

Working with Electricity | Mirvac Minimum Requirements

1. Purpose & Scope

The purpose of this document is to eliminate or minimise the risk of injury when working on, near, or with electrical systems, equipment or tools and both activities involving strip out and demolition, as well as the installation, energization and commissioning of electrical equipment, so far as is reasonably practicable.

This document applies to all workplaces under the management or control of a Mirvac entity.

Note: This document does not address electrical hazards of less than 50V AC or 120 V DC (i.e. extra low voltage). Individual exposures to extra low voltage may be hazardous if other conditions exist such as higher hertz. These exposures should be evaluated by a risk assessment to determine if special precautions are necessary.

2. Minimum Requirements

Mirvac personnel and Service Providers must have processes in place to ensure compliance with:

- the Critical Controls (refer Section 3);
- relevant Forms (refer Section 4);
- all relevant Legislation, Codes of Practice and Standards (refer Section 7); and
- product guidelines for installation, use or maintenance from the Original Equipment Manufacturer (OEM).

3. Critical Controls

- **Risk Assessment:** Prior to commencing work on, or with, electrical systems, equipment or tools a risk assessment must be conducted. The hierarchy of controls shall be applied in determining the most appropriate method of controlling the risks (refer examples in the Hierarchy of Controls Triangles in Section 9). The Workplace R&O Register identifies those electrical risks applicable to the workplace and the associated required controls. Additionally, prior to commencing work on or with electrical systems, equipment or tools all identified risks and associated controls must be documented in the JSEA/SWMS. In addition, where demolition and strip out works are being conducted, an adequate risk assessment must be undertaken to eliminate the risk of contact with electricity.
- **Portable Electric Equipment:** Portable electric equipment must be tested and tagged at required intervals. Prior to each use portable electrical equipment must be visually inspected and the casing and cords must be free of apparent electrical shock hazards. Any damaged portable electric equipment / tool must be immediately removed from service.
- **Extension Cords / Temporary Cables:** Power boards and extension leads are to be industrial rated and are not to be piggybacked. Temporary electrical supply cables / extension cords must be located so they are not subjected to mechanical damage, damage by liquids or high temperature, nor present a tripping hazard. Specific mechanical protection will be determined as part of the worksite set-up process in consultation with the relevant electrician or engineer.
- **Residual Current Devices (RCDs):** RCD's must be used on:
 - outlets (a portable RCD must be used);
 - electrical circuits;
 - temporary electrical distribution boards (where an RCD is not fitted to an electrical distribution);
 - general purpose outlets (GPO's) at construction sites;
 - portable generators; and
 - when using portable electrically powered tools, equipment and extension leads.
- **Installing Electrical Equipment:** Before installed equipment is energised, there must be consultation with involved parties that the installation is as per AS 3000 and written confirmation of compliance to

AS3000 and AS3012 is provided. Where there are other involved parties, the [Energisation Commissioning Permit](#) or similar must be completed. Note: Submission of the electrical installation design to the relevant network operator or technical safety regulator may be required before installation.

- **Commissioning Electrical Equipment:** The [Energisation Commissioning Permit](#) must be used where identified as a required control in the JSEA/SWMS (typically for more complex re-energisations and commissioning). Before commissioning work is carried out on electrical equipment, the equipment must be verified by a suitably qualified person to determine whether it can be commissioned – refer Section 6. Work must not occur on energised electrical equipment unless required for testing or commissioning (except High Voltage – see below). After testing the [Electrical Handover Checklist](#) (or Service Provider equivalent) is to be completed, certifying compliance with the applicable standards i.e. AS/NZS 3000 – *Wiring Rules*, AS/NZS 3012 *Electrical Installations - Construction and Demolition Sites* and AS/NZS 3017 *Electrical Installations – Verification guidelines*.
- **Decommissioning Electrical Equipment:** Where demolition, strip out (either complete or staged / partial) or de-energisation works are being undertaken, the [Isolation Lock Out Tag Out MMR](#) must be followed to correctly de-energise.
- In instances involving the strip out of existing buildings, or where the service is either unknown or unidentified, an electrical audit carried out by a qualified and competent electrical contractor may be considered.
- In all instances, physical disconnection of cabling from the source of power must be completed and verified / signed off by a qualified and competent electrical contractor in accordance with relevant codes and standards.
- **Working on or Near Electrical Equipment:** There must be no work carried out on energised equipment, plant or parts (or where it has the potential to become energised). The [Isolation Lock Out Tag Out MMR](#) must be followed to de-energise so as to achieve zero energy state, and secure, before work is performed. The JSEA/SWMS must identify safe approach distances and any other precautions, including any required licenses, for relevant personnel involved with the activity.
- **General:** Unless fault finding or commissioning, work on energised HV electrical equipment is not permitted at any time. The [Isolation Lock Out Tag Out MMR](#) must be followed to correctly de-energise. Each exposed part of a high-voltage installation must be treated as energised until it is isolated and determined not to be energised; and each high-voltage exposed part must be earthed after being de-energised.

High Voltage isolations may only be carried out by an Authorised Electrical Isolator, High Voltage Operator or Network Operator who is competent and authorised to operate that apparatus.

- **Temporary Electrical Supply:** Temporary supply and switchboards must have construction wiring and be marked, in accordance with AS 3012, to identify the source of power from which it originates and words to the effect of “Keep closed, run all leads through bottom”. Yellow energisation triangle and red danger sign (refer right) must be shown on front covers and the escutcheon. Where there is more than one switchboard on site, markings must be provided by letters, numbers or both. Wiring will be marked with iridescent yellow tape with the words 'construction wiring' spaced at intervals not exceeding 5m, to be readily distinguishable from permanent wiring.
- **Light Globes and Fluorescent Tubes:** Removal or installation of light globes or fluorescent tubes must have a risk assessment and as a minimum the local switch be turned off. For appliances which are plugged into a general purpose 'wall' outlet power supply, removal of the power cord plug from the outlet is an acceptable method of isolation.



- **Personal Protective Equipment (PPE):** PPE for electrical work, including testing and fault finding, must be suitable for the task and in good condition.
- **Inspection and Testing:** Inspection and testing/tagging of portable electrical equipment must be recorded in the [Electrical Inspection & Testing Register](#) or equivalent, provided by the Service Provider. The register is kept on site until the equipment is next tested, permanently removed from site or disposed of. The register also includes any equipment that has been destroyed, lost or stolen.
- **Emergency Preparedness / Rescue:** Emergency procedures must be established for potential electrical fault/contact/explosion incidents relevant to the scope of works being undertaken, including the safe rescue of persons if working near live parts.
- **Work on Solar Panels:** When working on Solar Panels or inverters, the DC equipment and output should be evaluated by risk assessment to determine if special precautions are necessary. Where special precautions are necessary the controls must be identified in JSEA/SWMS.
- **Emergency Preparedness:** A low voltage rescue kit must be available at the workplace for the duration of electrical works on the project.

4. Mirvac Forms

Checklists and Permits are to be completed and then authorised by Nominated Mirvac Representative prior to work

[Electrical Inspection & Testing Register](#) – register of testing of portable electrical equipment.

[Energisation Commissioning Permit](#) – for energisation of an electrical installation where there are other involved parties.

[Electrical Handover Checklist](#) – (or Service Providers if equivalent) for electrical installation with a Certificate of Compliance / Electrical Safety Certificate.

[Isolation/Demolition/Decommissioning Permit](#) – used for demolition/decommissioning/strip-out and used where there is more than one isolation point or the isolation is required longer than one shift.

5. Roles and Responsibilities

The Mirvac Workplace Manager of each workplace over which Mirvac has control is responsible to ensure workers at the site are aware of and adhere to the performance requirements of this document and responsible to ensure workers are equipped with adequate tools, training, competency and licensing to undertake the work.

6. Training and Competency

Training and competency: Personnel who work with electricity (e.g. to install, test, commission, repair, replace or adjust electrical equipment and devices or systems) must be competent and have the required legislated certificates or licensing for the region in which they are working.

Minimum Training Requirements for Work with Electricity

Activity	Required Training/Qualification
Work with electricity (e.g. to install, test, verify, commission, decommission, repair, replace or adjust electrical equipment and devices or systems)	Licensed electrician (in the relevant state)
Stand-bys for electrical emergency rescue	Qualified First Aider with CPR

7. Relevant Legislation, Codes of Practice and Standards

Document Title

NSW:	Work Health and Safety Act 2011 (NSW) Work Health and Safety Regulation 2017 (NSW) (including Chapter 4, Part 4.7 General electrical safety in workplaces and energized electrical work) Electrical Supply Act 1995 (NSW) Electricity Supply (General) Regulation 2014 Electricity Supply (Safety and Network Management) Regulation 2014
Vic:	Occupational Health and Safety Act 2004 (Vic) Occupational Health and Safety Regulations 2017 (Vic) (including reg 114 Electrical plant and electrical hazards) Electricity Safety Act 1998 (Vic) Electricity Safety (Installations) Regulations 2009 (Vic)
Qld:	Work Health and Safety Act 2011 (Qld) Work Health and Safety Regulation 2011 (Qld) Electrical Safety Act 2002 (Qld) Electrical Safety Regulation 2013 (Qld)
ACT:	Work Health and Safety Act 2011 (ACT) Work Health and Safety Regulation 2011 (ACT) (including Chapter 4, Part 4.7 General electrical safety in workplaces and energized electrical work) Electricity Safety Act 1971 (ACT) Electricity Safety Regulations 2004 (ACT)
WA:	Occupational Safety and Health Act 1984 (WA) Occupational Safety and Health Regulations 1996 (WA) Part 3 Division 6 Electricity Electricity Act 1945 (WA) Electricity Regulations 1947 (WA) Electricity (Licensing) Regulations 1991 (WA)
AS/NZS 3760 <i>In-service safety inspection and testing of electrical equipment</i>	
AS/NZS 3012 <i>Electrical Installations – Construction and demolition sites</i>	
AS/NZS 3190 <i>Approval and test specification - Residual current devices (current-operated earth-leakage devices)</i>	
AS/NZS 3199 <i>Approval and test specification - Cord extension sets</i>	
AS/NZS 3008.1.1 <i>Electrical installations - Selection of cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation conditions</i>	
AS/NZS 3010 - <i>Electrical installations - Generating sets</i>	
AS/NZS 3017 <i>Electrical installations - Verification guidelines</i>	
AS/NZS 3001 <i>Electrical installations - Transportable structures and vehicles including their site supplies</i>	
AS/NZS 3000: <i>Electrical installations (known as Australian/New Zealand Wiring Rules)</i>	
AS/NZS 4836 <i>Safe on or working on low voltage installations</i>	
Safe Work Australia - Managing electrical risks at the workplace: Code of Practice	
Work Cover NSW – Electrical Practices – Construction and Demolition Sites: Fact Sheet (website current)	
Work Cover NSW - Managing electrical risks in the workplace: Code of Practice	
Work Safe QLD - Electrical Safety - Works: Code of Practice	
Work Safe QLD - Electrical safety - Managing electrical risks in the workplace: Code of Practice	
Work Safe QLD - Managing electrical risks in the workplace: Code of Practice	
Work Safe Vic –Electrical installations on construction sites: Industry Standard	
Work Safe WA - Safe Low Voltage Work Practices by Electricians: Code of Practice	
Work Safe WA - Guidelines for the Safe management of high voltage electrical installations	
Energy Safety Division WA - WA Electrical Requirements (WAER)	

8. Additional Information

[Working with Electricity MMR Reference Document](#) (for Mirvac personnel only).

[Isolation Lockout Tagout MMR](#)

[Working with Services MMR](#)

9. Hierarchy of Controls Triangle – Working with Electricity

