
Electrical Safety Procedures

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1. Governing Policy

[Work Health and Safety Policy](#)

[Work Health and Safety Management System](#)

2. Purpose

These procedures outline the general requirements to maintain electrical safety at the University.


3. Scope

- a. These procedures apply to all workplaces owned, managed or controlled by Flinders University and any place where work is performed by a worker on behalf of the University.
- b. These procedures do not address the technical details which qualified electricians and electronic technicians are expected to know.

4. Definitions

Competent person	<ol style="list-style-type: none">a. For electrical work (other than electrical testing) on energised electrical installations – a licensed or registered electrician or any other person permitted to carry out or supervise electrical work under relevant State or Territory legislation.b. For any other case (including electrical testing) – a person who has the knowledge and skills, acquired through training, qualification and/or experience, to carry out the tasks required. Minimum qualifications:<ol style="list-style-type: none">i. for testing and tagging: <i>Parts I & II Certificate or equivalent TAFE or similar qualifications</i>ii. for work on research/teaching electrical equipment (including energised equipment)¹: Tertiary or TAFE certification as an electrical/electronics technician or similar qualifications.
De-energised	Means separated from all sources of electrical supply but not necessarily isolated, earthed, discharged or out of commission.
Electrical equipment	Any apparatus, appliance, cable, conductor, fitting, insulator, material, meter or wire that: <ul style="list-style-type: none">• is used for controlling, generating, supplying, transforming or transmitting electricity at a voltage greater than extra-low voltage• is operated by electricity at a voltage greater than extra-low voltage• 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• 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.
Electrical installation	A group of items of electrical equipment that: <ul style="list-style-type: none">• are permanently electrically connected together, and• can be supplied with electricity from the works of an electricity supply authority or from a generating source.
Electrical lead	An assembly of a plug intended for connection to a mains outlet socket, a sheathed flexible cord and a cord extension socket.

¹ Note: any electrical work involved in educational courses or in scientific research or experiments is exempt from the licensing provisions of the SA *Plumbers, Gas Fitters and Electricians Regulations 2010*

Electrical work	<p>Electrical work is:</p> <ul style="list-style-type: none"> connecting electricity supply wiring to electrical equipment or disconnecting electricity supply wiring from electrical equipment, or installing, removing, adding, testing, replacing, repairing, altering or maintaining electrical equipment or an electrical installation. <p>Electrical work does not include:</p> <ul style="list-style-type: none"> work that involves connecting electrical equipment to an electricity supply by means of a flexible cord plug and socket outlet; work on a non-electrical component of electrical equipment if the person carrying out the work is not exposed to an electrical risk; or replacing electrical equipment or a component of electrical equipment if that task can be safely performed by a person who does not have expertise in carrying out electrical work (e.g. replacing light bulbs).
Electrical portable outlet device	A device other than a cord extension set which has a single plug for connection to a mains outlet socket, a sheathed cord and an assembly of one or more socket outlets, e.g. power board.
Energised (live)	Means connected to a source of electrical supply or subject to hazardous induced or capacitive voltages.
Isolated	Means disconnected from all possible sources of electricity supply and rendered incapable of being made energised without premeditated and deliberate action.
Regulatory Compliance Mark (RCM)	
Residual current device (RCD)	A device intended to isolate supply to protected circuits, socket outlets or electrical equipment in the event of a current flow to earth that exceeds a predetermined value. The RCD may be fixed or portable.
Voltage	<p>Extra low voltage means voltage that does not exceed 50 volts alternating current (50 V a.c.) or 120 volts ripple-free direct current (120 V ripple-free d.c.).</p> <p>Low voltage means voltage that exceeds extra-low voltage and does not exceed 1000 volts alternating current (1000 V a.c.) or 1500 volts direct current (1500 V d.c.).</p> <p>High voltage² means voltage that exceeds low voltage.</p>

5. Management of electrical hazards

- a. Risks to health and safety associated with electrical equipment and electrical installations must be managed in accordance with the [WHS Risk Management Procedures](#), including:
- i. when planning processes using electrical equipment and electrical installations
 - ii. when processes using electrical equipment and electrical installations are changed

² Bedford Park site is supplied via 11000 volt ring main + 16 University owned high voltage substations.

- b. Safe work procedures, as determined by the risk assessment must be adhered to.
- c. Workers and others in the workplace must be informed of any potential electromagnetic hazards in the workplace which may affect a medical condition.

6. Reporting of electric shock and electrical incidents

- a. Workers and students must report all electrical accidents or incidents to their supervisor and on FliinSafe as per the [Accident, Incident and Hazard Reporting and Investigation Procedures](#)
- b. The following must be reported immediately to University Security and to the Associate Director, Work Health and Safety:
 - i. any accident or incident that involves an electric shock or electric burns
 - ii. any incident involving electricity that had the potential to cause serious injury.

7. General electrical safety in the workplace

7.1. General

- a. Any electrical equipment found to be unsafe in the workplace must be immediately disconnected (isolated) from the power supply and tagged out, (see [Plant information, out of service, isolation and lockout tags](#)) and not placed back into service until the equipment is repaired, tested and found to be safe or the equipment is replaced.
- b. Equipment must be used only as intended by the manufacturer (see [Plant Safety Procedures](#)).

7.2. Inspection and testing of electrical equipment

7.2.1. Inspection and testing record keeping

- a. Records of inspection and testing of University electrical equipment must be kept by the College/Property, Facilities and Development Division in accordance with legislation and include the following:
 - i. the date of inspection and test
 - ii. clear identification of the equipment tested
 - iii. results of the test (whether the equipment passed or failed)
 - iv. name of the person/company carrying out the testing, and
 - v. date by which the next testing must be carried out.
- b. The record may be in the form of a tag attached to the electrical equipment tested.
- c. Records of testing must be kept until the electrical equipment is next tested, permanently removed from the workplace or disposed of.

7.2.2. Repaired or serviced equipment

Any electrical equipment returned to service after repair or servicing that could have affected the electrical safety of the equipment must be inspected, tested and tagged before use.

7.2.3. New electrical equipment purchased through an Australian supplier

- a. New electrical equipment that is entering service for the first time does not need to be tested and tagged prior to use, but must be:
 - i. inspected for the presence of an RCM (Regulatory Compliance Mark) or other Australian safety approval mark
 - ii. inspected for damage before being used

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- iii. tagged with a *New to Service* tag which includes the date of entry to service, the date when next test is due and the statement *This appliance has not been tested in accordance with AS/NZS 3760*, and
 - iv. added to a Register recording when the equipment went into service and the next testing date.
- b. If the electrical equipment does not have an RCM and is a declared electrical product specified in *AS/NZS 4417.2 Regulatory compliance mark for electrical and electronic equipment Annex B.2*, the supplier must be advised of the non-conformance and the equipment returned.
 - c. The equipment must be tested and tagged at the next round of testing or at a maximum within 12 months of purchase.
 - d. University laptop computers must be tested and tagged every 12 months according to the regular testing schedule.

7.2.4. Directly imported equipment

- a. Imported equipment must only be purchased directly from overseas when suitable equipment is not available from an Australian supplier.
- b. Any electrical items imported directly from overseas must be safe to use in the workplace and must carry an Australian RCM or demonstrate conformity with an equivalent CE or UL international standard.
- c. Any electrical equipment purchased directly from overseas (i.e. not through an Australian supplier) must be inspected, tested and tagged by a licensed electrician (as per part a. of the definition of [competent person](#)) or electrical/electronic technician (as defined at [part b.ii](#)) before it is placed in the workplace and allowed to be used.
- d. Where electrical equipment has motors fitted, the equipment must be fitted with electrical isolators and tested to ensure energy sources are able to be isolated.

7.2.5. Second-hand electrical equipment

- a. Any second-hand electrical equipment must be inspected, tested and tagged by a licensed electrician or electrical/electronic technician before it is placed in the workplace and allowed to be used.
- b. Where available, wiring and maintenance documentation, including any modifications made to the equipment (e.g. upgraded wiring diagrams), must be acquired at the time of purchase.

7.2.6. Non-University electrical equipment

- a. Electrical equipment used regularly on University premises (including equipment owned by staff and post-graduate students) must be electrically tested and tagged by a [competent person](#) in accordance with the procedure and at intervals specified in *AS/NZS 3760:2010 In-service safety inspection and testing of electrical equipment* unless the testing interval has been varied by the completion of a risk assessment.³
- b. Electrical equipment brought on site by contractors and event organisers must have current test tags and be in good order.
- c. Travel adaptors must be used on a temporary basis only and can only be used on University premises if the travel adaptor:
 - i. has an earth connection (see earthed adaptor pictures)
 - ii. is in good condition
 - iii. has a rating of at least 230 volts at 10A (marked on the casing), and

³ Note that *AS/NZS 3760:2010 specifically excludes medical devices and electrical devices in patient care areas. For more information see AS/3551: 2004 Technical management programmes for medical devices or AS/NZS 3003:2011 Electrical Installations- patient areas.*

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- iv. has an RCM or other Australian safety approval mark.

7.2.7. Undergraduate student electrical equipment

- a. Undergraduate student electrical equipment such as laptop computers and related devices that are for their own personal use do not have to be tested and tagged.
- b. General electrical safety information is available on the [WHS website](#).

7.2.8. Medical devices and patient connect electrical equipment

Medical devices and patient connect electrical equipment must be tested in accordance with AS/NZS 3551 by a person adequately trained in biomedical engineering and suitably qualified in engineering, and who has the necessary knowledge and training to maintain and manage the equipment.

7.3. Access to switchboards and circuit breakers

- a. Access to University switchboards is restricted to Property, Facilities and Development Division authorised staff and those approved by the Property, Facilities and Development Division only.
- b. Resetting of circuit breakers located in University switchboards must be carried out by a [competent person](#) (as defined in s.4).
- c. Reports of tripped circuits and requests for resetting tripped circuit breakers must be submitted through Service One.
- d. Clear access (min 600mm from opened door) to electrical switchboards/distribution boards must be maintained at all times.

7.4. Temporary power supplies and switchboards

- a. Requests for installation of temporary switchboards and/or power supplies must be made:
 - i. to Property, Facilities and Development Project Management for builders/construction projects
 - ii. through a Property, Facilities and Development work request for event temporary power.
- b. Portable generators must be used and maintained in accordance with manufacturer's instructions and relevant Australian Standards (eg AS/NZS 3010 - *Electrical installations - Generating sets*, AS/NZS 4763 - *Safety of portable inverters*, AS/NZS 3002 - *Electrical installations - Shows and carnivals*).

7.5. Power boards

- a. Power boards used at University workplaces must comply with AS/NZS 3105 - *Approval and Test Specification for Electrical Portable Outlet Devices*.
- b. Power boards must have the following minimum features:
 - i. must be marked with an RCM or other Australian safety approval mark
 - ii. must be fitted with a resettable over current protection device, and
 - iii. must be tested and tagged by a competent person.
- c. The user must ensure that the tag is current prior to use.
- d. Power boards with long leads (i.e. over 1.8m) must have individual switches on the power board.
- e. Power boards must be located in an area which does not cause damage to the board or create a tripping hazard.
- f. In hazardous or wet areas power boards must be secured in a safe position.
- g. Power boards must not be overloaded when in use and must not be piggy backed.
- h. Power boards which are not compliant with these provisions must be removed from service.
- i. Power boards must be inspected and tested as per s.7.2.

7.6. Double adaptors and piggyback plugs

- a. The use of double adaptors is not permitted under any circumstances in the University.
- b. The use of piggyback plugs is not permitted, except for:
 - i. temporary event power where no other wiring methodology is possible, and
 - ii. performance spaces such as the Drama Centre and Matthew Flinders Theatre for the use of dimmer channels where no other wiring methodology is possible.
- c. Where piggyback plugs are used under this exception, they must:
 - i. be set up by a competent person who is familiar with their use and safe operation
 - ii. be weather protected
 - iii. be supported in a manner to eliminate pin exposure and in any case have a maximum of 4 plugs back to back, and
 - iv. not exceed the safe working load of the mounting.
- d. Wherever possible arrangements should be made to install enough socket outlets for all of the equipment in the workplace.

7.7. Extension cords

- a. Extension cords must comply with AS/NZS 3199 - *Approval and Test Specification for Cord Extension Sets*.
- b. Extension cords used externally must have portable RCDs attached or RCDs integrated as part of the extension cord unless they are connected to an RCD protected circuit.
- c. When in use, extension cords must be fully extended, not placed where they may be lying in water and not placed in such a way that they could be a tripping hazard (e.g. across aisles, corridors or other areas where people walk).
- d. Extension cords must be inspected and tested as per s.7.2.

7.8. Personal electric heaters

- a. Personal fan heaters and radiators are not permitted, except where they are supplied by the University and approved by Property, Facilities and Development.
- b. Requests must be submitted through [Service One](#).

7.9. Residual Current Devices

- a. RCD protection must be provided for the following electrical equipment and depending on the type of appliance, installation and environment, the RCD protection may be provided by either portable or fixed RCDs:
 - i. handheld electrical equipment including power tools, electric knives and hair dryers
 - ii. electrical equipment that is moved during operation, including vacuum cleaners, floor polishers, extension cords, electric lawn mowers, power boards, portable lighting
 - iii. electrical equipment which is moved between operation where damage to the equipment or the supply cord could occur, including portable welding equipment, portable bench saws, audio visual equipment, extension cords, power boards, computers on wheeled trolleys, and
 - iv. where electrical safety could be affected by the operating environment:
 - appliances used in wet areas, such as kettles and other kitchen appliances, and
 - electrical equipment used in an environment where it is exposed to moisture, heat, vibration, mechanical damage, corrosive chemicals or dust.
- b. All reasonable steps must be taken to ensure that residual current devices used at the workplace are tested regularly, in accordance with AS/NZS 3190, AS/NZS 3000, AS/NZS 3760 by a [competent](#)

[person](#) to ensure the devices are working effectively, except that push button tests of portable RCDs can be undertaken by local users at any time. This requirement covers RCDs used in all operating environments including non-portable (or 'fixed') RCDs.

- c. If a portable RCD is tested and found to be faulty, it must be taken out of service, tagged out and replaced as soon as possible.
- d. A record of testing (other than daily testing) must be kept until the device is next tested or disposed of.

7.10. Electrical Portable Outlet Devices (EPODs) in furniture

EPODs without a resettable overload may be installed in furniture provided they:

- i. have an RCM or other Australian safety approval number clearly displayed
- ii. display clearly the voltage and maximum wattage of the device
- iii. can only be energized by the action of inserting a 2 or 3 pin plug
- iv. are fastened securely to the furniture, and
- v. have no more than 2 outlets per EPOD and leads are configured to eliminate trip hazards.

8. Electrical work on teaching/research electrical equipment

8.1. Purchase of electrical equipment for teaching/research

- a. If the electrical equipment does not have an RCM and is a declared electrical product specified in AS/NZS 4417.2 - *Regulatory compliance mark for electrical and electronic equipment Annex B.2*, the supplier must be advised of the non-conformance and the equipment returned, except that, where no alternative equipment is available:
 - i. a [competent person](#) (as per s.4) must test and tag the equipment and must undertake a risk assessment for the use of the equipment, and
 - ii. controls are implemented to ensure the equipment is safe to use.

8.2. Electrical work isolation and access

- a. Electrical work must not be carried out on energised electrical equipment unless all the requirements in Procedure 10 are met and there is no reasonable alternative.
- b. For all other work on electrical equipment, the relevant College Vice-President and Executive Dean must ensure that:
 - i. work on electrical equipment is undertaken by a [competent person](#)
 - ii. an appropriate system is established in their area to ensure that electrical equipment has been de-energised to allow work to be carried out and it is not inadvertently re-energised while the work is being carried out. See [Plant information, out of service, isolation and lockout tags](#), and
 - iii. appropriate instruction, training, information and supervision is provided on isolation procedures to everyone who may be affected in the workplace.

9. Electrical work on fixed building-related electrical installations

9.1. Work on electrical installations

Only authorised competent persons are permitted to work on University electrical installations. For the purpose of this Procedure this means a licensed or registered electrician, or any other person permitted to carry out or supervise electrical work under relevant State or Territory legislation.

9.2. Verification of de-energised electrical equipment

- a. Electrical work must not be carried out on energised electrical installations unless all the requirements of Procedure 10 are met.

- b. Before any attempts to work on de-energised installations are made, the manager/supervisor of the area must ensure the following:
 - i. before carrying out electrical work, the worker ensures that the equipment/installation that the work is to be carried out on is tested by a competent person to determine whether or not it is energised
 - ii. each exposed part is treated as energised until it is isolated and determined not to be energised
 - iii. each high-voltage exposed part is earthed after being de-energised, and
 - iv. electrical equipment that has been de-energised to allow for electrical work to be carried out cannot be inadvertently re-energised.
- c. The safe work principle 'TEST FOR 'DEAD' BEFORE YOU TOUCH' must be applied at all times.

9.3. Working near energised electrical parts

- a. Where electrical work is to be undertaken near exposed energised (live) electrical parts, a risk assessment must be undertaken to determine the risk level and decide on appropriate control measures.

9.4. Isolation and access

- a. The Director, Property, Facilities and Development must ensure that
 - i. an appropriate system is established in their area to ensure that an electrical installation that has been de-energised to allow work to be carried out on it is not inadvertently re-energised while the work is being carried out. See [Plant information, out of service, isolation and lockout tags](#), and
 - ii. appropriate instruction, training, information and supervision is provided on isolation procedures to everyone who may be affected in the workplace.

9.5. RCD protection and changes to electrical installations

- a. All new and modified installations must be protected by a non-portable RCD as per AS/NZS 3000:2018 *Electrical Installations*.
- b. Existing installations must, wherever practicable, be fitted with a non-portable RCD where there is a significant risk of injury arising from the use of electrical appliances drawing electricity from the circuit.
- c. Any changes to electrical installations/infrastructure must be arranged through Property, Facilities and Development and these changes must be recorded on site plans or kept on relevant file.
- d. Electrical workers undertaking the changes must ensure that any certificates of compliance (CoC) are issued, are in a compliant format and are held on file where relevant.

10. Energised electrical work

Note 1: this Procedure 10 applies to energised work on both teaching/research electrical equipment and electrical installations.

Note 2: electrical work must not be carried out on energised electrical equipment solely for the purpose of convenience

10.1. Electrical work on energised electrical equipment/installations

- a. Work on energised electrical equipment/installations is prohibited unless:
 - i. it is necessary in the interests of health and safety that the electrical work is carried out while the equipment is energised (e.g. it may be necessary for life-saving equipment to remain energised and operating while electrical work is carried out on the equipment), or
 - ii. it is necessary that the electrical equipment to be worked on is energised in order for the work to be carried out properly, or
 - iii. it is necessary for the purposes of testing required by [WHS Regulation 155](#), or

- iv. there is no reasonable alternative means of carrying out the work.
- b. Electrical work must not be carried out on energised electrical equipment only because it is more convenient for the electrical equipment to stay energised while the work is being carried out.
- c. Operational reasons to justify energised electrical work must be documented.
- d. Energised electrical work must not be carried out unless the safety risk to those persons directly affected by a supply interruption is higher than the risk to the electrical workers proposing to carry out the energised electrical work.
- e. Any energised electrical work must be carried out in accordance with [WHS Regulations](#).

10.2. Planning and preparation for work on energised electrical installations

- a. If energised electrical work is to be carried out, it must be authorised as follows:

Director, Property, Facilities and Development	Energised fixed building-related electrical installations.
Manager of the area undertaking the work	Energised teaching/research equipment.

- b. Those authorising the work must ensure before the work commences that:
 - i. a risk assessment is conducted by a competent person in relation to the proposed work and this is recorded
 - ii. the area where the electrical work is to be carried out is clear of obstructions to allow for easy access and exit
 - iii. the point at which the electrical equipment can be disconnected or isolated from its electricity supply is:
 - clearly marked or labelled, and
 - cleared of obstructions to allow for easy access and exit by the worker who is to carry out the electrical work or any other competent person, and
 - capable of being operated quickly.

10.3. Carrying out work on energised electrical work

- a. The authorising person (as per s.10.2.a) must ensure that energised electrical work is carried out:
 - i. by a competent person who has tools, testing equipment and Personal Protective Equipment (PPE) that are suitable for the work, have been properly tested and are maintained in good working order
 - ii. in accordance with a safe work method statement prepared for the work, and
 - iii. subject to the exception explained below—with a safety observer present who is competent:
 - to implement the control measures in an emergency
 - to rescue the worker who is carrying out the work if necessary, and
 - has been assessed in the previous 12 months as competent to rescue and resuscitate a person.
- b. A safety observer is not required if the work consists only of testing and the risk assessment shows there is low risk associated with the proposed work.
- c. The authorising person must ensure, so far as is reasonably practicable, that the person who carries out the electrical work uses the tools, testing equipment and PPE properly.

11. Responsibilities

College Vice-Presidents and Executive Deans and Portfolio Heads	a. Ensure that these procedures are implemented in their College/Portfolio.
Property, Facilities and Development	<p>b. Manage electrical installations in all University buildings including:</p> <ul style="list-style-type: none"> i. provision, maintenance, repair, alteration and additions to the electrical installations ii. the safety of such installations and their compliance with appropriate legislation and Australian Standards. <p>c. Ensure effective residual current devices (RCDs) are installed in certain high-risk environments as defined in the regulations and ensure all fixed RCDs are tested and maintained in accordance with AS/NZS3760 and AS/NZS 3000.</p> <p>d. Authorise Competent Persons – licensed electricians to carry out or supervise electrical work in the University.</p> <p>e. Maintain records on electrical testing and tagging of University equipment.</p> <p>f. Report immediately any electric shock incident to University Security and to the Associate Director, WHS.</p> <p>g. Authorise any electrical work required on energised electrical installations and ensure such work is undertaken safely in accordance with WHS Regulations.</p> <p>h. Ensure that electrical work that is required to be undertaken by a licensed electrician is undertaken by a worker who meets the relevant licensing requirements in the State/Territory concerned.</p> <p>i. Consult as far as is reasonably practicable, other persons or businesses which share responsibility for a health and safety matter, including electrical safety.</p>
Competent persons	<p>j. Ensure that all electrical work they undertake complies with relevant mandatory requirements set down by legislation and the safety standards outlined in these procedures.</p> <p>k. Undertake ongoing training in electrical safety, the details of which will be determined by the person's supervisor.</p>
Managers and supervisors (including supervisors of students)	l. Ensure these procedures are implemented and complied with in their area of responsibility.

12. Related information

Code of Practice [Managing Electrical Risks in the Workplace](#).

[Plant Safety Policy](#)

Approval Authority	Vice-President (Corporate Services)
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Responsible Officer	Director, Property, Facilities and Development
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*** Unless otherwise indicated, this procedure will still apply beyond the review date.**

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