# ELECTRICAL SAFETY – SAFETY PRACTICE

## OVERVIEW

This Safety Practice establishes the minimum requirements for managing electrical risks on Perkins Builders workplaces. It applies to all employees, subcontractors and visitors who work on or near electrical installations or use electrical equipment, and supports compliance with applicable legislation, Codes of Practice and Australian Standards.

## RESPONSIBILITIES

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|---|---|
| Management | Provide the resources, systems and competent personnel to manage electrical risks and ensure compliance with legislative requirements. |
| HSEQ Team | Maintain this Safety Practice, provide guidance, and monitor compliance. |
| Project Managers / Site Managers | Ensure electrical work is planned, required approvals and documentation are in place, and electrical risks are identified and controlled before work commences. |
| Licensed Electrical Workers | Carry out electrical work in accordance with legislation, Australian Standards, approved procedures and this Safety Practice. |
| Workers and Subcontractors | Use electrical equipment safely, report damaged or defective equipment, and do not carry out electrical work unless authorised and competent. |

## *1. MANDATORY REQUIREMENTS*

***Guidance:***

Perkins Mandatory Requirements sets out the mandatory health and safety standards to be applied on all Perkins project sites in order to control significant hazardous task, thing or circumstance. Codes of Practice or Australian Standards and are to be used in conjunction with this document.

Prior to Perkins allowing the use of any energised electrical installation a Certificate of Compliance (State Specific) stating the electrical services have been installed, inspected tested and commissioned in accordance with the local electrical safety requirements and AS/NZS 3012 Electrical Installations-Construction and Demolition Sites, is to be obtained from the relevant electrical services installer for the installed electrical services and equipment including but not limited to:

- Installation of main switchboard (including the use of existing);
- Installation of temporary distribution boards;
- Supplying power to any site office, lunch/change room, ablution blocks, containers or storage areas;
- Installation of temporary lighting, including any emergency battery back-up lighting;
- Supplying power to any hoist (personnel and/or personnel & materials);
- Supplying power for a tower crane.

All electrical equipment is to be recorded on an electrical equipment register.

## *2. GENERAL*

***Guidance:***

All electrical installations and site distribution systems shall, as far as practicable, be carried out in accordance with,

- AS/NZS 3000 Wiring Rules and Australian Standard Codes of Practice.
- AS/NZS 3012 Electrical Installations - Construction and demolition sites.
- AS/NZS 61439.4 Low-voltage switch gear and control gear assemblies - Particular requirements for assemblies for construction sites

Code of Practice: For Persons Working on or near Energised Electrical Installations. All electrical work is to be carried out by qualified electricians and/or suitably supervised Apprentices. Apprentice supervision is as per Fig 1 From Safe Working Guidelines for Electrical Workers 2025

All electricians working on site will provide a copy of their Electrical License to the Site Manager upon induction and have a copy of their Electrical licence kept with their Induction paperwork or saved on Hammertech. All apprentice Electrical Workers shall be supervised by or have their work inspected prior to shift end/change by a qualified and licensed Electrician.

All installation work shall be inspected and approved by a qualified Electrician before being commissioned and brought into use.

All service testing of portable, transportable and fixed electrical equipment used on construction and demolition sites shall be in accordance with AS/NZS 3012 Electrical Installations — Construction and Demolition Sites.

Guards or covers of electrical switchgear shall not be removed by anyone other than an authorised person.

All incidents including near misses shall be recorded on an Incident Report (Form 912 / Hammertech) and reported to the Site Manager and HSE Officer. An incident shall be reported to the Project Manager immediately by phone.

Any incident resulting in an electric shock shall be reported immediately to the General Manager and HSE Manager, one of whom will contact the relevant service provider to notify of the incident.

Anyone receiving an electrical shock must be taken straight to a medical facility to be check by a doctor and have their heart rhythm checked

## 3. TEMPORARY ELECTRICAL SUPPLY

### Guidance:

Temporary electrical supply cables, leads etc., including any subsequent relocation, must be

- located so as not to present tripping hazards or physical damage by vehicles, water, etc. (refer figure 2)
- Not tied, bundled or grouped with permanent wiring
- Not attached to a free standing fence
- Identified by yellow iridescent tape spaced at intervals not exceeding 5m and marked with the words “CONSTRUCTION WIRING “

Temporary Electrical supply panels must comply with AS/NZS 3012 being;

- sufficient in number, located in close proximity to work areas to minimise trailing cables,
- Installed in a manner and location so as to prevent tip-over or movement (e.g. secured to a wall, post or free-standing structure) and to be of IP23 Rating were affected by the weather or the ingress of water if installed in wet area locations;
- Include a device to prevent strain or termination of cables and flexible cords (e.g. tie-bar);
- Protected from weather extremes;
- Be designed to ensure all main switches are accessible at all times;
- Clearly marked and capable of being locked in an open or closed position;
- Have markings at least 6mm high, in a clear and legible manner, identifying all mains/isolating switches;
- Sign on door stating: ‘KEEP CLOSED, RUN LEADS THROUGH BOTTOM’;
- Area in front of switchboards are to be kept clear at all times (1.2m minimum clearance);
- Identification of who to contact, contact number and where identification/location of where the board is fed from.

Unarmoured cables shall not be installed on metallic roofs or similar structures unless suitably protected against mechanical damage.

All electrical circuits, including mobile generator sources, must be protected by an Earth Leakage Circuit Breaker (ELCB), Residual Current Device (RCD) or a Ground Fault Circuit Interrupter (GFCI), fitted at the source.

## 4. SERVICES IDENTIFICATION AND PROTECTION

### Guidance:

Live electrical services/equipment shall be permanently decommissioned or otherwise temporarily decommissioned by a licensed electrician where there is a risk to any worker coming into contact with live electrical equipment or services when performing their work. Where it is not reasonably practicable to permanently or temporarily decommission the services, appropriate safeguards are to be established to ensure those undertaking the work are protected and informed of the presence of live services.

An Isolation Permit is to be completed, in conjunction with the relevant electrical trade subcontractor to identify the status of services within any area where the risk to others from live electrical services has been identified (e.g. working in ceiling voids, demolition of walls, floors etc.) and where the status of services needs to be communicated to others.

The status or change of status of electrical installation services is to be communicated to relevant workers through tool box talks or induction into the relevant SWMS (i.e. where their work involves working on or near live electrical services) which shall include reminding them of the need to continue to treat all cables as potentially live and not to cut these or remove them.

All ends to new and existing cables that are not connected to a junction box, fitting, appliance or equipment are to be folded over with the end of the cable taped with approved electrical tape so as to further minimise the risk of persons inadvertently coming into contact with a live electrical cable.

All live cables shall be labelled every 5m where accessible.

## 5. ISOLATING ELECTRICAL EQUIPMENT

### Guidance:

Refer to the Isolation Safety Practice (90.02.11) for details on isolating electrical and mechanical equipment.

When working on de-energised equipment, ensure effective isolation of all circuits and/or equipment before you commence work. Always test before you touch and treat all electrical parts as live until proven otherwise.
A Lock-out / tag-out (LOTO) procedure is to be obtained from the electrical contractor for the works and must be referenced in the relevant Safe Work Method Statement (SWMS);
The procedure must reflect the need to ensure lock-out ('Engineering') control is used as the primary control, in conjunction with tag-out ('Administrative') controls, and is to include:

- Isolated circuits to be locked out with personal danger tags.
- Personal danger tags to be installed and removed by the same worker only, do not remove other workers danger tags
- Circuits are not to be isolated with zip ties, copper wire or similar tags that can be easily removed.

When completing isolation works on older buildings where switchboards are not sufficiently earth leakage protected, there is a possibility neutrals will remain live. This needs to be taken into consideration and necessary controls implemented. Correct PPE should be worn (insulated gloves), and when moving cables the neutrals cable should be disconnected.

## 6. GENERAL ELECTRICAL SAFETY RULES

### Guidance:

The use of double adaptors and 3-pin plug adaptors (piggyback) and similar fittings is not permitted on site.

All power cords and portable electrical equipment shall be inspected prior to use for any damage, cuts, and burns or deteriorated insulation. Any defective equipment shall be tagged 'Out of Service', removed from use and repaired or replaced.

**Extension leads**

Most portable electric tools and equipment will be used in conjunction with extension leads. Special care should be taken when using extension leads as they are easily damaged.

Only use properly made-up three core leads with portable power tools.
Protect all leads from heat sources and mechanical damage. Never hang a lead over a metal object .
Wherever practicable, leads should be suspended off the ground by a nonconductive hook .
Remove leads and tools from the power supply by gripping the plug and not by pulling the cord. Never hoist or carry portable power tools using the lead.
All flexible cords shall be heavy duty sheathed with lipped see through or moulded plugs and shall comply with AS/NZS 3191.
Leads cannot be joined through an RCD. Extension leads used on sites shall not be joined in lengths in which the total length exceeds the maximum length of 30 meters.
Cables that are normally used for fixed wiring are not be used as flexible extension cords.
Flexible extension cords used in multi- storey construction are to be confined to the same floor as the power source (this does not apply in the case of formwork; external staging; lift or service shafts and stairwells).
Never use leads that are rolled up or reeled as dangerous overheating of the lead can occur.
Never work on any electrical equipment until it has been disconnected from the power supply or been isolated.
An RCD will always be used.

**Residual Current Devices**

Residual Current Devices, to provide earth leakage protection, shall be installed on all circuits.

All Portable RCDs are to be push button tested by operator prior to use and at least once every day in use.

Operating time Trip test to be completed by a competent person and documented every 3 months as per AS/NZS 3012. Figure 2

Where temporary electrical supply for construction/demolition work is not provided (e.g. in the case of working in existing a partially occupied building or office space) and the electrical supply is to be taken from an existing wiring socket (e.g. the buildings existing power supply) an appropriately qualified electrician is to test the circuit and confirm in writing the power supply is RCD and Earth leakage protected and the cabling meets AS/NZS 3012 prior to use.

Where the supply is not RCD and Earth leakage protected, or the cabling does not meet AS/NZS 3012, an RCD and Earth leakage protection shall be installed, so far as is reasonably practicable, to protect the circuit. On completion an appropriately qualified electrician is to confirm in writing the circuit is safe to use.

Where the electrical supply for construction/demolition work supply can only be obtained from an existing permanent wiring socket outlet, and the outlet is not protected by an RCD, a portable RCD must be connected between the socket outlet and the equipment plugged into the socket outlet.

Sub-mains supplying site sheds shall incorporate an RCD having a rated tripping current not exceeding 100 mA;

In the event of an RCD or circuit-breaker operating, the cause of any fault should be assessed by a licensed electrician before reset.

**Lighting**

Adequate artificial lighting to illuminate the work area is to be installed if there is insufficient natural lighting.

Lighting levels should be a minimum 40 lux in walkways and 160 lux in general work areas.

Lamps in luminaires must be protected against mechanical damage.

Sufficient battery powered lighting in stairways and passageways is to be provided to allow safe access and egress from the area if there is insufficient natural lighting and if there is a loss of supply so as to allow persons to exit work areas safely.

Emergency lighting shall meet the requirements of AS/NZS 2293.

Temporary wiring supplying lighting circuits shall be connected to the designated lighting circuits of the switchboard

**Task Lighting**

Portable luminaires shall meet the requirements of AS 60529:2004.

A mechanical guard is to be fitted to task lighting in order to protect the lamp.

Task lighting shall be of an adequate stability.

**Portable Generators**

All portable generators shall comply with Australian Standard AS/NZS 3010:2017, Electricity Generating Sets Transportable (up to 25 KW) or be fitted with core balance earth leakage protection having a rated tripping current not exceeding 30Ma.

## 7. WORKING NEAR EXPOSED LIVE PARTS

### Guidance:

When working in and around equipment where there is the possibility of personnel being exposed to and making contact with live parts, the following should be considered before proceeding with work;

- Have all live parts been identified?
- Can these live parts be electrically isolated?
- Can these live parts be physically isolated?
- Can PPE also be used to minimise risk of inadvertent contact?
- Is the operatives work position suitable to minimise chances of inadvertent contact?
- Is risk low enough to proceed?

As per Electricity Licencing Regulations 1991 Reg 55 A person who carries out or causes electrical work to be carried out on or near an energised part of an electrical installation must ensure a SWMS is completed and approved by the Site Manager, Suitable safety equipment and PPE is used and a risk assessment is carried out by a competent person, and they are satisfied that:

- There is no reasonable alternative to carrying out live work.
- The risks identified by the risk assessment are or can be reduced to as low as reasonably practicable.
- The work can be carried out safely.

It Is deemed No Reasonable Alternative to carrying out live work if one of the following applies-

- For the work to be carried out effectively.
- Carrying out the work by alternative means would put the health or safety of one or more persons in imminent danger.
- In order to test, measure the performance of, or detect or locate faults or defects.

See Figure 3 for flow chart on live work.

## 8. TESTING, COMMISSIONING AND ENERGISATION ELECTRICAL INSTALLATION

### Guidance:

Perkins Energisation Safety Practice (90.02.23) must be followed.

Testing is considered 'live' work.

Testing must be;

- Aimed at proving the electrical equipment or installation is electrically safe.
- Done in a way that is electrically safe.
  - Only people needed for testing should be present during testing.
  - Always perform safest testing alternative (Is there an alternative to live tests?)

- Needs to be done in an ordered manner as per Section 8, AS/NZS 3000. If a test indicates a problem that may affect the integrity of previous tests, those previous tests need to be re-done.

If there is no reasonable alternative to live work, then all the requirements of Regulation 55 of the Electrical licencing Act must be met.

1. Risk assessment (documented for live work)
2. Safe systems of work are in place.
3. Authorisation (from employer in consultation with PIC)
4. Appropriate training (including licensing, competency and experience)
5. Safety equipment and PPE is used

Energisation and commissioning procedures are to be provided to Perkins before energisation / commissioning are to include:

Requirements for developing a SWMS working in or around live services.

Identification of circuits to be energised.

Drawings/sketches reflecting services.

Arrangements for communication to workers regarding circuits to be energised.

Procedure for inspecting all outlets and circuits prior to energising/commissioning, ensuring that there are no open 'live ends'

## 9. INSPECTION AND TESTING

### Guidance:

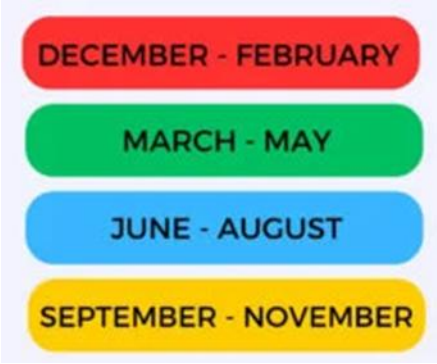
All electrical plant and equipment shall be subject to inspection and testing by a competent person.

All electrical plant and equipment shall be kept on a register for the purpose of ensuring its inspection and testing.

The register shall include information related to:

- Type of plant or equipment.
- Identifying number (Serial number or plant number)
- Name of person and licence or certification number of person conducting test
- Date of test and date next test due
- Location e.g. department, area, etc.

Following the inspection and testing, equipment shall be tagged, including the due date for the next inspection. Tags shall be colour coded to provide easy identification of currency of testing.




Test tags shall display licence number of authorised and certified contractor conducting the testing.

Any equipment which has failed to pass the test must not be used by personnel and shall be tagged out of service and removed from service until repaired or disposed of.

Subcontractors will supply an electrical register to the Site Manager on first arrival to Site and will update whenever new equipment is brought to site.

## 10. OVERHEAD LINES

### Guidance:

Danger Zone. Contact with live overhead power lines kills people and causes serious injuries every year. The WHS Regulations restrict working within the vicinity of overhead power lines. The Site Manager will ensure that any Crane/HIAB in use will not enter the danger zone of an overhead power line.

A "danger zone" means anywhere that:

- Is within 0.5 metres of a live insulated overhead power line or aerial bundled conductor line of a voltage of not more than 1,000 volts;
- Is within 1.0 metre of a live uninsulated overhead power line of a voltage exceeding 1,000 volts;
- Is within 3.0 metres of a live overhead power line, whether insulated or not, of a voltage exceeding 1,000 volts but not more than 33,000 volts; or
- Is within 6.0 metres of a live overhead power line, whether insulated or not, of a voltage exceeding 33,000 volts.

"Overhead power line" means an overhead line for the transmission of electrical energy.

If work is required within the "danger zone" of an overhead power line, the Site Manager will contact the power utility to organise isolation.

Warning signs shall be posted, and where practicable warning markings shall be placed on the lines, in consultation with and at the direction of the relevant energy safety authority, at all sites and all locations where there is a potential of contact with overhead lines e.g. by cranes, mobile work platforms, etc.

## 11. TRAINING

### Guidance:

All personnel working on electrical installations shall be appropriately licenced in accordance with the Electricity (Licencing) Regulations 1991.

All other personnel utilising electrical equipment and installations onsite but not directly working on them shall be informed of electrical safety requirements via the induction process and any further task specific requirements shall be identified in their JHA / SWMS for the task.

## LINK TO SUPPORTING DOCUMENTS

- *Isolation Safety Practice (90.02.11)*
- *Energisation Safety Practice (90.02.23)*

## REFERENCES

- Work Health and Safety Act 2020
- Work Health and Safety (General) Regulations 2022
- Electricity Act 1945
- Electricity Regulations 1947
- Electricity (Licencing) Regulations 1991
- AS/NZS 3760:2022 In-service safety inspection and testing of electrical equipment and RCD
- AS/NZS 3010:2017 Electrical Installations - Generating Sets
- AS/NZS 3000:2018 Wiring Rules
- AS/NZS 3012:2019 Electrical Installations-Construction and Demolition
- AS/NZS 3017:2022 Electrical Installations - Verification by inspection and testing
- AS/NZS 61439.4:2016 Low-voltage switchgear and control gear assemblies, Part 4: Particular requirements for assemblies for construction sites
- Code of Practice - Managing Electrical Risks in the Workplace
- Code of Practice - Persons Working on or near Energised Electrical Installations

***FIGURE 1 – Apprentice Supervision Schedule***

***Safe Work Guidelines for Electrical Workers 2025***

### 3.6.2 Determining the appropriate levels of supervision for apprentices

The following table provides guidance to employers and supervising electrical workers on appropriate minimum levels of supervision of apprentices at different stages of training and for different work types (de-energised only), subject to assessment by the supervising electrical worker.

| Type of work (de-energised only) | Apprentice Training year | Recommended minimum supervision level |
|---|---|---|
| New electrical installations (not connected to electricity supply) | 1st<br>2nd<br>3rd<br>4th or final | General<br>General<br>Broad<br>Broad |
| Maintenance, alterations, and additions to existing electrical installations (isolated and proven de-energised by supervising electrical worker) | 1st<br>2nd<br>3rd<br>4th or final | Direct<br>General<br>General<br>Broad |
| Workshop assembly and maintenance of electrical equipment (not connected to electricity supply) | 1st<br>2nd<br>3rd<br>4th or final | General<br>General<br>Broad<br>Broad |
| Tag and lockout procedure on de- energised installations and equipment (isolated and proven de-energised by supervising electrical worker) | 1st<br>2nd<br>3rd<br>4th or final | Direct<br>General<br>General<br>Broad |
| Testing and fault-finding on de- energised installations and equipment (not connected to electricity supply or isolated and proven de-energised by supervising electrical worker) | 1st<br>2nd<br>3rd<br>4th or final | Direct<br>Direct<br>General<br>General |

***FIGURE 2 – Electrical Equipment Test Schedule***

Information sourced from AS/NZS 3012.

| Equipment Type | Test Frequency | Means of Identification |
|---|---|---|
| Leads | 3 Monthly | December to February – RED<br>March to May – GREEN<br>June to August – BLUE<br>September to November - YELLOW |
| Power Tools | 3 Monthly | December to February – RED<br>March to May – GREEN<br>June to August – BLUE<br>September to November - YELLOW |
| Temporary Powerboards Switchboards<br>Inclusive of RCD | 3 Monthly | December to February – RED<br>March to May – GREEN<br>June to August – BLUE<br>September to November - YELLOW |
| Electrical Equipment within Construction Site Offices | 12 Monthly | Date Tagged |
| Portable RCD | 3 Monthly trip time test and in addition Press button tested prior to use. | December to February – RED<br>March to May – GREEN<br>June to August – BLUE<br>September to November - YELLOW |
| Non-portable RCD<br>(e.g. Site sheds, ablution blocks) | Yearly Trip time test and in addition Press button tested upon installation and monthly thereafter prior to use | Date Tagged |

***FIGURE 3 – Persons Working On or Near Energised Electrical Installations, Code of Practice 2017***