Procedure

Electrical Equipment Safety Management

1. Purpose

The purpose of this procedure is to provide a framework for managing electrical equipment safety in West Moreton Health's (WMH) work environment and ensuring protection from the risks associated with electricity.

Electricity is a critical utility service and is immensely useful, but it can be hazardous to persons and property if not carefully controlled and managed. This procedure outlines the appropriate standards for management of electrical safety within WMH. The technical details which qualified electricians are expected to know have not been repeated in this procedure.

The management of electrical safety is designed to provide protection from:

- Electric shock, damaged electrical equipment or extension leads and/or wet conditions in the areas that electrical equipment is used.
- Risk of fire arising from heating equipment, overloaded circuits, short circuits, inappropriate electrical equipment in hazardous environments.

2. Scope

This document relates to all WMH staff, contractors, consultants, labour hire workers and others engaged in work activities deemed as work under the *Electrical Safety Act 2002* and the *Electrical Safety Regulation 2013*, at any WMH workplace, whether it is an owned, managed or controlled location.

3. Statement / Commitment

WMH is committed to the health, safety and wellbeing of all staff, patients and visitors and will ensure all workplace hazards and electrical risks are managed by elimination or control, using a risk management approach, in accordance with this procedure.

4. Principles

This Procedure is underpinned by the principles outlined in the WMH Work Health and Safety Policy which states:

- WMH is committed to the highest standards of staff and patient safety and uses best practice methodologies to create a safe work environment for our staff and others
- The safety of our people is our highest priority. We strive for and are committed to continuous and sustainable improvement of health and safety risk management.

5. Process

5.1 Procurement of Electrical Equipment or Services

All electrical goods and services purchased by WMH must be safe to use and comply with the *Electrical Safety Act 2002* and *Work Health and Safety Act 2011* and associated Regulations and Australian Standards. Importers, designers, manufacturers, retailers, wholesalers, and other suppliers are required to ensure the products they supply are electrically safe and meet the relevant Australian Standards.

Consideration of electrical risk prior to purchase must meet the following requirements:

- Suitability of equipment / service for use
- Compatibility with existing electrical systems and processes
- Electrical loads and requirements (will electrical infrastructure need modification for use?)
- Installation, placement, ease of use and maintenance or servicing considerations
- Certification and compliance with Australian electrical safety regulations (particularly relevant for overseas sourced equipment).
- Environmental, noise and ventilation considerations

Electrical equipment acquired by loan or hire is required to be electrically safe. The responsibility for inspection, testing and tagging of such equipment falls to the nominal equipment owner (the hirer).

New specified electrical equipment purchased by WMH must be inspected, tested and tagged prior to first use.

5.2 Safe Use of Electrical Equipment / Prohibited Electrical Equipment

5.2.1 Double adaptors and piggyback plugs - are not permitted to be used within any WMH site, with no exceptions.

5.2.2 Heating appliances - (such as portable bar, fan or any personal heaters), are **not** permitted to be used on any WMH site, without individual prior written authorisation by the WMH Electrical Team, due to the significant fire risk.

5.2.3 Electrical switchboards - all switchboards or cupboards that contain switchboards within WMH facilities shall be locked to prevent unauthorised access. Keys can be obtained from authorised persons within WMH.

5.2.4 New specified electrical equipment purchased by WMH - must be tagged (in service) with the date of purchase or date of first use to identify when future testing and tagging is required.

5.2.5 Multi-outlet power boards - If additional power outlets are required and installing new power outlets is not practicable, multi-outlet power boards (inclusive of a 10 Amp overload cut out circuit breaker, and individual outlet switches) which have been tested and tagged in accordance with the Queensland Electrical Safety Regulation 2013 within the last twelve (12) months are permitted to be used.

5.2.6 Electrical leads and plugs - must be protected from damage, including damage by liquids. All electrical plugs should also be either the moulded type (integral part of the cord) or transparent.

5.2.7 Overloading circuits – Do not connect more than one sensitive or critical item of equipment (e.g. Biomedical Electrical Equipment) to single power outlets (via multi-outlet power boards).

5.2.8 Electrical infrastructure – No electrical equipment is to be used or installed into WMH sites by any staff member or others that could cause electrical damage or reduce the reliability of electrical supply.

5.2.9 Lock out, Tag Out – for faulty / damaged equipment. All defective or damaged electrical equipment must be removed from service immediately and be Tagged Out of service with a 'Do Not Operate' label in accordance with Electrical Safety legislation and Australian Standards and WMH Lock out – Tag out Procedure.

Additionally:

- Electrical appliances designed for food preparation, such as sandwich makers, toasters, jugs, kettles etc, must only be used in designated kitchen / kitchenette areas only.
- Turn off power outlets before disconnecting electrical leads.
- Avoid 'daisy chaining' of power boards, as this process risks of overheating the power board and can cause a fire. If more than one power board is required contact I & A to assess if extra power outlets are required.

5.3 Testing and Tagging of Specified Electrical Equipment

5.3.1 The *Electrical Safety Regulation 2013* requires certain items of electrical equipment to be inspected and tested by a competent person at intervals according to the type of work they are used for, as per *AS/NZS 3760 (In-service Safety Inspection and Testing of Electrical Equipment)* to confirm they are electrically safe. Once inspected and deemed electrically safe, an inspection tag is affixed to the equipment to display its testing status and expiry date.

5.3.2 The type of work being performed determines how often specified electrical equipment is tested. Specified electrical equipment is defined by *section 97 of the Electrical Safety Regulation 2013* as electrical equipment with a current rating of not more than 20 amps. Specified electrical equipment also includes cord extension sets.

5.3.3 For service or office work (most of the work within the clinical or office areas of WMH) specified equipment is limited to equipment that is moved during its normal use for the purpose of its use.

Type of work and/or equipment	Test and tag interval (maximum)
Construction work – transportable structures, fixed and transportable equipment and construction wiring	6 months
Construction work – other equipment	3 months
Manufacturing work – double insulated equipment	12 months
Manufacturing work – equipment not double insulated	6 months
Office work *(If no safety switch)*	5 years
Service work *(If no safety switch)*	12 months

Table 1

5.3.4 Only a person appointed as competent by their employer can test and tag electrical equipment. Competence is based on knowledge and skills gained from training, experience, qualifications or a combination of these. It is an offence under the *Electrical Safety Act 2002* to repair or maintain electrical equipment unless you have the appropriate electrical work licence.

5.3.5 The minimum training requirement for test & tag licencing competency is certification - UEESS00098 (or equivalent) from an appropriate Registered Training Organisation (RTO), to enable workers to safely test electrical cord connected equipment and cord assemblies to AS/NZS 3760.

5.4 Testing of Biomedical Electrical Equipment

A higher standard of testing applies to testing of medical electrical equipment under AS/NZS 3551 M*anagement programs for medical devices*. A Competent Person who is testing an item of medical equipment must have completed the standard training unit UEESS00098 for testing and tagging but must also have completed the course of instruction *UEENEEH134A - Fault find and repair electronic medical equipment*.

This includes the following tests:

- Protective Earth Test
- Insulation Resistance Test
- Earth Leakage Current Test
- Applied Part Leakage Current Test
- Mains Contact Current Test

Biomedical Technology Services (BTS) is an agency of Queensland Health who supplies and maintains a comprehensive range of health technology. The medical equipment and systems supplied for use by BTS in WMH are fully maintained as electrically safe, effective, and available for patient care and diagnosis, when required.

BTS systems are certified to comply with ISO9001 Quality Management Systems and accredited to NATA standards. They also comply with Australian and New Zealand standards AS/NZS:3351 Management Programs for Medical Devices.

5.5 Testing of Residual Current Devices (RCDs) or Safety Switches

All new lighting, socket outlet circuits and fixed wired equipment within WMH controlled workplaces rated at ≤ 32A must be protected by non-portable residual current devices (RCD's) rated at least to 30mA.

All clinical area electrical circuits rated at ≤ 32A, must be protected by 10mA RCD's.

Existing lighting, socket outlet circuits and fixed wired equipment that are rated at ≤ 32A, wherever practicable, when maintenance or other works are carried out on those circuits, must also be fitted with a non-portable RCD's, rated at least to 30mA.

I & A must ensure that RCD's are tested regularly by a competent person in accordance with Table.2 below as per AS/NZS3760 to ensure the devices are working effectively. I & A must ensure, that the RCD testing is completed as required. Records must be maintained by I & A as evidence of the RCD testing currency.

- Although most electrical circuits throughout WMH have RCDs installed, WMH requires testing and tagging of specified electrical equipment in all cases. This is due to the difficulty in identifying exactly which circuits provide protection, particularly in older buildings, and of tracking or preventing the movement of specified electrical equipment from a protected to a non-protected area.
- RCDs and portable RCDs must be tested at the prescribed intervals described in **Table 2** by a competent person and removed from use and tagged out of service if not working correctly or safely.
- In locations such as "Patient Treatment Areas" and "Manufacturing" spaces, RCD protected areas must be clearly identified and labelled with dates of last test and extent of coverage.
- In some cases, portable RCDs may also be required. I & A is progressively installing RCDs on all circuits throughout WMH. Until that program of RCD installation is completed, testing and tagging of specified electrical equipment must continue to include all portable electrical items.

Type of work	Fixed RCD (safety switch)		Portable RCD (safety switch)	
	Push-button user Test	Operating time / current test	Push-button user Test	Operating time / current test
Construction work	1 month	12 months	Daily, or before each use, whichever is the longer	3 months
Manufacturing work	6 months *	12 months *	Daily, or before each use, whichever is the longer * #	12 months * #
Office work	6 months *	2 years *	3 months *	2 years *
Service work - commercial cleaning equipment	N/A	N/A	Daily, or before each use, whichever is the longer *	6 months *
Service work - other	6 months *	2 years *	6 months *	2 years *
* Longer test intervals may apply. Consult AS/NZS 3760 In-service safety inspection and testing of electrical equipment. **# From 1 March 2008 portable safety switches are prohibited from use in manufacturing work**				

Table 2

Equipment that fails testing should be immediately; removed from service and an out of service tag attached to the item indicating that the item cannot be used.

If the equipment is safe to use, you must attach a test tag which shows the date the next test is due.

5.6 Risk Assessment and Review of Electrical Safety

5.6.1 I & A Managers / Supervisors must review at least every 12 months and, if necessary, revise, all risk control measures associated with electrical equipment so as to maintain, so far as is reasonably practicable, a work environment that is without electrical risks to health and safety.

5.6.2 A Risk Register of Electrical Equipment should be maintained to ensure that all risks associated with electrical equipment is properly managed.

5.7 Reporting of Electrical Hazards

All staff are responsible for, reporting faulty or damaged WMH electrical equipment and electrical hazards and risks to I & A, as soon as possible after the fault or damage is identified, and additionally logging the issue through the Riskman reporting process.

Fault Tags (*see **Figure 1** at right*) are available from I & A or through your manager / supervisor.

All staff are required to tag faulty electrical equipment as “Out of Service” and disconnect the equipment from its power source if it has a plug, to prevent the equipment being used, until it has been repaired or replaced.

Figure.1

5.8 Electrical Incident Reporting - Mandatory

5.8.1 Electric shocks, events and incidents:

i. A minor electric shock is defined as an incident which does not require medical or first aid treatment.
ii. An electric event is where no injuries are sustained, but precautionary medical observation is sought.
iii. A serious electric incident is defined as an event which requires first aid or medical treatment and incudes fatalities.

5.8.2 All minor shocks, "tingles" as well as more substantial incidents associated with electrical equipment, electrical infrastructure (wiring, switches, leads or plugs, etc) or any damage, whether minor or greater, caused to or by electricity (smouldering, fire etc.) must be reported immediately to I & A and the Work Safety and Wellbeing Unit and an incident report placed in Riskman.

5.8.3 All electrical events must be reported in accordance with the WMH Work Health and Safety Incident Management Procedure. All serious electrical incidents, dangerous electrical events and electrical near misses must be reported to the Work Safety and Wellbeing Unit (WSW) immediately. WSW are required to notify the Electrical Safety Regulator.

5.9 The use of Personal Electrical Equipment

5.9.1 WMH staff, patients and others are discouraged from bringing domestic or other personal electrical appliances into any WMH workplace.

5.9.2 Provision “5.9.1” does not apply to personal mobile phone chargers, which may be used by staff, patients, visitors and others; however, they must be safe to use, and may be subject to inspection by WMH staff at any time.

5.9.3 Where the use of personal electrical appliances is required - the relevant Manager / Supervisor must ensure the item is electrically tested and tagged as safe by I & A, before use, and if the equipment does not carry an RCM (Registered Compliance Mark) then the equipment is not permitted to be used in any WMH workplace.

5.9.4 The relevant area manager/supervisor is responsible for ensuring that untested personal electrical equipment is not used.

5.10 Emergency Preparedness regarding Electrical Safety

In an electrical emergency, call the Queensland Ambulance Service on 000. Stay on the phone until told to hang up by the Ambulance operator.

The importance of effective emergency preparedness and response regarding an electrical safety incident, should be identified within area emergency procedures, documented after consultation with the Emergency Control Organisation (ECO) team (comprised of the WMH Fire Wardens and WMH First Aid Officers) and regularly reviewed. The ECO Team input is critical in determining what action or controls may be required to safely manage and evacuate people during an electrical emergency event or to extinguish an electrical fire.

6. Definition/s

Term	Definition / Explanation / Details
Competent Person (Electrical)	• **Electrical Work Licence** - a person who has acquired through training, qualification, licencing and experience the required national proficiencies to be deemed competent to work with, near or on electrical infrastructure

	and equipment under the Electrical Safety Act 2002, Electrical licensing eligibility policy. • The minimum training requirement for test & tag licencing competency, is certification - UEESS00098 (or equivalent) from an appropriate Registered Training Organisation (RTO), to enable workers to safely test electrical cord connected equipment and cord assemblies to AS/NZS 3760. • If test and tag is required for medical equipment, a Competent Person must also complete a course of instruction to AS/NZS 3551-2012. (UEENEEH134A - Fault find and repair electronic medical equipment, or equivalent).
Electrical Equipment	Apparatus, appliance, cable, conductor, fitting, flexible supply cord, insulator, material, meter, power board, cable 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
Electrical Installation	A group of items of electrical equipment (e.g. switchboards, distribution boards, wiring etc) that: • are permanently electrically connected together • can be supplied with electricity from an electricity supply authority or from a generating source
Electrical Lead	An assembly of a plug intended for connection to a mains socket outlet, a double insulated sheathed flexible cord and a cord extension socket.
Electrical Power board	A device other than a cord extension set which has a single plug for connection to a mains socket outlet, a double insulated sheathed cord and an assembly of one or more socket outlets.
Hierarchy of Hazard Control	1. **Eliminate** the hazard, if at all possible. e.g. working de-energised eliminates significant electrical risks and should be the first preference. 2. **Substitute** the hazard with something less hazardous e.g. use battery operated electrical equipment, rather than a mains power device. 3. **Isolate** the hazard by using barriers or fences e.g. prevent workers from coming into contact an electrical hazard or risk. 4. Use **Engineering controls**, e.g. installing / using safety switches (RCD's). 5. **Administrative Controls**. Provide rules, training and supervision of the person performing that task. e.g. establishing exclusion zones, use of permit to work and Safe Work Method Statements (SWMS). 6. Wear personal protective equipment (**PPE**) such as safety footwear, gloves, eye protection, hearing protection, etc. 7. Ensure through **review**, that the chosen control measure does not introduce a new hazard or risk.
Residual Current Device (RCD)	A mechanical / electrical switching device intended to isolate an electrical circuit when a current imbalance attains the rated operating leakage current value of the device. e.g. 10mA or 30mA
Workplace	A place where work is carried out for WMH and includes any place where a worker goes, or is likely to be, while working.
Specified Electrical Equipment	Any equipment that meets the following criteria: • Extension leads (cord extension sets with a current rating of not more than 20 amps) • All power boards (portable outlet devices with a current rating of not more than 20 amps)

	OR • Electrical equipment that is connected by flexible cord and plug to low voltage supply, has a current rating not more than 20 amps and is used to perform manufacturing work (e.g. bench grinder, drill press, etc) OR • Equipment that is connected by a flexible cord and plug to a low voltage supply AND is used to perform service or office work AND is moved during its normal use for the purpose of its use (Note: this does not apply to items such as computers, fridges etc)
Safe Work Method Statement (SWMS)	Sets out the work activities in logical sequences and identifies hazards relating to the work and risks to health and safety associated with those hazards. It also describes control measures and how the control measures are to be implemented, monitored and reviewed to ensure high-risk work is carried out in a safe and healthy manner. A SWMS is to be kept until work is completed or for 2 years if a notifiable incident occurs in relation to the work

7. Roles and Responsibilities

Effective electrical equipment safety management relies on clear processes and defined roles and responsibilities to ensure an integrated and consistent approach is applied throughout WMH. These are outlined in the table below.

Role	Responsibility
All staff	• Maintain awareness of the requirements of this procedure. • Remove from service and report to I & A any damaged or faulty electrical equipment.

Clinical staff interfacing with patients	• Communicate to the patients
	  ○ the requirements to have the equipment inspected and tested prior to use
	  ○ that West Moreton is not liable for any damage to personal equipment
	  ○ arrange for the inspection and testing of the privately-owned equipment.

Nurse Unit Manager (Clinical space use of equipment)	• Confirm that equipment has been inspected and tested prior to authorising its use (West Moreton Tag attached to the lead). • Briefing new staff on the requirements of this procedure.
Appropriate Director (non-clinical space)	• Confirm that equipment has been inspected and tested prior to authorising its use (West Moreton Test Tag attached to the lead).

8. Non-Compliance

Failure to adhere to this procedure, may result in penalties being applied under the *Electrical Safety Act 2002 and Work Health and Safety Act 2011.*

9. Monitoring and Evaluation

What will be monitored	That electrical equipment safety is appropriately managed in WMH's work environment.
How (method)	• Ensure that all staff/contractors who use or come into contact with electrical equipment are fully trained and inducted into how to identify safe electrical equipment as per this procedure.
Frequency	• Annual testing and tagging program – I & A • Annual testing and tagging audit – I & A
Responsible officer	An authorised Infrastructure and Assets person who has been deemed competent in the management of Electrical Equipment.
Reporting to	The Infrastructure and Assets Facility Maintenance Manager

10. Related West Moreton Documents

Policy and Procedure Documents	• WMH Work Health and Safety Policy • WMH Lock out – Tag out Procedure • WMH Work Health and Safety Incident Management Procedure
Clinical Guidelines/Pathways	• Nil
Other	• Policy, Procedure and Work Instruction Staff Sign-Off Sheet

11. Compliance Requirements and Obligations

Legislation and other compliance requirements	• Electrical Safety Act 2002 • Electrical Safety Regulation 2013 • Work Health and Safety Act 2011 • Work Health & Safety Regulation 2011 • Electrical safety code of practice 2013 - Managing electrical risks in the workplace • Hazardous Manual Tasks Code of Practice 2011 • How to Manage Work Health and Safety Risks Code of Practice 2011 • Work health and safety consultation, co-operation and co-ordination - Code of Practice 2011
Australian Standards	• AS/NZS 3000 - Electrical Installations (known as the Australian/New Zealand Wiring Rules). • AS/NZS 3003 - Electrical installations - Patient areas. • AS/NZS 3200 - Medical Electrical Equipment - general requirements for safety. • AS/NZS 3760 - In-Service safety inspection and testing of electrical equipment. • AS/NZS 4417 - Regulatory compliance mark for electrical equipment ("RCM" mark). • AS/NZS 4513 - Medical Electrical Equipment - fundamental aspects of safety standards. • AS/NZS 4836 - Safe working on or near low-voltage electrical installations and equipment.

Dept. of Health Implementation Standards	• QH-IMP-401-2 – Work, health and safety governance, consultation and capability standard 2018 • QH-IMP-401-3 – Work, health and safety risk management standard 2018 • QH-IMP-401-4 – Work, health and safety monitoring, evaluation and performance review standard 2018 • QH-IMP-401-6 – Work, health and safety accountabilities standard 2018

12. Development, Revision and Approval History

ID & Version No.	Approval Date	Effective Date	Review Date	Document Custodian/Author	Endorsing Committee	Approval Authority
WMHHS2019052v1	24/06/2019		24/06/2022	Director Service Support		Position: CFO Signature:
	Summary of changes					
	☒ New, developed following external WHS audit non-conformances					

13. Key Words

Electrical equipment, power board, extension lead; electrical appliance; infrastructure; assets; risk assessment; test and tag; Residual Current Device (RCD), Safety Switch.

14. Appendices

Nil