical safety.
- 7.1.3. Setting objectives, targets and performance indicators for any electrical safety program, as relevant.
- 7.1.4. Checking that managers and supervisors have been provided with training to ensure they understand and can:
  - a. Apply the requirements of the electrical safety legislation and this procedure to the areas and activities under their control.
  - b. Provide adequate training and supervision to the persons under their control.
- 7.1.5. Consulting with other PCBU's, so far as is reasonably practicable, if their duty of care overlaps.
- 7.1.6. Checking, so far as is reasonably practicable, that reasonably foreseeable electrical safety hazards within each department are identified, assessed and controlled when elimination is not practicable.
- 7.1.7. Monitoring the hazard register and enforcing close out of items when required.
- 7.1.8. Reviewing the effectiveness of the electrical safety process.
- 7.1.9. Including a review of electrical safety in the management review process.

### 7.2. *Managers and supervisors* are accountable for:

- 7.2.1. Providing training, information, instruction and supervision to workers and other stakeholders to check that:
  - a. Competency and where relevant, licensing, is demonstrated and maintained.
  - b. They understand and can apply the electrical safety procedure and any relevant safe operating procedures in relation to the tasks they undertake.
- 7.2.2. Checking that reasonably foreseeable electrical hazards within their department or the tasks workers or others are required to undertake are identified, assessed and recorded on the hazard register, in consultation with workers or their representatives.
- 7.2.3. Implementing controls, in consultation with workers or their representatives or other stakeholders, using the hierarchy of control; and evaluating and reviewing them for effectiveness.
- 7.2.4. Communicating the outcomes of risk assessments within the department or work groups and across the organisation as required.
- 7.2.5. Checking that any newly purchased electrical equipment is tagged on entry to service, if required.
- 7.2.6. Checking that any faulty electrical equipment is immediately removed from service and tagged with an Out of Service tag.
- 7.2.7. Logging electrical safety issues with maintenance as soon as they are identified.
- 7.2.8. Closing out hazard register items within designated time frames.
- 7.2.9. Retaining records as required.
- 7.2.10. Seeking expert advice when a need is identified.
- 7.2.11. Providing required reports to the WHS committee or management team.

### 7.3. The *WHS Coordinator* is accountable for:

- 7.3.1. Maintaining the currency of the electrical equipment register.
- 7.3.2. Checking that portable electrical equipment issued to staff has a tag indicating current electrical testing compliance when required.
- 7.3.3. Ensuring a competent person undertakes required testing of electrical equipment on site and that the electrical equipment that passes the test is tagged with a non-metallic, non-reusable tag.

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

- 7.3.4. Checking that any electrical equipment identified as faulty during testing is withdrawn from service and tagged with an Out of Service tag until repairs are completed or disposal occurs.
  - 7.3.5. Undertaking required inspections, testing and maintenance and retaining records.
  - 7.3.6. Implementing any corrective or preventative actions required for the continual improvement of the electrical safety process.
  - 7.3.7. Checking that statutory reporting requirements have been met in relation to any electrical incidents at work.
- 7.4. *Workers* are accountable for:
- 7.4.1. Attending training when required.
  - 7.4.2. Following any reasonable instruction related to electrical safety.
  - 7.4.3. Only using electrical equipment if it is within their level of competency, job role and the equipment has a current test tag (if required).
  - 7.4.4. Applying an Out of Service tag to electrical equipment that is faulty or does not have a required current test tag, immediately removing it from service and completing a maintenance request.
  - 7.4.5. Using, testing and maintaining a portable RCD as instructed.
  - 7.4.6. Reporting any hazardous situations or safety problems immediately to their manager.
- 7.5. The *WHS Committee* is accountable for:
- 7.5.1. Facilitating cooperation between management and workers in matters relating to electrical safety.
  - 7.5.2. Monitoring the hazard register and referring issues to The Flinders Ranges Council Senior Leadership Team that require management direction or enforcement.
- 7.6. *Health and Safety Representatives* may:
- 7.6.1. Facilitate consultation between department managers and workers in relation to WHS issues that affect the workgroup that they represent.
  - 7.6.2. Assist in the resolution of WHS issues.
  - 7.6.3. Request a review of a control measure in the circumstances outlined in the WHS Hazard Management procedure.
- 8. REVIEW**
- 8.1. The Electrical Safety Procedure should be reviewed by the WHS Committee, in consultation with workers or their representatives, every three (3) years or more frequently if legislation or Council needs change. This may include a review of:
    - 8.1.1. Legislative compliance issues
    - 8.1.2. Audit findings relating to electrical safety
    - 8.1.3. Incident and hazard reports related to electrical safety, claims costs and trends
    - 8.1.4. Feedback from managers, workers, contractors or others
    - 8.1.5. Other relevant information.
  - 8.2. Results of reviews may result in preventative and/or corrective actions being implemented and revision of this document.
- 9. REFERENCES**
- Work Health and Safety Act 2012  
 Work Health and Safety Regulations 2012  
 Electricity Act 1996  
 Electricity (General) Regulations 2012  
 Plumbers, Gas Fitters and Electricians Act 1995



# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

General Disposal Schedule 20 for Local Government  
WorkCoverSA Performance Standards for Self-Insurers

Code of Practice: How to Manage Work Health and Safety Risks  
Code of Practice: Managing Electrical Risks in the Workplace  
Code of Practice: Worker Representation and Participation Guide

Office of the Technical Regulator: [Working Safely Near Overhead Powerlines](#) pamphlet

Australian Standard AS 2832.1 Cathodic Protection of Metals – Pipes and Cables  
Australian Standard AS 2790 Electricity Generating Sets- Transportable (up to 25kW)  
Australian/New Zealand Standard AS/NZS 3000 Electrical Installations (known as the Australian/New Zealand Wiring Rules)  
Australian/New Zealand Standard AS/NZS 3760 In-Service Safety Inspection and Testing of Electrical Equipment  
Australian/New Zealand Standard AS/NZS 3012 Electrical Installations-Construction and Demolition Sites  
Australian/New Zealand Standard AS/NZS 4576 Guidelines for Scaffolding  
Australian/New Zealand Standard AS/NZS 61558 Safety of Power Transformers, Power Supply Units and Similar

NOTE: this is not an exhaustive list and other documents may need to be referenced depending on the nature and hazards of the work being undertaken and the respective work environment.

## 10. RELATED DOCUMENTS

WHS Hazard Management Procedure  
Plant Procedure  
WHS Emergency Management Procedure  
Isolation, Lock Out, Tag Out Procedure  
Incident Reporting and Investigation Procedure  
First Aid Procedure

## 11. DOCUMENT HISTORY:

Version No:	Issue Date:	Description of Change:
1.0	May 2007	Was called 'Electrical Installation & Equipment'
2.0	June 2010	One System Format.
3.0	July 2014	Terminology changes to reflect 2012 WHS Act, Regulations and Codes of Practice. Examples of changes include; OHS to WHS and employee to worker where appropriate. Added requirements for register of electrical equipment Inclusion of appendices

## 12. APPENDICES

Appendix 1: Working Safely Near Overhead Powerlines  
Appendix 2: Preventative Actions checklist



# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

## Appendix 1: Working safely near overhead powerlines

Source: [http://www.sa.gov.au/\\_data/assets/pdf\\_file/0003/6969/ED06\\_Working-safely-near-overhead-powerlines.pdf](http://www.sa.gov.au/_data/assets/pdf_file/0003/6969/ED06_Working-safely-near-overhead-powerlines.pdf)

# Working safely near overhead powerlines

Office of the Technical Regulator



For more energy information:

**Web:** [sa.gov.au/energysafe](http://sa.gov.au/energysafe)

**Phone:** 8226 5500

**Email:** [dmitre.otr@sa.gov.au](mailto:dmitre.otr@sa.gov.au)

There are many hazards associated with working in proximity to powerlines.

In order to manage these hazards, the clearance distances to powerlines that apply in South Australia are outlined in this brochure.

It is important to take these distances into account when designing structures or planning to work near powerlines as it may affect the work practices or the use of equipment or structures such as scaffolding.



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## 2 Working safely near overhead powerlines

### Cranes and Elevating Machinery

The *Electricity (General) Regulations 2012* are administered by the Office of the Technical Regulator. For safety reasons, minimum safe distances from powerlines, including clearances for machinery, vehicles or vessels with an elevating component or shear legs, are prescribed by the Regulations. These prescribed distances apply from the closest part of the machinery, including its load, to the closest conductor of the powerline, at all times. See the Machinery column of Table 1. Prescribed distances are dependant on the voltage of the powerline which must be correctly identified.

In addition to the requirements of the Regulations, *Australian Standard AS2550 – Cranes, hoists and winches – Safe use*, describes the operation of cranes and elevating working platforms in proximity to powerlines. This Standard provides general guidance regarding safe working practices for machinery near powerlines, with clearances depending on whether the work is conducted with or without a spotter. See the Cranes column of Table 1.

#### Minimum safe clearance with risk assessment

To work to the prescribed distances of the Regulations, you must also be able to show that you have allowed for any likely movement (wind effects, mechanical/hydraulic, swinging of crane loads) of both the powerline and the machinery, including operator error. The clearance distances prescribed by the Regulations are absolute clearances that cannot be breached at any time. Any breach of the prescribed clearances could put you and others in immediate danger of electric shock.

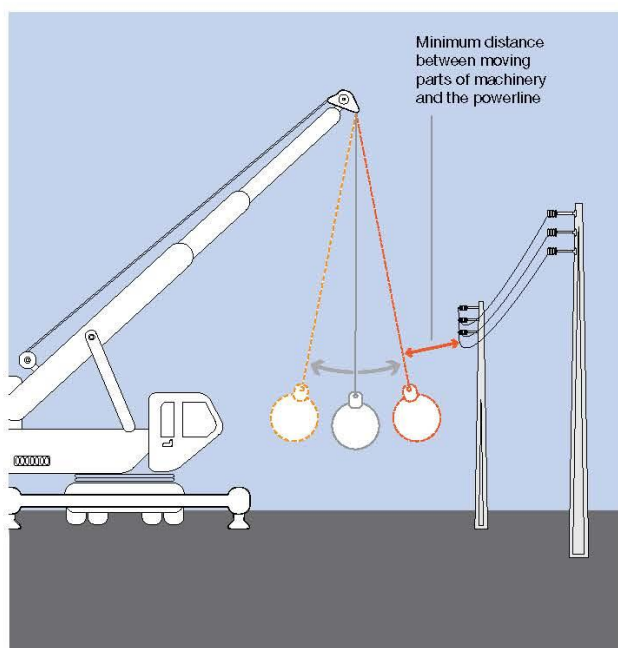


Image 1: Possible movement of powerlines and machinery must be taken into consideration

In order to operate machinery with an elevating component such as cranes, elevating work platforms and earthmoving equipment such as excavators, to the minimum clearances prescribed by the Regulations as shown in the Machinery column of Table 1, the following safety requirements (in accordance with the principles of AS2550) should be applied.

- (a) The voltage must be identified; and
- (b) A spotter (competent person who is suitably qualified by experience, training, or both with the sole duty of observing and warning against unsafe approach of the crane, its lifting attachments or its load to powerlines) carries out spotting duties at all times; and
- (c) A documented risk assessment is carried out before any work commences, in consultation with all relevant parties involved in the work; and
- (d) The electricity network operator is notified before commencing work; and
- (e) Any conditions specified by the electricity network operator or Technical Regulator are complied with.

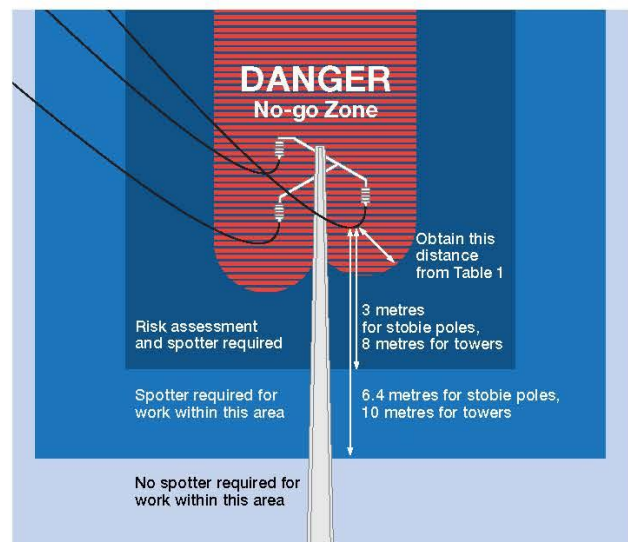


Image 2: Clearance zones for operating machinery in proximity to powerlines. No ceiling on clearance zones (see Note 1).

Note 1: Special situations – lifting above powerlines may be acceptable in some situations subject to the following conditions:

- (1) Alternative work methods being explored as a first preference; and
- (2) Conditions (a) to (e) above being complied with; and
- (3) For voltages  $\leq 1000$  V ac (low voltage) – notification to the Office of the Technical Regulator; or
- (4) For voltages  $> 1000$  V ac (high voltage) – obtaining written authority from the operator of the electricity infrastructure (usually SA Power Networks) and notification to the Office of the Technical Regulator.

Contacts:

SA Power Networks (Builders & Contractors Line) – 1300 650 014  
Office of the Technical Regulator (DMITRE Energy Markets and Programs Division) – 8226 5500

## Safe Approach Limits for People

In addition to the minimum clearance distances set out in the *Electricity (General) Regulations 2012* for machinery and structures, there are safe approach limits for people working near powerlines as shown in Table 1 below (light green column).

The minimum safe approach limit is measured from the closest conductor on the powerline to the closest part of the person or an object held by the person.

Subject to a documented risk assessment taking into account the movement of tools, materials and structures, it is possible to use reduced approach limits as shown in Table 1 below (dark green column).

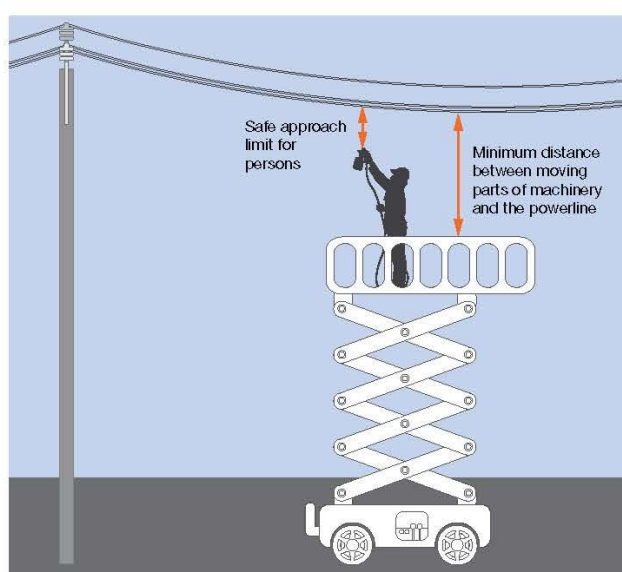


Image 3: Using tools in proximity to powerlines

It is important when planning to carry out work near powerlines that all the approach limits are taken into account. They may affect the work practices you need to use.

## Scaffolding

The *Electricity (General) Regulations 2012* prescribe the legal clearances to powerlines from structures, which includes scaffolds. These clearances are dependent on the voltage of the powerline. This recognises that the higher the voltage, the more dangerous it is to work close to the powerlines, and therefore requires greater clearances. These clearances are shown in the Buildings column of Table 1.

Australian Standard AS/NZS 4576 – *Guidelines for Scaffolding* may in some situations define different clearances than the Electricity Regulations. This Standard uses the same clearances for all voltages and recommends that where practical the powerlines be de-energised when erecting scaffolds in close proximity to powerlines.

You must ensure that no part of the scaffold, persons, or other equipment or materials can breach the safe approach limits (discussed above), especially during the erection of the scaffold.

If these clearances cannot be achieved, it will be necessary to contact the electricity supply authority (usually SA Power Networks) to make arrangements for the safe completion of the works. This may require a Network Access Permit to be issued.

In some circumstances the clearances specified in AS/NZS 4576 may be less than those prescribed in the Electricity Regulations, in which case the prescribed distances of the Regulations must be complied with. Please refer to the “Building safely near powerlines” brochure for more information on safe clearances for scaffolding.

Table 1: Clearance distances from powerlines—to be taken from the position of the closest conductor

	Cranes AS 2550.1 Crane Code. (Approved Code of Practice) Earthmoving machinery and Elevating Work Platforms		Machinery Electricity (General) Regulations 2012 Schedule 5, Table 1 – Distance to operation of machinery, vehicle or vessel with elevating component or shear legs	Safe Approach Limits Electricity (General) Regulations 2012 64(3) Safe Approach Limits		Buildings and Structures, including Scaffolds Electricity (General) Regulations 2012 Schedule 1, Table 1	
Voltage (in volts)	No Spotter	Spotter required	Risk assessment and spotter required	Approach limit – normal persons	Approach limit – with risk assessment	Horizontal direction	Vertical direction
240	6.4m	3.0m	1.0m	3.0m	1.0m	1.5m	3.7m
415	6.4m	3.0m	1.0m	3.0m	1.0m	1.5m	3.7m
7,600	6.4m	3.0m	1.5m	3.0m	2.0m	3.1m	5.5m
11,000	6.4m	3.0m	1.5m	3.0m	2.0m	3.1m	5.5m
19,000	6.4m	3.0m	1.5m	3.0m	3.0m	3.1m	5.5m
33,000	6.4m	3.0m	1.5m	3.0m	3.0m	3.1m	5.5m
66,000	6.4m	3.0m	3.0m	4.0m	4.0m	5.5m	6.7m
132,000 pole	6.4m	3.0m	3.0m	5.0m	5.0m	15m	NA
132,000 tower	10.0m	8.0m	3.0m	5.0m	5.0m	20m	NA
275,000	10.0m	8.0m	4.0m	6.0m	6.0m	25m	NA



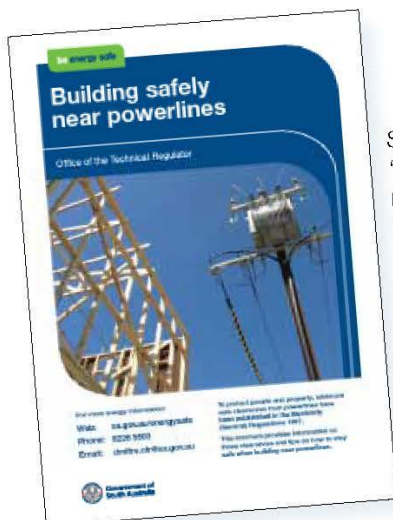
## 4 Working safely near overhead powerlines

### Network Access Permits

A Network Access Permit is a written document that you sign on receipt and hold while powerlines are turned off, or otherwise made safe. The powerlines will only be re-energised after you sign and return the permit to the network operator. The permit, and any conditions attached, must be explained to you before you sign it. Contact SA Power Networks Builders and Contractors line on 1300 650 014 or visit [www.sapowernetworks.com.au](http://www.sapowernetworks.com.au) for information on obtaining a Network Access Permit.

### Tiger Tails

When working near overhead powerlines, whether using machinery such as a crane or erecting a scaffold, it is recommended that you contact SA Power Networks to have 'Tiger Tails' installed on the low voltage powerlines. These 'Tiger Tails' are a visual indicator only and do not reduce the prescribed safe working clearances.



See our "Building safely near powerlines" brochure for information on safe clearance distances and more safety tips.

This information is provided to offer general guidance only on working safely near overhead powerlines, and does not purport to cover all situations, or any particular situation, or to outline a complete list of procedures that must be followed. It is not to be taken as a statement of law or legal advice, and must not be construed to waive or modify any legal obligation. The Government of South Australia will not be liable for any injury, damage or loss of any kind sustained by any person that arises directly or indirectly from reliance upon any information contained herein or source of information referred to.

### Determining the voltage and type of powerline

Find out the voltage of the powerlines by:

- visiting [sa.gov.au/energysafe](http://sa.gov.au/energysafe)
- contacting the Office of the Technical Regulator on 8226 5500
- contacting SA Power Networks on 1300 650 014.
- High voltage powerlines are those of more than 1,000 V (1 kV) of electricity. Low voltage powerlines refer to lines of 1,000 V or less.

Images 4 and 5 below shows common types of powerlines in South Australia.

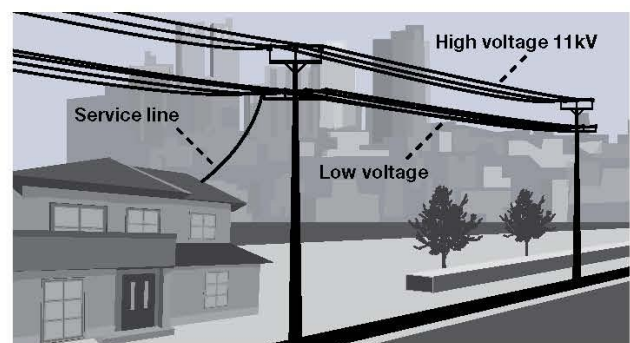


Image 4: Typical powerlines in built up areas

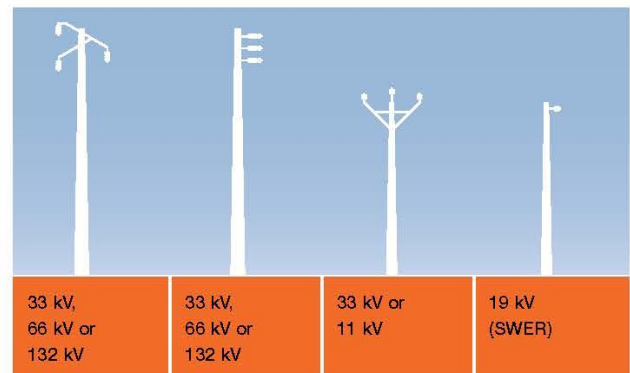


Image 5: Common powerlines in South Australia

be energy safe

For more energy information:

Web: [sa.gov.au/energysafe](http://sa.gov.au/energysafe)

Phone: 8226 5500

Email: [dmitre.otr@sa.gov.au](mailto:dmitre.otr@sa.gov.au)



Government of  
South Australia

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

## Appendix 2: Preventative Actions checklist

This checklist will help you to identify hazards associated with electrical work and develop safe work methods. If you answer 'NO' to any question you must take action to put **appropriate risk control measures** in place.

PART 1: INITIAL ASSESSMENT	Y	N
Can the work be undertaken while the electrical equipment is de-energised? <i>If Yes, proceed to Part 2. If No, is it:</i>		
• necessary in the interests of health and safety that the electrical work is carried out on the equipment while the equipment is energised?		
<b>OR</b>		
• necessary that the electrical equipment to be worked on is energised in order for the work to be carried out properly?		
<b>OR</b>		
• is it necessary for the purposes of electrical testing required under Regulation 155?		
<b>OR</b>		
• are there no reasonable alternative means of carrying out the work?		
<i>If your answer to any of these is 'yes' proceed to Part 3 after considering whether part of the installation or equipment may be de-energised while the work is carried out.</i>		
<i>If you cannot answer 'yes' to any of these proceed to Part 2—you must work de-energised.</i>		
PART 2: WORK DE-ENERGISED	Y	N
• Do you have approved test instruments suitable for the task?		
• Have you checked that the test instruments are functioning correctly?		
• Have you isolated the supply eg by switching off?		
• Have you conclusively tested that the equipment is de-energised?		
<i>You must carry out the electrical work in accordance with any safe work method statement that must be prepared for the work.</i>		
<i>Proceed to Part 4.</i>		
PART 3: WORK ON OR NEAR ENERGISED EQUIPMENT	Y	N
Has a risk assessment been conducted by a competent person which identifies all electrical hazards and non-electrical hazards, both actual and potential?		
Is the work area clear of obstructions to allow for easy access?		
Is the isolation point clearly marked or labelled and capable of being operated quickly?		
Has the person with management or control of the workplace been consulted about the proposed electrical work?		
Do you have a safe work method statement for the task at hand? This should state the control measures required to eliminate or minimise the risks.		
Are you trained, competent and confident in applying the particular procedures or techniques that are required for the task?		
Have you checked to ensure that your tools and accessories are insulated and have been inspected and maintained to ensure they are serviceable?		
Is your test equipment appropriate to the task and functioning correctly?		

# ELECTRICAL SAFETY PROCEDURE

Version No	3.0
Issued	24 <sup>th</sup> July 2014
Next Review	July 2017
GDS	12.63.1.1

Are you wearing the appropriate clothing and associated PPE for the task eg safety helmet and boots, insulating gloves?		
Do you have the appropriate insulating mats and sheeting?		
Is a safety observer present? <i>Note: a safety observer is not required for electrical work if it only involves testing and the risk assessment shows that there is no serious risk associated with the work.</i>		
Are the necessary first aid facilities provided and accessible and are unauthorised persons prevented from entering the work area?		
<b>REMEMBER:</b> <ul style="list-style-type: none"> <li>• Do the work very carefully.</li> <li>• Follow the safe work procedures.</li> <li>• Assume all exposed conductors are energised.</li> <li>• Be aware of the voltage to earth of all exposed conductors.</li> </ul>		
<b>PART 4: AFTER COMPLETING THE WORK</b>	<b>Y</b>	<b>N</b>
Have the installations/circuits/equipment been restored to a safe and operable condition?		
Have all tags and locking-off devices been removed?		

Source: COP- Managing Electrical Risks in the Workplace, July 2012, p59