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1. Purpose

The purpose of this Procedure is to provide guidance and information for managing electrical hazards.

This procedure DOES NOT apply to High Voltage installations or Tasks.

2. Scope

This Procedure is applicable to all team members at Unitywater and should be read in conjunction with the

- Electrical Safety Code of Practice 2020 – Works
- Working near overhead and underground electric lines Electrical Safety Code of Practice 2020
- Managing Electrical Safety Risks in the Workplace Code of Practice 2021: Section 7
- Working Near Energised Electrical Part
- [F10656](#) - Risk Assessment Template
- [Pr8182](#) - Isolation - Lock Out Tag Out (LOTO) Procedure
- [Pr9679](#) - Asbestos Management Procedure
- [Pr9744](#) - Contractor Management (Safety) Procedure and other relevant procedures.

This procedure forms part of the learning content in uLearn modules:

- UW-3938 - Low Voltage Rescue Course (UW)
- UW-2847 - Working Safely Near Live Electrical Lines and Apparatus Course (UW)
- 1WLOTOA - Lock Out Tag Out (LOTO) Personal and Authorised Course (UW)
- UW-3753 - Lock Out Tag Out (LOTO) Verification of Competency (UW)
- 1ELOTOST - Lock Out Tag Out (LOTO) Personal Module (UW)
- UW-2991 - Lock Out Tag Out (LOTO) Stores Awareness Program (UW).

3. Roles and responsibilities

Table 1: Roles and responsibilities

Position title	Responsible for
Executive Managers	Provide adequate resources to ensure that the procedures can be effectively undertaken.
Branch Managers / Section Managers	- Ensure that these procedures are implemented within their area of responsibility - Provide adequate resources to ensure that the procedures can be effectively undertaken.
Manager Mechanical and Electrical	- Ensure that adequate resources (team members, finances and equipment) are provided to control and monitor the safe execution of work by Unitywater team members utilising the team members electrical or restricted electrical licences. - Ensure that electrical work performed is in accordance with the Electrical Safety legislation, relevant Australian Standards and Codes of Practice. - Ensure all Unitywater procedures are adhered to in relation to electrical safety. - Report any electrical near misses, incidents or electrical hazards. - As Document Owner responsible for: - Conducting and/or delegating regular reviews to ensure this procedure and related resources (e.g. forms, website content) remain fit for purpose, consistent and current. - Approving this procedure for publication. - Ensuring all relevant stakeholders and team members have been consulted, and feedback is captured and actioned (where applicable). - Ensuring appropriate communication and/or training is provided to relevant team members when implementing a new, amended or obsolete document (where applicable). - Monitoring compliance with internal/external requirements (e.g. monitor legislation changes and assess/update this procedure when required).
Facilities, Property and Land Section	- Ensure that qualified electrical contractors are engaged to perform any electrical work and that they are compliant in Sitepass. - Ensure that electrical work performed by contractors is in accordance with the Electrical Safety legislation, relevant Australian Standards and Codes of Practice. - Ensure that all Unitywater procedures are adhered to in relation to electrical safety and contractor management. - Report any electrical near misses, incidents or electrical hazards.
Qualified Business person (QBP) and Qualified Technical Person (QTP) AKA Electrical Endorsee	- Ensure that procedures are adequate and in compliance with relevant regulations, codes and standards. - Ensure that all relevant procedures are followed. - Ensure that F8628 - Electrical Test Certificates are archived. - Schedule electrical safety training for restricted licence holders. - Perform regular audits of work performed by restricted licence holders to verify that work is being performed safely and in compliance with codes and standards. - Collect and store restricted electrical work records and test results. - Conduct Electrical Safety Checklists Annually on each open Electrical Licence holder. - Manage Electrical Licence register in Objective.

Position title	Responsible for
Licensed Electrical Worker	- Maintain and comply with the conditions applicable with their electrical work licence issued by the Electrical Safety Office, including Current LVR/CPR training, ensuring their licence is kept up to date and ensure Unitywater's endorsee has a current copy. - Assist in the development and implementation of SWMS's and other related controlled documents. - Perform electrical work to comply with Unitywater direction, SWMS, procedures, F10656 - Risk Assessment Template, the AS/NZ3000 Wiring Rules, Electrical Safety legislation and codes of practice. - Maintain training and knowledge necessary to act as an Authorized Person and Safety Observer as required. - Use electrical safety equipment and personal protective clothing that is suitable for the type of work being performed and within test date. - Perform effective electrical isolations in accordance with the Unitywater Lock Out Tag Out processes. - Ensure any electrical work done on electrical equipment is tested (to the extent it is affected by the work), is electrically safe and provide a test certificate as required. - Report any electrical near misses, incidents or electrical hazards.
Safety Observer	- Comply with Unitywater direction, SWMS, procedures and F10656 - Risk Assessment Template. - Have current LVR/CPR training. - Continuously observe that safety procedures and control measures in the SWMS are carried out by persons working in the authorised zone or other potentially hazardous situations. - Must be able to warn and, if necessary, stop the work before the risks become too high. - Give warnings when necessary to prevent inadvertent contact with energised electrical equipment or any other relevant hazard. - Provide assistance in case of an emergency including being competent to perform electrical rescue and CPR where required. - Not carry out any other work or function that compromises their role as a safety observer, i.e. the safety observer shall not observe more than one task at a time. - Use and wear suitable electrical safety equipment and clothing appropriate for the work - Maintain the training requirements as outline in the <i>Electrical Safety Regulation 2013</i>. - Report any electrical near misses, incidents or electrical hazards.
Person in Charge of Works (PICOW)	- Comply with Unitywater direction, SWMS, procedures and F10656 - Risk Assessment Template. - Ensure that qualified electrical contractors are engaged to perform any electrical work and that they are compliant in Sitepass. - Ensure all hazards have been identified, controls selected, all team members on site are aware and have signed the Risk assessment. - Ensure that all controls are implemented and adhered to prior to the work commencing. - Ensure appropriately trained and licensed team members are engaged to complete the work.

Position title	Responsible for
Mechanical and Electrical Unit Leader	• Ensure that qualified electrical contractors are engaged to perform any electrical work and that they are compliant in Sitepass. • Ensure new starters are given a full two (2) week induction period AND are given a crew member to shadow till they feel competent. • Ensure compliance with work procedures, regulations and codes. • Purchase, issue and regular testing of safety equipment including PPE and test equipment. • Perform regular electrical audits in the field. • Ensure that arrangements are in place for the purchase, issue and regular testing of safety equipment, including PPE and test equipment.
Team Member	• Comply with Unitywater direction, SWMS, procedures and F10656 - Risk Assessment Template. • Report any electrical near misses, incidents or electrical hazards. • Not undertake electrical work unless suitably qualified. • Not enter any exclusion zones or operate vehicles or plant within exclusion zones or authorised zones associated with exposed energised electrical components or parts unless you have been trained and authorised. • Not tamper with any electrical isolation, locking devices, danger tags or locks on electrical isolation points. • Follow Pr8182 - Isolation - Lock Out Tag Out (LOTO) Procedure • Advising the Document Owner if this procedure is not consistent with current practices. • Where possible, minimise printing and/or avoid creating duplicate copies of this procedure. Ensure current versions are sourced from the Document Centre.

4. Procedure – Risk management

4.1 Risk assessments

Risk assessments must be completed prior to conducting any electrical work or working within the vicinity of electrical hazards to ensure risks are identified, eliminated and/or controlled in accordance with the [Pr9306](#) - Risk Management Procedure and [F10656](#) - Risk Assessment Template and related Codes of Practices. The electrical risk assessment activities should also consider potential “Arc Flash” risks.

RISK CONSEQUENCES			LIKELIHOOD				
			RARE (1) Have never heard of this happening Highly unexpected, considered a unique event. [10%]	UNLIKELY (2) The event might occur once in your career. Could occur, but surprised if it happens. [30%]	POSSIBLE (3) The event or similar has occurred elsewhere. May occur in some circumstances – not expected but accept it may happen. [50%]	LIKELY (4) The event has occurred several times Expected to occur in most circumstances – not surprised if it happens. [70%]	ALMOST CERTAIN (5) Occurs more than once per year. It is expected to occur, almost inevitable. [90%]
Environment	Safety	Water Quality					
Minor (1) Negligible environmental impact, easily restored to pre-existing condition.	Injury or illness not requiring first aid treatment / Near misses.	Isolated breach of aesthetic parameter. Little to no disruption to normal operation.	Minor 1	2	4	7	11
Moderate (2) Minor localised environmental impact. Short-term recoverable impact.	Medical Treatment/ Suitable Duties Injury or illness. Short term illness.	Local aesthetic impact e.g. turbidity, pH or isolated breach of chronic health parameter (within a district metered area or small reservoir supply zone). Regulator notified, isolated breach of Water Quality Objectives.	Moderate 3	5	8	12	16
Serious (3) Material environmental harm. Can be returned to pre-existing condition in the medium term.	Lost Time Injury or illness <4 days. Short term disability.	Widespread aesthetic impact (within a water supply scheme or primary reservoir zone). Repeated breach of chronic health parameter. Repeated breach of Water Quality Objectives.	Serious 6	9	13	17	20
Major (4) Serious environmental impact. Detrimental impact on area of high conservation value or special significance. Can be recovered with time and effort.	Serious / Hospitalisation injury. Long term Lost Time Injury or illness. Long term disability.	Potential acute health impact e.g. pathogens. Widespread or multiple breach of chronic health parameters. Regulator notified with Qld Health involvement. Potential Event under Drinking Water Quality Management Plan approval 2(a) (sudden or extreme change in water quality, flow or environmental conditions which raises contamination concerns).	Major 10	14	18	21	23
Critical (5) Long-term environmental harm. Unable to return to pre-existing condition.	Fatality or amputation of a limb. Long term/ terminal illness. Permanent disability.	Potential acute health impact. Regulator declared outbreak expected. Reported Event under DWQMP approval 2(a); OR sudden or extreme change which is beyond Unitywater's ability to control.	Critical 15	19	22	24	25

Figure 1: Risk assessment (source Pr10731 - Risk Assessment and Scoring Criteria Tool)

4.2 Safety related procedures

Relevant safety related procedures will be developed for reoccurring work activities that have been risk assessed. Procedures must be reviewed where there is a change to a work procedure, new technology is introduced or after an incident.

4.3 Safe Work Method Statements

Safe Work Method Statements (SWMS) are required for electrical work and must:

- identify the electrical work
- specify the hazards associated with that electrical work and risks associated with those hazards
- describe the measures to be implemented to control the risks
- describe how the risk control measures are to be implemented, monitored and reviewed.

Safe work method statements must be written in a way that makes them readily understandable by the team member who are to use them.

A team member must read and understand the SWMS prior to undertaking electrical work.

4.4 Hazard management

All team members are required to report any electrical hazard through Intellex, make the site safe, where safe to do so and if required log a facilities request or a service request.

The Electrical Worker Inspection (available on the Intellex App) is also a tool to identify any electrical hazards.

4.5 Permit requirements

A High Voltage Electrical Work Permit is required through Beakon for work involving high voltage electrical installations or equipment.

A High Voltage Access Permit is required to be issued when working on High Voltage equipment in accordance with Pr11351 – High Voltage Switching Procedure.

The purpose of the High Voltage Electrical Beakon Work Permit is to ensure high voltage electrical hazards are identified and controlled to minimise risks associated with electric shock, arc flash, equipment damage and unplanned outages.

High Voltage (HV) means an electrical installation or equipment operating at voltages greater than 1000V AC RMS or 1500V ripple-free DC.

Where work involves isolation of high voltage equipment, isolations must be completed in accordance with [Pr8182](#) - Isolation - Lock Out Tag Out (LOTO) Procedure & PR11351 – High Voltage Switching Procedure

High Voltage Electrical Beakon Work Permits must be obtained, approved and managed in accordance with [Pr8996](#) - Permit to Work Procedure

5. Procedure – Electrical work

5.1 Energised (Live) electrical work

Unitywater and s14 of the *Electrical Safety Regulations* (2013) prohibit work to be carried out on energised electrical equipment unless:

- it is necessary in the interests of health and safety that the electrical work is carried out while the equipment is energised, or
- it is necessary that the electrical equipment to be worked on is energised in order for the work to be carried out properly, or
- it is necessary for the purposes of testing to ensure the equipment is de-energised as required by s15 of the *Electrical Safety Regulation 2013*, or
- there is no reasonable alternative means of carrying out the work.

However, at Unitywater, other than testing and fault finding, energised electrical work is not permitted. If energised electrical work is unavoidable, contact your Supervisor and QTP (endorsee) prior to starting any work.

5.2 Fault finding and testing

Fault finding and testing is considered energised electrical Work. Prior to fault-finding work on or near exposed energised conductors or live conductive parts, the team member/s/s must complete a risk assessment and produce a risk score that is acceptable according to the Risk Matrix. The risk assessment shall include, but not be limited to, the determination as to whether isolation, the use of suitable barriers or a safety observer is required. The electrical risk assessment activities should also consider potential “Arc Flash” risks.

Any team member undertaking fault-finding work on or near exposed energised conductors or live conductive parts shall be competent in the work to be carried out.

When fault-finding work is to be carried out on or near exposed energised conductors or live conductive parts (within 3M), precautions shall be taken, or procedures put into place to prevent the possibility of simultaneous contact with conductors at different voltages or to earth.

There must be a safety observer observing the performance of the electrical work, unless the work involves testing electrical equipment where the testing task can be done safely without the need for a safety observer if permitted by the Risk assessment.

A team member must wear appropriate and suitable personal protective equipment (PPE) for the task. PPE shall be in test date, of correct fit and in good condition.

All fault-finding work on exposed energised conductors or live conductive parts shall be done from a stable work position.

Before commencing work, confirm suitability and check for correct operation of test equipment.

Use approved test equipment for the work and ensure that the appropriate operating range is selected.

Consider the effects at the work site and remotely of:

- bridging out of safety and control circuit interlocks
- inadvertent initiation of equipment operation
- inadvertent energisation of electrical equipment
- bridging of terminals
- forcing of contactors and interlocks
- forcing of software interlocks, e.g. programmable logic controllers.

Extreme caution is required not to open circuit the secondary winding of a current transformer (CT) because high voltages may be generated.

Caution must be taken when inserting fuses or closing links carrying full load current or under a suspected fault condition.

When work is left unfinished, the requirements of Section 5.6 and AS/NZS 4836:2011 Safe Working on or Near Low Voltage Electrical Installations and Equipment in particular the requirement to leave the workplace in a safe state for access by other team members, must be satisfied.

Ensure the electrical equipment is returned to service in its original state or that changes made have been approved.

After electrical testing of cables and equipment, a considerable build-up of capacitive charge can occur and remain on the cable. Care must be taken to ensure that such cables are properly discharged.

5.3 Working de-energised

When electrical work is being performed on electrical equipment, each exposed part must be treated as energised until it is isolated and determined by a competent team member not to be energised.

The testing method (including the tester used) must be safe and effective. The team member carrying out the testing must understand testing procedures and be competent in the use of the tester. 'Voltage Pens' are not a suitable test device.

Voltage testers must be tested for correct operation immediately before use and again after use to confirm that the instrument is operational.

5.4 Low voltage isolation

Working de-energised on low voltage electrical equipment or circuits requires the electrical equipment or circuits to be effectively isolated from all relevant sources of electricity supply in accordance with the [Pr8182](#) - Isolation - Lock Out Tag Out (LOTO) Procedure.

The effectiveness of isolation procedures relies on:

- isolation points being readily available/accessible and being suitable for the type of isolation (switching) being conducted
- the necessary hardware
- having isolation procedures documented and accessible to electrical team members in the workplace
- the provision of instruction, information and training of electrical team members involved with the electrical equipment
- appropriate supervision to ensure safe work procedures, including isolation procedures, are followed.

5.5 Restoring power

All reasonable steps must be taken to ensure that restoring electricity supply following isolation does not pose risks to health and safety at the workplace. For example:

- appropriately terminating all conductors
- carrying out appropriate testing on any new, altered or repaired electrical equipment, for example tests for insulation resistance, earth continuity, polarity, correct connection and function testing
- removing safeguards, including temporary bonds and short-circuiting devices
- notifying all team members working on the electrical equipment and other affected team members at the workplace that electricity is to be restored
- taking precautions as appropriate to ensure that other electrical equipment is not inadvertently energised
- following procedures for removing any locks (or other control mechanisms), tags, notices and safety signs

- carrying out a visual inspection to ensure that all tools, surplus material and waste has been removed from the workplace
- When electricity is restored, mandatory testing must be undertaken to ensure correct polarity etc. Further information refer to AS/NZS 3017 Electrical installations – Verification guidelines and/or as per AS/NZS 3000.

5.6 Leaving unfinished work

The work site shall be left in a safe state for access by other team members. Means of making the work site safe should include the following:

- terminating exposed conductors in a manner that provides a degree of protection of IP 2X in accordance with AS 60529 and, where necessary, providing appropriate mechanical protection or restraint
- affixing of out of service tags as per [Pr8182](#) - Isolation - Lock Out Tag Out (LOTO) Procedure.
- installation of barriers or barrier tape or other means necessary to keep unauthorised team members out of the work site
- where appropriate, informing relevant parties that the work is not complete and advising of potential hazards
- taking any necessary precaution to ensure that electrical installations and equipment cannot become energised
- ensuring that switchboards and equipment are clearly and correctly labelled in relation to their status
- providing sufficient information for team members to allow them to safely continue the work.

5.7 Working near overhead and underground electric lines

Any work performed on or near overhead or underground electric lines must be conducted in compliance with the Part 5 of the *Electrical Safety Regulation 2013*, the Managing Electrical Safety Risks in the Workplace Code of Practice 2021: Section 7 Working Near Energised Electrical Part and the Electrical Safety Code of Practice 2020: Working near overhead and underground electric lines.

Exclusion zones are set out in Schedule 2 of the *Electrical Safety Regulation 2013* and outlined below.

What are the exclusion zones when working near powerlines?

Workers and their equipment should not approach overhead powerlines any closer than the following:

Nominal phase to phase voltage (kV) (Exposed unless otherwise specified)	Untrained Persons			Instructed Persons (IP) & Authorised Persons (AP)			
	Untrained Persons	Operation of operating plant	Operation of vehicle	Instructed Persons (IP) & Authorised Persons (AP)	Operation of operating plant, with safety observer or another safe system		Operation of vehicle
					Un-insulated	Insulated	
Consultation & insulation verified by an authorised person for the electric line	No exclusion zone prescribed	1000	300	No exclusion zone prescribed	-	No exclusion zone prescribed	No contact
Low voltage (LV) with consultation	1000	3000	600	No exclusion zone prescribed	1000	No exclusion zone prescribed	600
LV without consultation	3000						
LV & up to 33 with consultation	2000		900	700	1200	700	700
LV & up to 33 without consultation	3000						

Figure 2: Exclusion zones when working near powerlines

Electric lines must be treated as energised (live) until they have been:

- proven to be de-energised
- isolated so that they cannot be inadvertently re-energised
- if a high voltage line, effectively earthed.

If the electric line is required to be de-energised, the PICOW or Management must obtain written confirmation from the electrical entity that owns the asset that the electric line has been de-energised before work can commence.

5.8 Work near underground electric lines

Prior to carrying out any work such as digging, excavation or tunnelling within an exclusion zone of an underground electric line, team members are required to:

- Been deemed as or engage the services of an Authorised Worker through Energex.
- Completed an electrical work risk assessment in association with the relevant Safe Work Method Statement.
- Obtain Before You Dig Australia diagrams and source any other detail that will assist in understanding what equipment may be in the area of digging.

(Refer to [SWMS9260](#) - Work in or Near a Shaft or Trench deeper than 1.5m or a Tunnel Safe Work Method Statement and the Electrical Code of Practice 2020: Working near overhead and underground electric lines).

5.9 Operating plant near overhead electric lines



Figure 3: Example of a warning sign near overhead electric lines

Prior to carrying out any work that could or will involve operating plant near overhead electric lines, team members are required to have:

- Been deemed as, or engage the services of, an Authorised Worker through Energex
- Completed an electrical work risk assessment in association with the relevant Safe Work Method Statement.

(Refer to [SWMS9261](#) - Working With or Around Powered Mobile Plant Safe Work Method Statement and the Electrical Safety Code of Practice 2020: Working near overhead and underground electric lines).

5.10 Emergency procedures – contact with power lines

What happens if overhead or underground power lines are contacted?

- the machinery or vehicle will become energised (live) at the same voltage as the power lines contacted and the electricity will attempt to pass through the vehicle to the ground
- anything else in contact with the power lines will also become energised (live), such as fences and trees
- a potentially dangerous electrical field will be created around anything in contact with the power line. This field extends for approximately eight (8) metres around these items.

What should you do if contact is made?

The following emergency procedure should be followed:

- try not to panic, remain calm and stay in the vehicle until the power has been isolated and the power lines removed. Don't risk being electrocuted by attempting to leave the vehicle before power is disconnected
- advise anyone near the incident site to stay a minimum of eight (8) metres from the plant, vehicle and anything else in contact with the power lines
- treat all power lines as if they are energised (live)
- call 000 immediately to report power lines down and a life threatening situation and contact Energex 13 19 62 to switch off the power.

Tyre Explosion

- tyres can explode during or after contact with power lines
- if a vehicle contacts overhead power lines, there will be a massive electrical current flowing through the vehicle and its tyres. This can cause the tyres to explode on contact or could cause the tyres to start burning inside
- this burning creates a build-up of gases and heat which could cause the tyre to explode at a later time, even 24 hours after the incident
- the resulting explosion could potentially injure persons in the proximity with flying debris
- the vehicle should be isolated at a safe distance for 24 hours to avoid injury.

Energex Authorised Workers

No worker, plant or thing is to be within an unsafe distance (exclusion zone) of an overhead or underground electric line unless they have been deemed an Authorised Worker by Energex and they have completed electrical work risk assessment in association with the relevant Safe Work Method Statement.

Team members completing the risk assessment must refer to Schedule 2 of the *Electrical Safety Regulation 2013* - Exclusion zones for overhead electric lines and Appendix B of the Electrical Safety Code of Practice 2020: Working near overhead and underground electric lines.

Exclusion zones apply whenever work needs to be carried out, or operate plant or a vehicle, around an energised overhead electric line and the risk cannot be eliminated by turning off the power.

Exclusion zones extend in all directions, not just sideways. The exclusion zone will vary depending on the:

- voltage of the line
- whether the line is insulated or bare
- the level of competence, training and authorisation of the team member carrying out the work.

Further information relating to working near overhead and underground electric lines can be found in the Electrical Code of Practice 2020: Working near overhead and underground electric lines.

5.11 Inspections of specialised electrical equipment

Electrical equipment such as ladders, insulating mats and covers, insulating gloves and low voltage rescue kit are required to be inspected prior to use and certified six - monthly.

Whenever an item of equipment is tested by an external organisation a written test report will be required. The testing organisation will be required to provide written details of test methods.

Equipment	Prior to Use	Six (6) monthly
Ladders Portable ladders and stepladders shall comply with either AS 1892.2 Portable Ladders Timber or AS 1892.3 Portable Ladders Reinforced Plastic or equivalent and be used according to the manufacturer's instructions and in accordance with AS 1892.5 Portable Ladders Selection, Safe Use and Care.	Refer to the F9695 - Portable Ladder Inspection Checklist available on the Intellex App	Refer to the F9695 - Portable Ladder Inspection Checklist available on the Intellex App
Insulating mats and covers Insulating covers and mats used for electrical safety purposes should comply with AS/NZS 2978 Insulating mats for electrical purposes.	Insulated covers and mats should be visually inspected for possible defects before each use. Wash with water and soap or detergent, stretched and examined for the following: • blisters, cracks, cuts or holes • embedded foreign matter • defective fastenings.	Insulated covers and mats will be tested by an external testing laboratory.
Insulating gloves Gloves must comply with AS 2225 Insulating Gloves for Electrical Purposes or an equivalent Standard and insulated to the highest potential voltage expected for the work being undertaken.	Visually examine for signs of damage, deterioration and legibility of marking. Stretch by hand to ensure that mechanical strength is adequate and then tested by rolling the insulating glove from the cuff to force air into it. Air tested.	Insulated gloves will be tested by an external testing laboratory.
Low voltage rescue kit	Ensure all items are present, are in good condition and gloves are in-test: • Low Voltage Rescue Crook • 1000v Insulating Gloves Torch • Fire Blanket • "Isolate Here" Sign • Burns Dressing • Bag – needs to be able to hold water.	Low voltage rescue kit will be tested by an external testing laboratory.

Equipment	Prior to Use	Six (6) monthly
Safety Helmet (Hard Hat)	Each time before use, helmets shall be inspected to ensure that there are no dents, cracks or any other damage. The harness strap needs to be secure to ensure that it fits correctly.	Helmets shall be checked for damage and wear (e.g. brittleness) and cleaned. Check 'use by date.'

5.12 Signage and barricading

Adequate signage and barricading must be used when performing electrical work. This could include witches' hats, danger signs. Signage and barricading requirements must be included in the Risk Assessments.

5.13 Testing and tagging

Specified electrical equipment and safety switches need to be tested at intervals according to their class of work. Intervals for testing are determined by the *Electrical Safety Regulation* (2013) and AS/NZS 3760 In-service safety inspection and testing of electrical equipment.

The class of work determines how often specified electrical equipment and safety switches are tested.

If an electrical item is found to have an out-of-date tag, take it out of service, place an 'out of service' tag on the device and notify your Mechanical and Electrical Team Leader.

Class of work	Portable/specified electrical equipment	Type 1 or 2 safety switch (fixed)	Type 1 or 2 safety switch (portable)
Construction work	At least three (3) monthly intervals by a competent person.	Use the inbuilt test button (at least monthly). An operating time/current test by a competent person at least annually.	Use the inbuilt test button – immediately after it is connected and immediately before it used, first time each day. By a competent person, at least every three (3) months.
Service work	At least 12 monthly intervals by a competent person or connected to a safety switch.	Use the inbuilt test button, at least every 6 months. An operating time/current test by a competent person, at least every 12 months. Longer test intervals may apply. Consult the Electrical Safety Regulation 2013 (PDF, 846 KB) and AS/NZS 3760 In-service safety inspection and testing of electrical equipment.	Use the inbuilt test button at least every three (3) months or before each use, whichever is longer. An operating time/current test by a competent person, at least every 12 months. Longer test intervals may apply. Consult the Electrical Safety Regulation 2013 (PDF, 846 KB) and AS/NZS 3760 In-service safety inspection and testing of electrical equipment.

Class of work	Portable/specified electrical equipment	Type 1 or 2 safety switch (fixed)	Type 1 or 2 safety switch (portable)
Office work	At least five (5) yearly intervals by a competent person or connected to a safety switch.	Use the inbuilt test button at least every six (6) months. An operating time/current test by a competent person, at least every two (2) years.	Use the inbuilt test button at least every three (3) months. An operating time/current test by a competent person at least every two (2) years.

5.14 Purchase and use of portable electrical equipment

Purchasing any portable electrical equipment must be undertaken in accordance with Unitywater's procurement policies and procedures.

To ensure the safe use of portable electrical equipment in the workplace all team members are required to:

- use only portable electrical equipment that have been authorised by Management
- visually inspect new equipment to ensure that no damage has occurred during transport, delivery, installation or commissioning
- organise electrical leads so they will not be damaged - avoiding running leads across the floor or ground, through doorways and over sharp edges, and using lead stands or insulated cable hangers to keep leads off the ground
- only use the equipment for what's it's designed to do
- not to use leads and tools in damp or wet conditions unless they are specially designed for these conditions
- not to use double adapters and 'piggyback' electrical boards
- remove any defective or damaged portable electrical equipment from use and log a facilities request.

6. Licencing requirements

Electrical work (whether energised or de-energised) must only be carried out by a team member who holds an appropriate electrical licence authorising the work; or the team member is otherwise authorised to perform the work under the Electrical Safety Act and Regulations.

There are six (6) different types of electrical work licences. These are:

Licence	Conditions
Electrical mechanic licence	- Install or change an overhead electrical line. - Install electrical wiring. - Repair any electrical equipment.
Electrical linesperson licence	- Electrical work involved in building or maintaining an overhead electric line. - Electrical work in the building or maintenance of an underground electric line. - Testing of overhead electric lines.
Electrical fitter licence	- Rewinding and repairing an electric motor. - Building and assembling a switchboard. - Maintain/repair electrical equipment.
Electrical jointer licence	Allows you to perform limited specialist installing, jointing and terminating electrical cables and work relating to electrical cables and equipment, such as: Jointing and terminating a high voltage cable.
Restricted electrical work licence	This licence limits you to specific electrical work associated with work from another trade: - All restricted electrical work must be performed under a work order. - Restricted electrical work is limited only to equipment having a rating not greater than 25kW and testing electrical installations for dead. - The holder of a Restricted Electrical Worker's licence must have the licence readily available whenever performing restricted electrical work.
An electrical work training permit	This is a restricted permit which allows electrical work to be performed under specified conditions while you are being trained.

Section 55 of the *Electrical Safety Act 2002* states that only very limited unlicensed tasks are allowed, such as:

- authorised testing of electrical equipment
- installing or repairing telecommunication cables
- electrical work while performing the profession of an electrical engineer
- learning electrical work as an apprentice or trainee.

It is the responsibility of the electrical licence holder to ensure that:

- the electrical licence is kept up to date
- a copy is provided to Unitywater
- the supervisor/manager is informed of any issues relating to the electrical licence e.g. out of date, immediately after becoming aware of the issue.

Any breaches of these or the legislation requirements may lead to disciplinary action.

7. Training

Unitywater team members are required to participate in any training provided by the organisation. This training could include (but not limited to):

- UW-3938 - Low Voltage Rescue Course (UW)
- UW-2847 - Working Safely Near Live Electrical Lines and Apparatus Course (UW)
- 1WLOTOA - Lock Out Tag Out (LOTO) Personal and Authorised Course (UW)
- UW-3753 - Lock Out Tag Out (LOTO) Verification of Competency (UW)
- 1ELOTOST - Lock Out Tag Out (LOTO) Personal Module (UW)
- Restricted Licence training
- Utilise [Pr8276](#) - Apprentice Supervision Procedure.

8. Incident reporting

All incidents including electrical incidents, are to be reported to the Team Leader/Manager as required under [Pr8202](#) - Incident Reporting and Notification Procedure

9. Recordkeeping

The table below identifies the types of records relating to this documented process and their storage location:

Table 2: Recordkeeping

Type of record	Storage location
Hazard / Incident reports	Intelex
Risk assessments	Within relevant EzMax mobile/Maximo work order (if paper based then scanned version attached to work order). If no work order, save in relevant project/activity/event folder in Objective.
Training records	Recorded in Learning & Development Objective folder and/or recorded in uLearn.
Tickets / licences	Recorded in Objective.

10. Definitions

Table 3: Definitions, abbreviations and acronyms

Term	Meaning
Arc Flash	An arc flash is a phenomenon where a flashover of electric current leaves its intended path and travels through the air from one conductor to another, or to ground. The results are often violent and when a person is in close proximity to the arc flash, serious injury and even death can occur.
Authorised Person	An authorised person, for an electric line, means a person who has: - Enough technical knowledge and experience to do work that involves contact with, or being near to, the electric line. - Been approved by the person in control of the electric line to do work that involves contact with, or being near to, the electric line, or is authorised to act for the person in control of the electric line.
Competent	Means a team member who has acquired, through training, qualifications, experience or a combination of these, the knowledge and skill to carry out the task.
De-energised	Means separated from all sources of supply but not necessarily isolated, earthed, discharged or out of commission.
Electrical Equipment	Is any apparatus, appliance, cable, conductor, fitting, insulator, material, meter or wire: - used for controlling, generating, supplying, transforming or transmitting electricity at a voltage greater than extra low voltage, or - operated by electricity at a voltage greater than extra low voltage, or - that is, or that forms part of, a cathodic protection system.
Electrical Test Equipment	Calibrated equipment with correct Class, suitable for tasks.
Energised (Live)	Energised means connected to a source of electrical supply or subject to hazardous induced or capacitive voltages.
Electrical work	Means connecting electricity supply wiring to electrical equipment or disconnecting electricity supply wiring from electrical equipment; or manufacturing, constructing, installing, removing, adding, testing, replacing, repairing, altering or maintaining electrical equipment or an electrical installation.
Exclusion Zone	An exclusion zone, for a team member, operating plant or vehicle for an overhead electric line, means the distance from the line stated for the team member, plant or vehicle in Schedule 2 of the <i>Electrical Safety Regulations 2013</i> .
Portable Electrical Equipment	An appliance that is connected to a Socket Outlet by a flexible lead and plug top. The equipment can be moved without unwiring and includes, but is not limited to, computers, microwaves, heaters, battery chargers, TV's and kettles.
RCD's	Residual Current Devices and may be portable or fixed to the switchboard.
Unsafe distance	Any operating plant, or a vehicle, comes within an unsafe distance of an overhead electric line if the operating plant or vehicle is within the exclusion zone for the operating plant or vehicle for the line.

11. References and resources

Table 4: References and resources

Source	Reference
External	Work Health and Safety Act 2011 (Qld)
	Work Health and Safety Regulation 2011 (Qld)
	Electrical Safety Act 2002 (Qld)
	Electrical Safety Regulation 2013 (Qld)
	Working near overhead and underground electric lines - Electrical Safety Code of Practice 2020 , WorkSafe QLD
	Managing electrical risks in the workplace, Code of Practice 2021 , WorkSafe QLD
	Electrical Safety Code of Practice 2020 – Works , WorkSafe QLD
	Energised Electrical Parts WorkSafe QLD
	AS/NZS 2978 Insulating mats for electrical purposes
	AS/NZS 4836 Safe working on or near low-voltage electrical installations and equipment
	AS/NZS 3000 Electrical installations
	AS/NZS 3017 Electrical installations – Verification guidelines
	AS 1892.2 Portable Ladders Timber
	AS 1892.3 Portable Ladders Reinforced Plastic
	AS 1892.5 Portable Ladders Selection, Safe Use and Care
Internal	AS 2225 Insulating Gloves for Electrical Purposes
	AS 60529 Degrees of protection provided by enclosures (IP Code)
	OP8069 - Live Work Policy
	Pr8182 - Isolation - Lock Out Tag Out (LOTO) Procedure
	Pr8190 - Lone Worker Procedure
	Pr8202 - Incident Reporting and Notification Procedure
	Pr8276 - Apprentice Supervision Procedure
	Pr8996 – Permit to Work Procedure
	Pr9306 - Risk Management Procedure
	Pr9679 - Asbestos Management Procedure
	Pr9744 - Contractor Management (Safety) Procedure
	F10656 - Risk Assessment Template
	SWMS9260 - Work in or Near a Shaft or Trench deeper than 1.5m or a Tunnel Safe Work Method Statement
	SWMS9261 - Working with or Around Powered Mobile Plant
	SWMS9386 - Work on or Near Energised Electrical Installations or Services
	Intelex App inspection checklists:
	Electrical Worker Inspection
	F9695 - Portable Ladder Inspection Checklist

Source	Reference
	Test and Tag Register: https://theelectricalsafetyteam.com.au/ Related training (UW): 10EEHA - Electrical Equipment for Hazardous Areas EEHA Course 10EEHAR - Electrical Equipment for Hazardous Areas Refresher Course 10LVR - Perform Rescue from an energised LV Panel (Low Voltage Rescue -LVR) Course 10WSEA - Work Safely with Overhead Power Course 1WLOTOA - Lock Out Tag Out (LOTO) Personal and Authorised Course