

# HRP07: Electrical Safety Procedure

## Section 1 - Purpose and Scope

(1) The purpose of this procedure is to ensure the management of risks associated with electrical systems and equipment at Southern Cross University (SCU) are appropriately managed and controlled.

(2) The purpose of this procedure is to ensure SCU's management, employees, students and others are aware of the risks associated with electrical systems and equipment in the workplace, management strategies and to provide advice on appropriate controls.

(3) All employees, students and others including both independent contractors and contractors under SCU control are to be made aware of and follow this procedure.

(4) This Procedure applies to all SCU Work Units and sites. The procedure aligns with WHS legislation in the relevant jurisdictions SCU operates in.

## Section 2 - Definitions

Competent Person	For electrical work on energised electrical equipment or energised electrical installations (other than testing referred to in WHS Regulations 150 and 165), a licensed or registered electrician or any other person permitted to carry out electrical work under relevant Commonwealth, state, or territory legislation (for example, electrical engineer, electrical apprentice) (special provisions apply for members of the Australian Defence Force). For any other case a person who has acquired through training, qualification or experience, the knowledge, and skills to carry out the task.
Duty holder	Any person who owes a work health and safety duty under the WHS Act including a person conducting a business or undertaking, a designer, manufacturer, importer, supplier, installer of products or plant used at work (upstream), officer or an employee.
De-energised	Separated from all sources of 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: 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 2832.1-2015: Cathodic protection of metals – Pipes and cables. Electrical equipment does not include any apparatus, appliance, cable, conductor, fitting, insulator, material, meter, or wire that is part of a motor car or motorcycle if: the equipment is part of a unit of the vehicle that provides propulsion for the vehicle. the electricity source for the equipment is a unit of the vehicle that provides propulsion for the vehicle.
Electrical installation	A group of items of electrical equipment that: 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 work	Connecting electrical supply wiring to electrical equipment or disconnecting electricity supply wiring from electrical equipment, installing, removing, adding, testing, replacing, repairing, altering, or maintaining electrical equipment or an electrical installation
Energised (Live)	Connected to a source of electrical supply or subject to hazardous induced or capacitive voltages.
Employee	Any person who carries out work for a person conducting a business or undertaking, including work as an employee, contractor, or subcontractor (or their employee), self-employed person, apprentice or trainee, work experience student, employee of a labour hire company placed with a 'host employer' or a volunteer.
Hazard	A situation or thing that has the potential to harm a person. Hazards at work may include noisy machinery, a moving forklift, chemicals, electricity, working at heights, a repetitive job, bullying and violence at the workplace.
Isolated	Disconnected from all possible sources of electricity supply and thereby rendered incapable of being made energised without premeditated and deliberate action.
Label	Written, printed or graphical information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the container of a hazardous chemical.
Lock out, Tag out	Procedure that involves locking and tagging energy-isolating devices (e.g., a circuit breaker, switch, or valve) to prevent the accidental start-up of machinery or equipment during maintenance or repair, ensuring it remains in a safe state until work is complete.
Officer	An officer under the WHS Act includes: an officer under section 9 of the Corporations Act 2001 (Cth) an officer of the Crown within the meaning of section 247 of the WHS Act, and an officer of a public authority within the meaning of section 252 of the WHS Act. A partner in a partnership or an elected member of a local authority is not an officer while acting in that capacity.
Person conducting a business or undertaking (PCBU)	A PCBU is an umbrella concept which intends to capture all types of working arrangements or relationships. A PCBU includes a: company unincorporated body or association, and sole trader or self-employed person. Individuals who are in a partnership that is conducting a business will individually and collectively be a PCBU. A volunteer association (defined under the WHS Act) or elected members of a local authority will not be a PCBU.
Person with management or control of a workplace	A person conducting a business or undertaking to the extent that the business or undertaking involves the management or control, in whole or in part, of the workplace. A person with management or control of a workplace does not include: the occupier of a residence, unless the residence is occupied for the purposes of, or as part of, the conduct of a business or undertaking, or a prescribed person.
Reasonably Practical	Reasonably practicable means that which is, or was at a particular time, reasonably able to be done to ensure health and safety, taking into account and weighing up all relevant matters including: 1. the likelihood of the hazard or the risk concerned occurring. 1. the degree of harm that might result from the hazard or the risk. 1. what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk. 1. the availability and suitability of ways to eliminate or minimise the risk, and 1. after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.
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.
Risk	The possibility harm (death, injury, or illness) might occur when exposed to a hazard.

RiskWare	Electronic database for the reporting of all incidents and near misses. RiskWare includes the investigation of incidents against systemic causes, the assignment of corrective actions, and regulatory and performance reporting.
Socket outlet	A device for detachably connecting electrically operated equipment to a power supply. The term 'socket outlet' includes a cord-extension socket attached to a flexible cord that is permanently connected to installation wiring.
Voltage	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.). 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.). High voltage means voltage that exceeds low voltage.
Workplace	Any place where work is carried out for a business or undertaking and includes any place where an employee goes, or is likely to be, while at work. This may include offices, factories, shops, construction sites, vehicles, ships, aircraft or other mobile structures on land or water.

## Section 3 - General Principles

(5) SCU minimises the risks of exposure to electricity or electrical equipment to SCU employees, students, and visitors to workplaces by ensuring:

- a. All employees have access to this procedure and will be inducted to the safety management system.
- b. Outsourcing electrical works to a competent person who has received recognised training/licensing and is certified to undertake the works.
- c. Appropriate training and records for internal electrical tradespeople.

### Definition of Electrical Work

(6) Electrical work means:

- a. Connecting electrical supply wiring to electrical equipment or disconnecting electricity supply wiring from electrical equipment, and,
- b. Manufacturing, constructing, installing, removing, adding, testing, replacing, repairing, altering, or maintaining electrical equipment or an electrical installation.

### General Safety Principles

(7) Workers must follow the manufacturer's instructions and safe work procedures in the use of electrical equipment.

### Consultation

(8) Consultation is required with a person who may be affected by any maintenance and service work that might involve electrical energised equipment. People performing the work must receive all necessary training and access to the Plant and Equipment Register, and the work should be documented.

(9) If there is more than one Person Conducting a Business or Undertaking (PCBU), for example, an electrical contractor, both must consult to coordinate activities to ensure all risks are known and controlled.

### Information, Instruction and Training

(10) SCU will provide appropriate competency training through a Registered Training Organisation (RTO) to all maintenance employees required to complete electrical works, e.g., test and tag of electrical equipment, low voltage rescue.

(11) All trade workers shall receive training in the isolation and lockout procedures for each area of work undertaken by them in SCU.

(12) All contractors and sub-contractors who engage in the repair and maintenance of hazardous equipment or energy systems must be trained in lockout procedures and instructed on the SCU requirements.

(13) Contractors engaged by SCU to undertake electrical works must meet the relevant licensing requirements and evidence the same prior to commencement of works.

### **Electrical Risks**

(14) Electrical risks include but are not limited to death, shock, or other injury caused directly or indirectly by electricity. The most common electrical risks and causes of injury are:

(15) Electric shock may be received by direct or indirect contact, tracking through or across a medium, or by arcing. For example, an electric shock may result from indirect contact where a conductive part that is not normally energised (such as a metal toaster body or a fence) becomes energised due to a fault.

(16) Fire (such as fire resulting from an electrical fault), arcing, or explosion causing burns. These injuries are often suffered because arcing or explosion or both occur when high fault currents are present.

(17) Electric shock from 'step-and-touch' potentials, i.e. the phenomenon that explains how you could be electrocuted or suffer an electric shock injury from a downed power line, even if you do not touch it, and

(18) Toxic gases causing illness or death. Burning and arcing associated with electrical equipment may release various gases and contaminants.

(19) Electric shocks may also lead to other injuries, including falls from ladders, scaffolds, or other elevated work platforms. Other injuries or illnesses may include muscle spasms, palpitations, nausea, vomiting, collapse, and unconsciousness.

(20) Workers using electricity may not be the only ones at risk—faulty electrical equipment and poor electrical installations can lead to fires that may also cause death or injury to others.

### **Unsafe electrical equipment**

(21) Any unsafe electrical equipment at the workplace must be disconnected or isolated from its electricity supply and is not to be reconnected until it is repaired or tested by a competent person and found to be safe or is replaced or permanently removed from use.

### **Inspection and testing of electrical equipment**

(22) Electrical equipment must be regularly inspected and tested by a competent person if the electrical equipment is supplied with electricity through an electrical socket outlet (plug in equipment), and used in an environment in which its normal use exposes the equipment to operating conditions that are likely to result in damage to the equipment or a reduction in its expected life span. This includes conditions that involve exposing the electrical equipment to moisture, heat, vibration, mechanical damage, corrosive chemicals or dust.

### **Lower risk workplaces**

(23) Electrical equipment should be tested at least every 12 months in lower risk workplaces that are dry, clean, well organised and free of conditions that are likely to result in damage to electrical equipment such as offices.

## Higher risk workplaces

(24) Electrical equipment in higher risk workplaces where the equipment is exposed to operating conditions that are likely to result in damage to the equipment or a reduction in its lifespan, such as workshops, should be tested at least every 6 months.

(25) All electrically tested equipment must be tagged with a compliant and legible label, as per the Work Health and Safety legislation and Australian Standard AS3760.

## New Equipment

(26) New equipment must be visually inspected for damage before use, added to the Plant and Equipment Register and tagged to indicate in-service date.

## Hire/Leasing Equipment

(27) When hiring or leasing equipment, the manager must ensure that the supplier has electrically inspected, tested, and tagged the equipment prior to supplying it.

(28) Workers and contractors are required to visually inspect the cord and plug of electrical equipment prior to using it. All equipment, cords and sockets are to be placed safely away from water and not touched with wet hands. Ensure that it is within test and tag date.

(29) Electrical cords must be secured safely so that they are not a trip hazard and cannot be accidentally damaged.

## Power Points

(30) Power points must be switched off before an electrical plug is removed from the socket to reduce the risk of electric shock or fire. Plugs must not be removed by pulling the cord.

(31) Where a worker identifies any evidence that the cord, plug, or equipment are damaged, they must remove the equipment/isolate the socket and immediately place an Out of Service Tag, and report with Riskware hazard report and submit an Archibus report.

(32) Electricians including Accredited Service Providers (ASPs) must not work live on SCU electrical equipment or installations merely because it is more convenient. Convenience is not an excuse to carry out dangerous work.

(33) [WHS Regulations](#) and Electrical Safety Regulations prohibit work on energised (live) electrical equipment unless one or more of the [exceptions](#) under the WHS Regulations applies (see WHS Regulation 158). Note, it is insufficient to conduct live electrical work simply because it is more convenient to do so that isolating and de-energising.

(34) De-energised testing methods should be used before energised testing methods. Fault finding should first be attempted in a de-energised environment using de-energised testing methods. If unsuccessful, energised testing methods may be used subject to meeting the requirements of the WHS Regulation for working energised.

(35) Refer to the Code of Practice: [Managing Electrical Risks in the Workplace](#) in the relevant jurisdiction for more information on the few circumstances under which testing live is permitted and [how](#) it should be carried out.

## Double Adaptors and Power Boards

(36) Double Adaptors must not be used under any circumstances in SCU facilities.

(37) Power boards are permitted under the following conditions:

- a. they should include or incorporate an RCD.

- b. they must not be used to supply high current consumption devices.
- c. multiple plug power boards must not be piggy backed (one connected to another) as this can lead to overheating, electrical shocks and fires.
- d. they must not be used in hostile environments or exposed to wet or moisture laden atmospheres.
- e. they must be regularly inspected and tested and tagged.

### **Extension Leads**

(38) Extension leads are permitted under the following conditions:

(39) not be of excessive length for their purpose.

(40) be of adequate current rating.

(41) positioned so that they are protected against damage and do not create a trip hazard.

(42) regularly inspected and tested and tagged.

### **Testing and Tagging**

(43) All electrical equipment must be recorded in a Plant and Equipment Register. The register may take the form of a shared drive or data base.

(44) The register must include the following:

- a. Location of the equipment
- b. Date of commissioning/purchase
- c. The name of the person who carried out the testing
- d. The date of the testing
- e. The outcome of the testing
- f. The date of the next due test

(45) A tag must be attached to the equipment recording the name of the person who carried out the testing, the date of the testing, the outcome of the testing and the date the next testing is due.

### **Competency of the person carrying out inspection and testing**

(46) Inspection and testing of electrical equipment must be carried out by a competent person who has acquired through training, qualification or experience, the knowledge and skills to carry out the task. The competent person should also have the relevant test instruments to carry out inspection and testing and be competent to interpret the test results.

(47) Some kinds of electrical testing should only be carried out by a licensed electrician, e.g. testing requiring the dismantling of electrical equipment.

### **Contractors**

(48) The Work Unit must ensure the contractor has inspected, tested, and tagged all plug-in electrical equipment prior to bringing it on site. The Contractor must be able to provide evidence of test and tag of all electrical equipment they bring onto site, upon request.

### **Monitoring of Electrical Risks**

(49) Electrical equipment, sockets and power boards must be regularly inspected during the WHS Workplace

inspection and as part of visual inspections prior to use.

### **Safety Switches / Residual Current Devices (RCDs)**

(50) SCU must ensure that any electrical risk associated with the supply of electricity to electrical equipment through a socket outlet is minimised by the use of an appropriate safety switch/RCD. Safety Switches/RCDs must comply with AS/NZS 3760 and be tested to ensure they are working properly.

(51) A safety switch is an electrical safety device designed to minimise the risks of electrocution caused by excessive power demands or faulty equipment/wiring. Safety switches are particularly beneficial where electrical cords, items or equipment or the operator may be exposed to water, overloaded and/or there is a risk of the cord or plug being damaged. Safety switches are required for use for all electrical equipment with three pin plugs which are mobile, moved between jobs or used in a wet or hazardous environment. Examples include:

- a. Plug in hand-held drills, saws, or other powered tools/equipment.
- b. Floor polishers and vacuum cleaner.
- c. Extension cords.

### **Conduct of Electrical Work**

#### **Licence requirements**

(52) Authorised electrical workers, including electrical contractors, must hold valid and relevant licences and accreditation, and be trained and appropriately competent to undertake electrical work at SCU workplaces.

#### **Working de-energised**

(53) Electrical work on energised electrical equipment is prohibited. Before electrical work is carried out it must be tested by a competent person to ensure it is not energised. All precautions must be taken to prevent de-energised equipment from being inadvertently re-energised by isolating and locking out circuits/equipment intended to be worked on. Refer to HRP22 Lock out tag out Procedure.

#### **Restricted access**

(54) Controls must be in place to prevent unauthorised access to equipment while it is being repaired or maintained. Controls may include locked access, barricading and signage at entry to notify SCU employees, contractors, students and others of the electrical hazards.

#### **Out of Service, Danger Tag and Personal Lock**

(55) Out of Service Tags are to be used by Property Services in the event they identify a faulty piece of electrical equipment, power board, lead, or a damaged socket. Use of Danger Tags along with lockout (isolation) devices are part of the risk management system for managing some specific risks and will be used by competent Property Services employees or approved qualified electrical contractors and sub-contractors.

(56) Once applied SCU out of service tags can only be removed by a Competent Property Services employees or approved qualified electrical contractors and sub-contractors. Electrical equipment which is found to be faulty should be removed from service. If it is old, not required or not worth repairing, the plug should be cut off and the item disposed of.

(57) Examples of tags and locks are included in the Code of Practice – How to manage and control electricity in the workplace – Appendix A. The wording may vary in accordance with AS1319:1994 – Safety Signs for the Occupational Environment.

## **Lock Out Principles**

(58) Lock outs or isolation principles are designed to either isolate or prevent the use of specific equipment or systems. This may be because the equipment is not working correctly and poses a danger to staff and/or others in public access areas. Refer to HRP22 Lock out tag out Procedure

### **Altering isolation for testing, fault finding and re-energising.**

(59) Working on live equipment should be avoided at all times. If testing or fault finding on live equipment is absolutely necessary, then then testing shall be carried out by a competent person only and in accordance with the WHS Regulations for energised electrical work.

## **Leaving Unfinished Work**

(60) If work is left unfinished, you must ensure that the workplace is safe so far as is reasonably practicable. For example:

- a. terminate any exposed conductors.
- b. physically secure any exposed conductors or surrounding metalwork.
- c. tag and tape off the electrical equipment, workplace area, excavations, etc.
- d. inform affected persons at the workplace the work is not complete and advise of potential hazards.
- e. ensure excavations are covered or barricaded.
- f. take any necessary precautions to ensure that electrical equipment cannot become inadvertently re-energised.
- g. ensure that the status of switchboards and electrical equipment are clearly and correctly labelled; and
- h. hand over adequate information to workers taking up the unfinished work to allow them to continue the work safely.

## **Safe Work Procedures**

(61) For further guidance refer to the following safe work procedures which can be found on the Property Services Policy, Plans and Procedures page.

- a. Working on Electrical Equipment/Circuits
- b. Lights Maintenance
- c. Underground Cable Installation

## **Personal Protective Equipment (PPE)**

(62) PPE (for example protective eyewear, insulated gloves, hard hats, aprons and breathing protection) should be rated for the work to be done and perform to Australian Standards. If working on or near energised equipment, the PPE must be able to protect the user from the maximum expected energy available at the worksite.

## **Reporting**

(63) All issues, faults and/or damage to SCU electrical infrastructure and equipment must be reported in the SCU Maintenance Management System, and:

(64) all incidents, near misses and hazards relating to electrical work and electrical equipment must be reported in Riskware.

(65) The WHS team are to notify the regulator (SafeWork NSW, Work Health & Safety Qld or the Electrical Office or other relevant regulator) of a notifiable electrical serious injury or illness of a person or dangerous electrical incident.



(66) Refer to the relevant state's WHS legislation.

### **Appropriate Tools & Equipment**

(67) It is important that all tools and equipment used for electrical work are 1) appropriate for the work tasks to be done (i.e., fit for purpose), 2) adequately maintained and kept in good working order, and 3) used appropriately.

(68) Examples of tools and equipment and how fit-for-purpose, adequately maintained, and appropriate use may impact workers' health and safety in electrical work contexts are listed below:

- a. Procuring correctly insulated tools.
- b. Use of lanyards to prevent dropped objects into switchboards (e.g., risk of arc flash).
- c. Use of non-conductive ladders.
- d. Placing ladders and other elevating structures away from electrified devices or materials to prevent inadvertent touching or grabbing (e.g., in the event of overbalancing or gripping for stability).
- e. Installing temporary covers or shrouds over electrical equipment while work is performed.
- f. Provision and safe use of insulating mats and barriers.
- g. Correctly calibrated and tested voltmeters and proximity voltage testers.
- h. Provision and safe use of personal protective equipment, and management of personal items that may be conductive such as glasses, footwear or jewelry.

### **First-aid Equipment and Provision of First-aid**

(69) All equipment required to perform first-aid and low voltage rescues must be provided by SCU and regularly tested/inspected. Further, sufficient numbers of workers involved in electrical work must be adequately trained in supplying basic first aid and in the use of rescue equipment.

## **Section 4 - Responsibilities**

(70) Refer to WHS Responsibility and Accountability Statement.

## **Section 5 - Records of Documentation**

(71) All relevant documentation will be recorded and kept in accordance with WHS Legislation and other legislative obligations including:

- a. Details and scope of the work performed.
- b. Names of those performing the work.
- c. Evidence of electrical licence.
- d. Records of visual inspections (Workplace Inspection Checklist).
- e. Site electrical register.

## **Section 6 - Revision and approval history**

(72) This procedure will be reviewed as per nominated review dates or because of other events, such as:

- a. Internal and external audit outcomes.
- b. Legislative changes.

- c. Outcomes from management reviews.
- d. Incidents.

## Section 7 - References

Work Health and Safety Act 2011
Work Health and Safety Regulation 2011 (QLD) 2017 (NSW)
Electrical Safety Act 2002 (QLD)
Electrical Safety Regulation 2013 (QLD)
How to manage and control electricity in the workplace 2021 COP (QLD) 2022 (NSW)
AS/NZS 3760:2010 - In-service safety inspection and testing of electrical equipment
AS 1319:1994 Safety Signs for the Occupational Environment

## Section 8 - Related Documents

HRP22 Energy Isolation Management Procedure
WHS Responsibility and Accountability Statement

## Status and Details

<b>Status</b>	Current
<b>Effective Date</b>	9th December 2024
<b>Review Date</b>	9th December 2027
<b>Approval Authority</b>	Vice President (People and Culture)
<b>Approval Date</b>	9th December 2024
<b>Expiry Date</b>	Not Applicable
<b>Responsible Executive</b>	Kim Franks Vice President (People and Culture)
<b>Head of Work Unit</b>	Kim Franks Vice President (People and Culture)
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