HRP07: Electrical Safety

Section 1 - Purpose and Scope

(1) This Procedure aims to ensure Southern Cross University (SCU) management, employees, students, and others know the risks associated with electrical safety in the workplace and relevant management strategies for the risk mitigation process.

(2) All employees, students, and others must follow this Procedure.

(3) This Procedure applies to all SCU Work Units and sites.

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 the knowledge and skills to carry out the task through training, qualification, or experience.
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: 1. Is used to control, generate, supply, transform, or transmit electricity at a voltage greater than extra-low voltage. 2. Is operated by electricity at a voltage greater than extra-low voltage. 3. Is part of an electrical installation in an area where the atmosphere presents a risk to health and safety from fire or explosion. 4. 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. 5. 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: 1. The equipment is part of a unit of the vehicle that propels the vehicle. 2. 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 an electricity supply authority’s works or 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.
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	A 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.
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.
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.

Section 3 - General Principles

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

a. Outsourcing electrical works must be done by a competent person who has received recognised training/licensing and is certified to undertake the work.
b. Appropriate training and records for internal electrical tradespeople.

General Safety Principles

(5) Workers must follow the manufacturer's instructions and safe work procedures when using electrical equipment.

Consultation

(6) See WHSMP07: Consultation, Communication, and Participation.

Information, Instruction and Training

(7) 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, perform low voltage rescue.

(8) All trade workers shall receive training in the isolation and lockout procedures.

(9) 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.

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

Electrical Risks

(11) 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:

a. 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.
b. 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.
c. 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
d. Toxic gases causing illness or death. Burning and arcing associated with electrical equipment may release various gases and contaminants.

(12) 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.

(13) 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.

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

Unsafe Electrical Equipment

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

Inspection and Testing of Electrical Equipment

(16) 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.

Testing and Tagging

(17) All electrical equipment must be recorded in a register.

(18) 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.

(19) A tag must be attached to the equipment recording the name of the person who carried out the testing, the

testing date, the outcome, and the date the subsequent testing is due.

Competency of the Person Carrying out Inspection and Testing

(20) 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.

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

(22) The Work Unit must ensure that any contractor has inspected, tested, and tagged all plug-in electrical equipment before bringing it on site. The Contractor must be able to provide evidence of testing and tagging of all electrical equipment they bring onto the site upon request.

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 six 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 and tagged to indicate in-service date.

Hire/Leasing Equipment

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

(28) Workers and contractors must 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.

Power Points

(29) 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.

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

Double Adaptors and Power Boards

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

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

a. they should include or incorporate an RCD.
b. they must not be used to supply devices with high current consumption.
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

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

a. not be of excessive length for their purpose.
b. be of adequate current rating.
c. positioned so that they are protected against damage and do not create a trip hazard.
d. regularly inspected and tested and tagged.

Safety Switches / Residual Current Devices (RCDs)

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

(35) 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 mobile three pin plugs, 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 cleaners.
c. Extension cords.

Conducting Electrical Work

Licence Requirements

(36) (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 Energised

(37) WHS Regulationsand Electrical Safety Regulations prohibit work on energised (live) electrical equipment unless one or more of the exceptions under the WHS Regulations apply (see WHS Regulation 158). It is insufficient to conduct live electrical work simply because it is more convenient than isolating and de-energising.

(38) 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.

Working De-energised

(39) Electrical work on energised electrical equipment is prohibited. Before electrical work is carried out, a competent person must test it 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/tag out Procedure.

(40) 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.

(41) Where concealed services are suspected, HRP22 Lock Out Tag Out procedures must be followed as a precaution until confirmation of de-energisation is achieved

Restricted Access

(42) 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.

Lock Out Principles

(43) Lockouts 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/tag out Procedure.

Altering Isolation for Testing, Fault Finding, and Re-energising

(44) Working on live equipment should be avoided at all times. Suppose testing or fault finding on live equipment is necessary. In that case, testing shall be carried out by a competent person only and per the WHS Regulations for energised electrical work.

Leaving Unfinished Work

(45) 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, and excavations.
d. Inform affected persons at the workplace that the work is incomplete and advise them of potential hazards.
e. Ensure excavations are covered or barricaded.
f. Take necessary precautions to ensure that electrical equipment cannot become inadvertently re-energised.
g. Ensure that the status of switchboards and electrical equipment is 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

(46) A safe system of work will be applied to electrical work, which may include risk assessment, Safe Work Instruction (SWI), and Safe Work Method Statements (SWMS).

(47) Besides the above, any work that involves cutting, coring, drilling, penetrating, removing, or resurfacing floors, slabs, walls, or ceilings must follow the Concealed Services Clearance Protocol before work commences.

(48) The Concealed Services Clearance Protocol includes:

a. Mandatory use of calibrated detection equipment to scan for embedded electrical (and other) services.
b. Review of infrastructure drawings or asset records. Where no drawings exist or are insufficient, the risk must be escalated to the Property Services department.
c. On-site verification by a licensed electrician is required where the presence of services cannot be ruled out.
d. Completion of a Pre-Work Clearance Form confirming all necessary checks have been undertaken.
e. descalation pathway where uncertainty remains regarding service presence or condition.
f. Documentation of findings and communication to all affected personnel.

(49) If concealed or undocumented electrical services are located or suspected, work must not proceed until risk controls are implemented in accordance with HRP22: Lock Out Tag Out, including isolation, tagging, barricading, or removal from service where required, and the risk must be escalated to the Property Services department.

(50) Legacy infrastructure (e.g., abandoned cables, undocumented systems) must be treated as a potential live risk until proven otherwise by a competent person. These findings must be logged into the Site Electrical Register and reported through the appropriate SCU system (e.g., Riskware or Archibus).

Personal Protective Equipment (PPE)

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

Reporting

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

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

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

Appropriate Tools and Equipment

(55) All tools and equipment used for electrical work must be:

a. Appropriate for the work tasks (i.e., fit for purpose).
b. Adequately maintained and kept in good working order.
c. Used appropriately.

(56) 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 lanyards to prevent dropped objects from entering 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 individual items that may be conductive, such as glasses, footwear, or jewelry.

First-aid Equipment and Provision of First-aid

(57) (60) 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

(58) Refer to WSHMP13: Responsibilities and Accountability Statement.

Section 5 - Records of Documentation

(59) 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 an electrical licence.
d. Records of visual inspections (Workplace Inspection Checklist).
e. Site electrical register.
f. The Site Electrical Register must include known embedded cables and legacy infrastructure. Where undocumented services are identified or suspected, they must be logged and verified by a competent person and documented appropriately.

Section 6 - Revision and Approval History

(60) 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 (in the applicable jurisdiction that SCU operates)

Work Health and Safety Regulation (in the applicable jurisdiction that SCU operates)

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

Related Documents

HRP22: Lock Out, Tag Out

WHSMP13: Responsibility and Accountability Statement

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Responsible Executive	Kim Franks Vice President (People and Culture)
Head of Work Unit	Kim Franks Vice President (People and Culture)
Enquiries Contact	Shaun Brown Manager, Workplace Health and Safety --- Vice President (People and Culture) portfolio