

Business Procedure

Test and Prove De-energised Procedure Document Number – ASM-PROC-ENG-MAN-10

This document applies to the following sites:

All Sites	<input type="checkbox"/>				
Rockhampton Office	<input type="checkbox"/>	Brisbane Office	<input type="checkbox"/>	Tarong Site	<input checked="" type="checkbox"/>
Barron Gorge Hydro PS	<input checked="" type="checkbox"/>	Kareeya Hydro PS	<input checked="" type="checkbox"/>	Mica Creek PS	<input checked="" type="checkbox"/>
Koombooloomba Hydro PS	<input checked="" type="checkbox"/>	Swanbank PS	<input checked="" type="checkbox"/>	Mackay Gas Turbine	<input checked="" type="checkbox"/>
Wivenhoe Small Hydro PS	<input checked="" type="checkbox"/>	Stanwell PS	<input checked="" type="checkbox"/>	Meandu Mine	<input type="checkbox"/>

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1.0 Purpose

This procedure shall set out the minimum requirements for performing Test to Prove De-energised on electrical equipment at Stanwell Corporation Limited (SCL) generating sites. It is also intended to ensure compliance with the Electrical Safety Act 2002, Regulation 2013 and the code of practice for Managing of Electrical risks in the Workplace 2013.

2.0 Scope

Implementation of this procedure is limited to trained and authorised personnel who perform Test to Prove De-energised as part of Safe Work Isolation system procedures, and performance of electrical work.

Where Qld Legislation, Codes of practice or Australian Standards are superior to this procedure, they shall take precedence over this procedure

3.0 Duty/Responsibilities

A person may hold more than one duty\responsibility under this procedure.

Stanwell Corporation Limited

SCL must ensure that before electrical work is carried out on electrical equipment, the equipment is tested by a competent person to determine whether or not it is energised.

Site Management

Shall ensure that processes, forms, procedures and training are in place to ensure that this procedure and all relevant legislation, standards and codes of practice are complied with at all times.

Generating Sites

Will be responsible for purchase of suitable testing devices and accessories, including the registration, testing, calibration and inspection of these devices at the specified periods.

Authorised Employees and Contractors

Authorised workers and Contractors must comply with this procedure, complete risk assessments and comply with any other related procedures

Training and Development Department

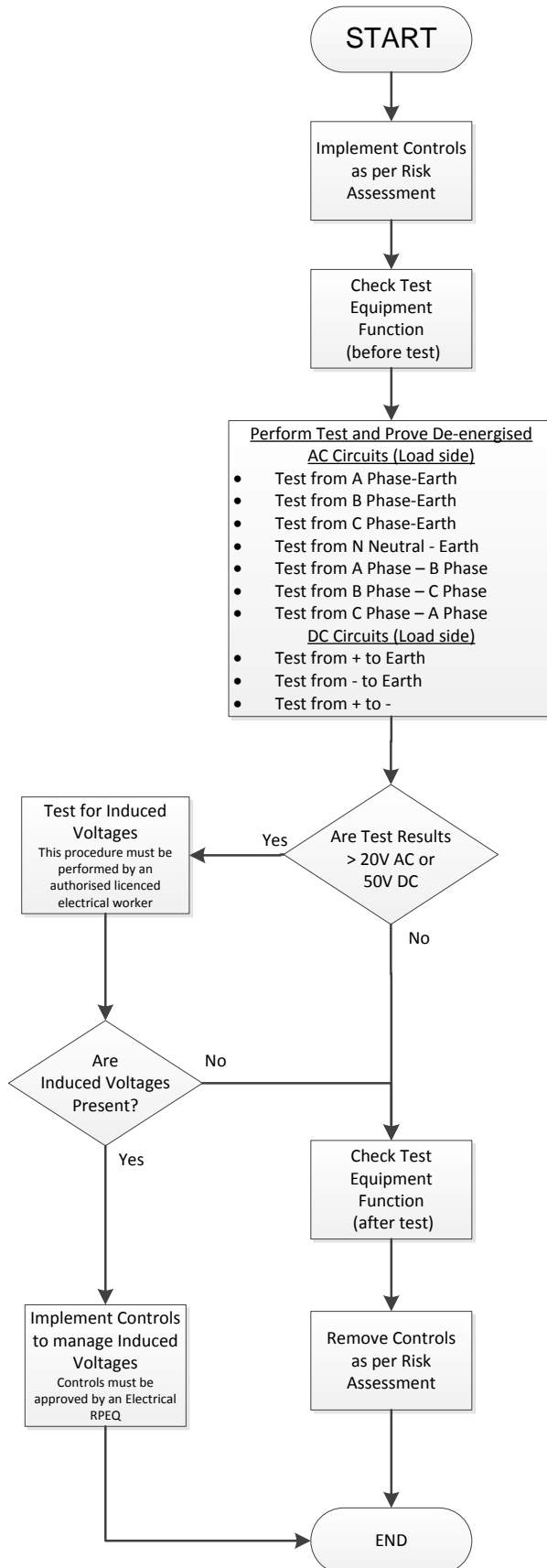
Shall manage training and refresher certification and register personnel as authorised after successful completion of training. Must maintain a register of authorised SCL personnel.

Corporate Electrical Safety Committee

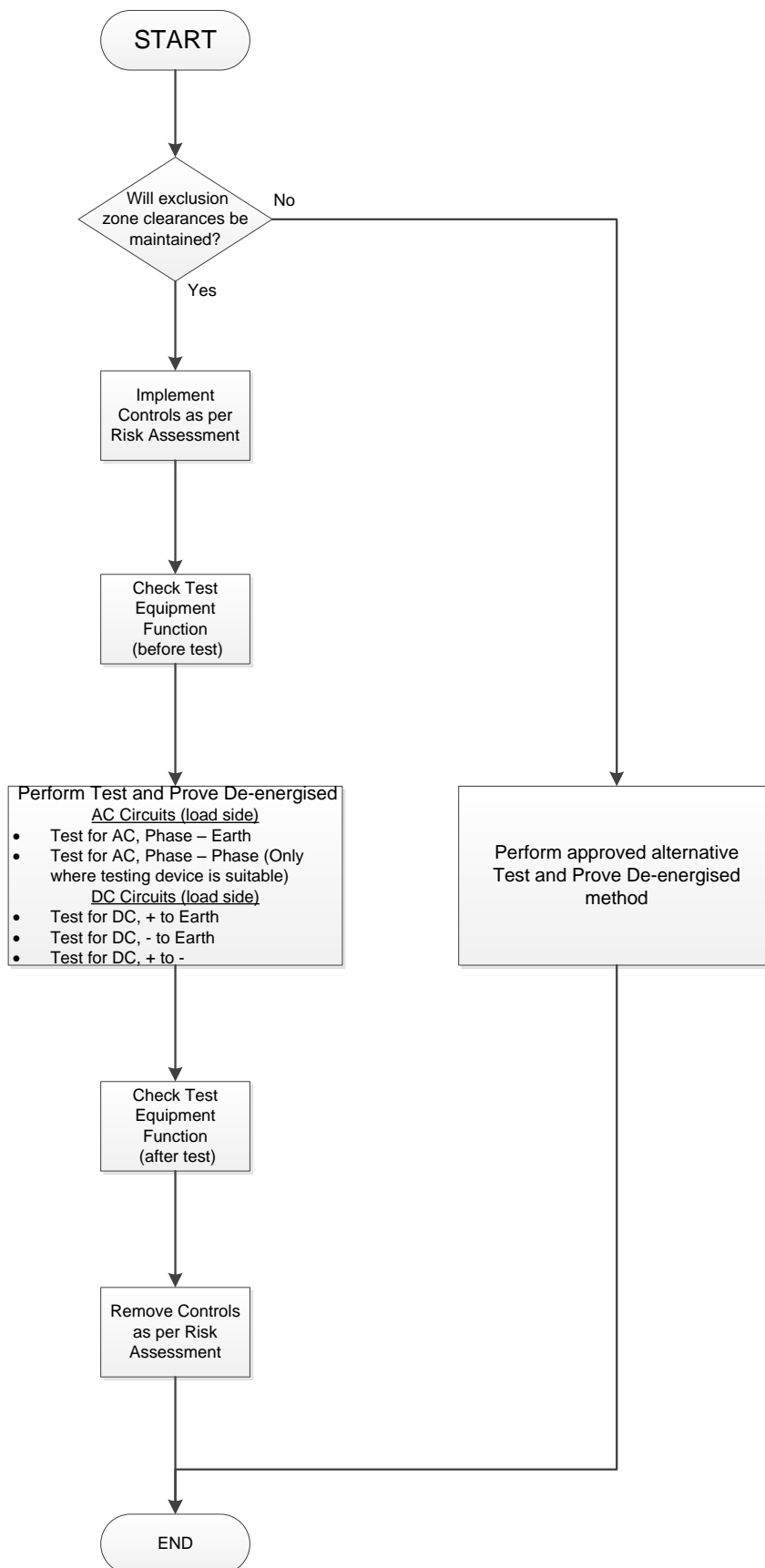
Is responsible for the periodic review and maintenance of this procedure.

4.0 Functional Flowchart

4.1 LV Test and Prove De-energised Flowchart



4.2 HV Test and Prove De-energised Flowchart



5.0 Training and Competency

- SCL personnel who perform Test to Prove De-Energised tasks shall be trained and authorised.
- Recertification/refresher training for unlicensed workers will be conducted every 2 Years. All Contractors will be trained in the SCL process, or an industry equivalent training package approved by SCL for use on site.

6.0 Hazards and Risk Assessment

- The SCL hazard and risk assessment process will be used to assess the risk for each hazard identified in the *Test and Prove De-energised* process
- Test to prove de-energised is energised electrical work, until equipment is proven to be de-energised. The energised electrical work process must be followed in addition to this procedure. (ASM-PROC-ENG-MAN-09).
- A proving unit or integral self test function should be used to confirm test instrument functionality, prior to testing the load circuit. It is not recommended to prove the test instrument on a live LV or HV bus, however this can be performed where risk assessment permits and no other suitable test is available.
- Where HV test instruments have a self test function and no proving unit is available then this self test function is deemed an acceptable confirmation test of instrument functionality.

7.0 Testing to Prove De-energised Frequency

Testing to prove de-energised must be undertaken after an isolation has been effected and before work commences and as appropriate for the duration of the electrical work.

Even though the proof of de-energised may be accomplished by any number of persons at various times during the execution of their work, this does not eliminate the requirement on each individual to satisfy themselves that the part is de-energised by either witnessing or carrying out a test to prove de-energised.

As a minimum, ongoing Test Before You Touch is required as follows:

- At the start of each working day.
- On each occasion of return to isolation following energising for testing.
- On each occasion where known changes are noted that might change the status of the electrical part e.g. contamination of the equipment by water, dust or peripheral switching and plant operations, entry into a new part of the electrical equipment i.e. a switchboard or panel.
- When the work area has been left idle (unattended) for a period of time. (when electrical work has been suspended for some weeks or months and where other activities may continue, testing should be maintained on a frequency that is assessed against the risk that is present)

8.0 General Test to prove De-Energised requirements

- On LV equipment, testing to prove de-energised is to be performed by authorised and trained personnel.
- On high voltage equipment, testing to prove de-energised is to be performed by trained and authorised HVIA personnel or licenced electrical worker, at each isolation point immediately prior to applying earths.
- When testing to prove de-energised on LV circuits, it is important to know the type and level of voltage being tested to ensure that sources of supply have been de-energised i.e. is it AC or DC? Is it low voltage or extra low voltage.

- Assess the panel/cubicle for arc flash hazards. This can be determined by a label indicating the potential arc flash energy or if not labelled, level 2 arc flash/shock hazard management PPE is to be used.
- Only site approved and registered test instruments that have current test and calibration status are to be used.
- Where appropriate fused test leads should be considered.
- Where required by the site safe system of work isolation process, verification of the test to prove de-energised task is to be recorded within plant isolation documents. A conclusive test is achieved and documented on the plant isolation documents if the voltage reading is less than 20 Volts AC for alternating current circuits and 50 Volts ripple free DC for direct current circuits.
- If a testing to prove de-energised task cannot be performed as per this corporate procedure, an RPEQ Electrical is to be consulted to determine an alternative test method. Where such a method is used, this process is to be documented within the safe work method statement that relates to the work task.

Special cases to be considered include:

- Where the performance of the testing introduces a hazard, **alternate documented methods, approved by an RPEQ**, are to be used to confirm de-energisation.
- Where fixed equipment has been isolated via a plug and socket arrangement or electrically disconnected from the supply system, testing the equipment to prove its de-energised is not required. On a plug and socket arrangement the plug is to be locked by a device to prevent it being plugged back in while under a Safe work Isolation.
- In the case of switchboard maintenance outages, where circuit isolation point tags/locks are removed (under an approved site procedure) to allow switchboard maintenance activities to occur. Prior to re-energisation the circuit isolation points under individual permits must be retested to conclusively prove the isolation has been remade.

9.0 Equipment Selection

- Testing devices and leads are to be CATIII as a minimum level.
- Only Test instruments approved for use on SCL sites and registered on a site electrical equipment register are to be used.
- Approved test instruments are to be inspected for damage and calibration and next test due dates checked prior to each Test.
- Authorised Non Electrical Persons (ANEP) who are trained and authorised to perform *Test and Prove De-energised* procedures on low voltage circuits as part of the Safe Work System processes, are restricted to using the **Fluke T5-1000 multimeter only. (Suitable for CAT III or CAT IV)**
- Authorised Licenced Electrical Workers (ALEW) and Authorised Electrical Persons (Engineers only) may select testing devices from the approved list as required to perform their job role.

10.0 Test and Prove De-energised Procedures

10.1 LV Test and Prove De-energised Procedures

10.1.1 Fluke T5-1000 (for non electrical personnel)

1. Implement controls as per SWMS.
2. Inspect the multimeter and leads for damage; check the calibration and next test due dates. Do not use if it is damaged or past the next test due date.
3. Test DMM function; it is recommended to use a meter proving device to confirm meter function, before resorting to using an adjacent AC & DC power supply source.

4. Go to cubicle/switchboard; stand on the hinge side of the door, face away and open panel door. This is so that in the unlikely event of an [arc flash](#) you are not exposed.
5. Check that circuit breaker/isolator is open.
6. Known AC Test. Set the DMM to Volts. Place test probe on a suitable earth, and place the other probe on circuit breaker/isolator red phase load terminal, then white phase, then blue phase. Check voltage is less than 20V AC. Then test between red-white phase load terminals, red-blue phase load terminals, and blue-white phase load terminals. If reading is > 20V AC, engage an authorised licenced electrical worker and proceed to the [Induced Voltages](#) Testing process.
7. Known DC Test. Set the DMM to Volts. Place test probe on a suitable earth (e.g. earth connection on the door), and place the other probe on the circuit breaker/isolator load side positive connection, then negative connection. Check voltage is less than 50Volts ripple free DC. Then test between positive and negative load side connection. If measurement is > 50V ripple free DC, engage an authorised licenced electrical worker and proceed to the Induced Voltages Testing process.
8. Unknown Voltage Testing. When testing a control panel with unknown voltages, perform steps 6 & 7 on every terminal. If reading is > 20Volts AC or 50V ripple free DC engage an authorised licenced electrical worker and proceed to the Induced Voltages Testing process.
9. Close the cubicle/switchboard panel door.
10. Re-test DMM function as per Step 3. If the DMM fails to read voltage, the DMM needs to be checked or replaced and all steps repeated.
11. Remove controls as per SWMS.

10.1.2 Digital Multimeter (for Electrical personnel)

1. Implement controls as per SWMS.
2. Inspect the multimeter and leads for damage; check the calibration and next test due dates. Do not use if it is damaged or past the next test due date.
3. Test DMM function; it is recommended to use a meter proving device to confirm meter function, before resorting to using an adjacent AC & DC power supply source.
4. Go to cubicle/switchboard; stand on the hinge side of the door, face away and open panel door. This is so that in the unlikely event of an arc flash you are not exposed.
5. Check that circuit breaker/isolator is open.
6. Known AC Test. Set the Fluke DMM to AC Volts. Place test probe on a suitable earth, and place the other probe on circuit breaker/isolator red phase load terminal, then white phase, then blue phase. Check voltage is less than 20V AC. Then test between red-white phase load terminals, red-blue phase load terminals, and blue-white phase load terminals. If reading is > 20V AC, proceed to the Induced Voltages Testing process.
7. Known DC Test. Set the Fluke DMM to DC Volts. Place test probe on a suitable earth (e.g. earth connection on the door), and place the other probe on the circuit breaker/isolator load side positive connection, then negative connection. Check voltage is less than 50Volts ripple free DC. Then test between positive and negative load side connection. If measurement is > 50V ripple free DC, proceed to the Induced Voltages Testing process.
8. Unknown Voltage Testing. When testing a control panel with unknown voltages, perform steps 6 & 7 on every terminal. If reading is > 20Volts AC or 50V ripple free DC, proceed to the Induced Voltages Testing process.
9. Close the cubicle/switchboard panel door.
10. Re-test DMM function as per Step 3. . If the DMM fails to read voltage, the DMM needs to be checked or replaced and all steps repeated.
11. Remove controls as per SWMS.

10.2 HV Test and Prove De-energised Procedures

10.2.1 Modiewark (non contact voltage tester)

1. Check the voltage range of the tester is suitable for the application.

2. Inspect the Modiewark for damage; check the calibration and next test due dates. Do not use if it is damaged or past the next test due date.
3. Switch on the Modiewark and ensure it is operating. When the Modiewark is switched on, a visual alarm lamp flashes and the buzzer beeps at approximately one-second intervals, giving clear standby indication and that the instrument is operational. Do not use if this indication is not present.
4. When a Modielive is available, prove the tester works by holding the Modielive proving unit test probe near, but not touching the Modiewark. Indication that a circuit is energised occurs if the audible and visual alarms change to continuous operation i.e. a steady light and continuous sounding buzzer. If it doesn't change the tester needs to be checked or replaced.
5. Implement controls as per *SWMS*, including wearing of appropriate arc flash and electric shock *PPE*.
6. Check that circuit breaker/isolator is open and racked out.
7. Select the correct voltage range for the circuit being tested.
8. Test the circuit by holding the probe close to each phase in turn on the load/circuit side of the device to be tested. In each case check the tester does not light up or sound the buzzer. If it does, stop and investigate the cause.
9. Repeat step 3 and 4 to retest the tester. If it doesn't have an audible and visual alarm, the tester needs to be checked or replaced and all steps repeated.
10. Remove controls as per *SWMS*.

10.2.2 Taplin Tester

1. Check the voltage range of the tester is suitable for the application.
2. Inspect the Taplin Tester for damage; check the calibration and next test due dates. Do not use if it is damaged or past the next test due date.
3. **Type D100:** Connect interconnecting lead between probes. Insert probe with meter into the self test unit receptacle and the second probe onto the raised contact on the test unit. Push down on the probe with the meter and note deflection on the meter of approximately 20% and that the red test lamp is lit. Do not use if this indication is not present.
4. **Type D225/M:** Switch the Taplin tester selector switch to 'PD' or self test position. Using bare hands place one hand on the metal of the dial indicator and the other on the test probe of the tester. The dial indicator will deflect between 200 and 370 indicating that the tester is operating. Do not use if this indication is not present.
5. Implement controls as per *SWMS*, including wearing of appropriate arc flash and electric shock *PPE*.
6. Check that circuit breaker/isolator is open and racked out.
7. Select the correct voltage range for the circuit being tested.
8. Touch the probe on each phase in turn on the load/circuit side of the device to be tested. In each case check the tester does not indicate voltage on the dial indicator. If it does, stop and investigate the cause.
9. Repeat step 3 or 4 to retest the tester. If it doesn't indicate correctly, the tester needs to be checked or replaced and all steps repeated.
10. Remove controls as per *SWMS*.

10.2.3 CC-360 Series Detex Voltage Detector

1. Check the voltage range of the tester is suitable for the application.
2. Inspect the Detex Voltage Detector and link sticks for damage; check the calibration and next test due dates. Do not use if it is damaged or past the next test due date.
3. Press the red test button on the voltage detector and ensure it is operating. When it is switched on the red diode flashes and there is also an audible signal tone given off. When the test button is released the red diode goes out and the green diode lights up for approximately 2 minutes, the audible tone also ceases. Do not use if this indication is not present.
4. When a Piezo verifier is available, confirm operation of Detex Voltage Detector using the Piezo Verifier Detex Tester proving unit.

5. Implement controls as per *SWMS*, including wearing of appropriate arc flash and electric shock *PPE*.
6. Check that circuit breaker/isolator is open and racked out.
7. Touch the probe on each phase in turn on the load/circuit side of the device to be tested. In each case check the green diode stays on. If the red diode comes on, stop and investigate the cause.
8. Repeat step 3 and 4 to retest the tester. If the red diode and audible signal don't activate, the tester needs to be checked or replaced and all steps repeated.
9. Remove controls as per *SWMS*.

10.2.4 CATU CC-245-275.330 Voltage Detector

1. Check the voltage range of the tester is suitable for the application.
2. Inspect the CATU Voltage Detector and link sticks for damage; check the calibration and next test due dates. Do not use if it is damaged or past the next test due date.
3. Press the test button on the voltage detector and ensure it is operating. Correct working of the detector is indicated by the red diode(s) flashing and an audible buzzer sounding. When the test button is released the red diode(s) go out and the green diode(s) light up for approximately 1-2 minutes, the audible buzzer sound also ceases. Do not use if this indication is not present.
4. Implement controls as per *SWMS*, including wearing of appropriate arc flash and electric shock *PPE*.
5. Check that circuit breaker/isolator is open and racked out.
6. Next touch the probe on each phase in turn on the load/circuit side of the device to be tested. In each case check the green diode(s) stays on. If the red diode(s) comes on and/or the audible buzzer sounds, stop and investigate the cause.
7. Repeat step 3 and 4. If the red diode(s) and audible buzzer doesn't activate, the tester needs to be checked or replaced and all steps repeated.
8. Remove controls as per *SWMS*.

10.2.5 Fameca TAG2020 Voltage Detector

1. Check the voltage range of the tester is suitable for the application.
2. Inspect the Fameca Voltage Detector and link sticks for damage; check the calibration and next test due dates. Do not use if it is damaged or past the next test due date.
3. Press the red test button on the voltage detector and ensure it is operating. When it is switched on the red diode flashes and there is also an audible signal tone given off. When the test button is released the red diode goes out and the green diode lights up for approximately 2 minutes, the audible tone also ceases. Do not use if this indication is not present.
4. When a Fameca PT-DET tester is available, Confirm operation of Fameca Voltage Detector using the Fameca PT-DET Tester proving unit.
5. Implement controls as per *SWMS*, including wearing of appropriate arc flash and electric shock *PPE*.
6. Check that circuit breaker/isolator is open and racked out.
7. Next touch the probe on each phase in turn on the load/circuit side of the device to be tested. In each case check the green diode stays on. If the red diode comes on, stop and investigate the cause.
8. Repeat step 3 and 4. If the red diode and audible signal don't activate, the tester needs to be checked or replaced and all steps repeated.
9. Remove controls as per *SWMS*.

10.3 Induced Voltages Test Procedure

NOTE: This procedure is to be performed by an SCL [Authorised Licensed Electrical Worker](#) only.

The Principle behind this test is to determine if a sustained voltage remains present or is an induced voltage. Testing is performed between each phase and earth.

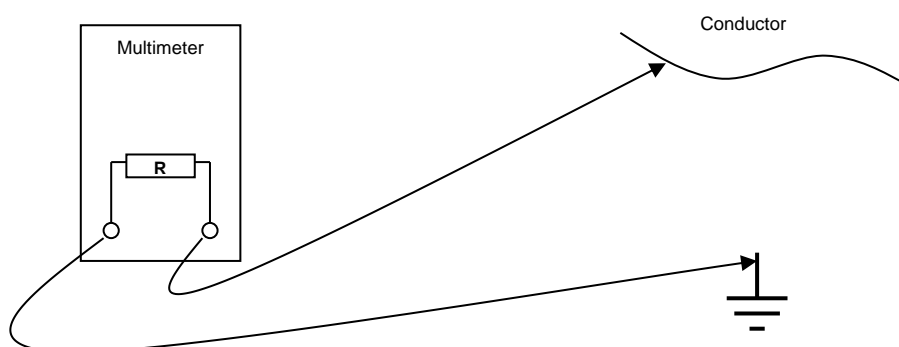
1. This procedure can only be used when the measured voltage is extra low voltage:
 - i. Less than 50 volts AC; or
 - ii. Less than 120 volts DC.

Note: If the measured voltage is greater than i or ii, refer to the Electrical Engineering group for further investigation.

2. Connect a resistance of 20 kΩ in parallel with the voltmeter when measuring the voltage.

Note: This is done to place a load in the circuit to check if the source voltage is sustained at this load.

Shunts are commercially available from MRD Rail Technologies Pty Ltd



3. If measuring AC voltage and the sustained voltage is above 20V AC, proceed to Step 5.
4. If measuring DC voltage and the sustained voltage is above 50V DC, proceed to Step 5.
5. If an acceptable test is not obtained then reduce the resistance to 3kΩ and repeat the test.

Note: This places a higher load in the circuit to determine if the source voltage is sustained at this lower resistance.

6. If the sustained voltage remains above 20V AC or 50V DC then the circuit is to be considered as **not proven de-energised** – proceed to Step 7.
7. Report any instances of circuits not being able to be proven de-energised to an RPEQ Electrical immediately so that further investigation can be conducted into the cause.

10.4 Managing Induced Voltages

1. Where induced voltages can not be controlled by other means they will be managed by the introduction of a grounding strap, connected between all phases of the circuit and earth for the duration of the electrical works. The position of the grounding strap will be as close as practical to the work area. The use of grounding straps will be approved by an RPEQ Electrical.

Note: The grounding strap must be recorded on the Safe Work Isolation and removed before the Safe Work Isolation is surrendered.

11.0 Responsibilities

SCL Corporate Electrical Safety Committee is responsible for maintaining this Business Procedure.

12.0 Occupational Health and Safety Requirements

Throughout this procedure, the highest possible safety standards must be practised at all times.

- Shall comply with the Work Health and Safety Act 2011 and Regulation 2011
- Shall comply with the Queensland Electrical Safety Act & Regulation
- Codes of Practice
- Relevant Australian Standards

13.0 Environmental Requirements

Throughout this procedure, the highest possible environmental standards must be practised at all times.

All relevant Statutory Environmental Regulations must be adhered to.

- Shall comply with the Environmental Protection Act 1994 and Regulation 2008

14.0 Review and Consultation (Prior to Approval)

This Document is required to be reviewed, as a minimum, every 3 year/s

The content of this document will be checked and consulted on by the Corporate Electrical Safety Committee after each review.

15.0 Communication Plan (After Approval)

Sites will be advised about changes to this procedure through a site wide Health and Safety advice and/or through the GenNet safety communication page.

Corporate Electrical Safety Committee site representatives will feed back to relevant site personnel.

16.0 References (Including Information Services)

Source	Reference
Legislation	<ul style="list-style-type: none"> • Electrical Safety Act 2002 • Electrical Safety Regulation 2013 • Managing Electrical Risks in the workplace • Working near Overhead and Underground Electric Lines
Australian Standards	<ul style="list-style-type: none"> • AS/NZS 3000:2007 Wiring Rules • AS/NZS 4836 Safe Working on or near Low Voltage Electrical

	<p>Installations and Equipment</p> <ul style="list-style-type: none"> AS/NZS 610101 Safety requirements for electrical equipment for measurement HB 187-2006 Guide to Selecting a Safe Multimeter
Business Standard	<ul style="list-style-type: none"> ASM-STD-ENG-03 - Corporate Electrical Standard
Business Procedure	<ul style="list-style-type: none"> Safe System of Work ASM-PROC-ENG-MAN-09 - Energised Electrical Work
Legacy Business Procedures	<ul style="list-style-type: none"> 709587 SCL legacy procedure to Test & Prove De-energised TRG-TPS-MTC-ELE-001-Tarong legacy procedure Test to Prove De-energised.
Forms	<ul style="list-style-type: none"> Nil
Manufacturers Advice	<ul style="list-style-type: none"> 14/123750 Fluke application note 14/123753 29k and 3k Ohm Shunts
Stay Safe	<ul style="list-style-type: none"> ASM-PROC-ENG-MAN-10A – Test to Prove De-energised Stay Safe

17.0 Definitions

Term	Meaning
Arc Flash	Arc Flash is the result of a rapid release of energy due to an arcing fault between a phase bus bar and another phase bus bar, neutral or a ground. During an arc fault the air is the conductor. As a consequence, a person in proximity to such an arc flash can be injured. This rapid release of energy can be accompanied by a blast.
Arc Flash Protection Boundary	An approach limit at a distance from live parts that are uninsulated or exposed within which a person could receive a second degree burn. (IEEE1584:2002 Clause 3.13).
Arc Rated Clothing	Means clothing that has an ATPV rating
ATPV: Means Arc Thermal Performance Value	A reported value from electric arc testing. This value is presented in calories per square centimetre and represents the maximum capability for arc-flash protection of a particular garment, fabric or item of arc flash PPE.
Authorised Electrical Person (AEP)	A person who is not required to hold an electrical licence for the performance of their profession as an Electrical Engineer or calling as an, Electrical Apprentice, Electrical Trainee/Student Authorisation is granted after completion of relevant training (including Electrical Safety Induction, annual resus and LV rescue, and any other necessary training.
Authorised Licensed Electrical Worker (ALEW)	A person who is the holder of a Queensland electrical workers license(or equivalent). SCL authorises Licensed Electrical workers after completion of relevant training (including Electrical Safety Induction, annual Resus and LV rescue, and any other necessary training.
Authorised Non Electrical Person (ANEP)	A person who is not an ALEW or AEP and is required to vary their LV exclusion zone as part of their work. For example Isolating officer, Authority/permit holder, Safety observer etc.
Competent	Having acquired the knowledge and skills enabling that person to perform the task required, in a safe and effective manner.
DC	Direct current
DMM	Digital Multimeter
Electrical Equipment	Any apparatus, appliance, cable, conductor, fitting, insulator, material, meter or wire: <ul style="list-style-type: none"> Used for controlling, generating, supplying, transforming or transmitting

	<p>electricity at a voltage greater than extra low voltage:</p> <ul style="list-style-type: none"> ▪ Operated by electricity at a voltage greater than extra low voltage; ▪ That is or forms part of, a cathodic protection system.
Energised Electrical Work Guide	Document listing all controls that are required when performing any live electrical work, as required under the Electrical Safety Act 2002
Extra Low Voltage (ELV)	Voltage of 50V or less AC RMS, or 120V or less ripple-free DC “(QLD Electrical Act 2002 - Schedule 2)”
Exposed Part	is any terminal, connection, conductor or electrical part that can be contacted with a standard test finger
Flame Retardant Clothing	Clothing that has properties which suppress or delay the combustion or propagation of flame.
High Voltage (HV)	Voltage exceeding 1000 volts AC or 1500 volts ripple-free DC
Induced Voltage	A voltage due to electromagnetic or capacitive coupling that may be present in an isolated conductor if it is located near to or run in parallel with an energised conductor
Low Voltage (LV)	Voltage exceeding 50 volts AC or 120 volts ripple-free DC but not exceeding 1000 volts AC or 1500 volts ripple-free DC.
On or near	A situation where an electrical worker is working on or near exposed energised conductors or live conductive parts and there is a reasonable possibility that the electrical worker’s body, or any conducting medium the electrical worker may be carrying or touching during the course of the work, may come closer to the exposed energised conductors or live conductive parts than 500mm. The term ‘on or near exposed energised conductors or live conductive parts’ does not apply if the uninsulated and energised part is safely and securely shielded by design, or segregated and protected with barricades or insulated shrouding or insulating material to prevent inadvertent or direct contact.
PPE	Personal protective equipment
PPE Zone	The area totalling 500mm in any direction from live exposed parts within which an Authorised Electrical Person has approval to perform work using PPE control measures.
RPEQ Electrical	Registered Professional Engineer Queensland Electrical
SCL	Stanwell Corporation Limited
Standard Test Finger	A device used to determine minimum clearances around electrical parts as per the dimensions set out in the IEC Standard 61010.
Safe Work Method Statement (SWMS)	Document used to list all the associated hazards and controls to be implemented to mitigate the hazards
Test Before Touching	Also termed Test and Prove De-energised. An electrical test performed by an Authorised Licensed Electrical Worker immediately prior to working on a de-energised electrical part.
Test to Prove De-energised	Also termed Test Before Touching. A process that involves the testing of electrical circuitry with a voltage measurement device to determine the electrical status, and confirm that the circuitry is de-energised as a result of isolation protocols.

18.0 Revision History

Rev. No.	Rev. Date	Revision Description	Author	Endorse/Check	Approved. By
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0	12.05.15	Document Created	Dave Lavender	Peter Cox, David Janes, Musgrave, Geoff	Trevor Hooper

19.0 Appendix

Appendix 1 Testing Devices and Proving Units

Approved Contact Testing Devices

- Digital Multimeter ([DMM](#)) as approved by sites – low voltage.
- Digital Multimeter Fluke T5-1000 – low voltage for use by authorised unlicensed personnel.
- Taplin tester Type D100 – high voltage.
- Taplin tester Type D255/M – high voltage.
- Fameca TAG2020 Voltage Detector – high voltage.
- CATU CC-245-275330-PK Voltage Detector, red, 275/330kv, 50kV TV bar, 200mm hook, Powerlink spec.
- CC-360 series Detex Voltage Detector–high voltage. (being phased out at Tarong)

Approved Non Contact Testing Devices

- Modiewark – high voltage

Note: The use of HV testers (non contact type) that detect an electrical field surrounding an energised conductor may not be suitable for cables that are surrounded by a metallic screen or cables carrying direct current. In these cases a contact type tester is to be used.

Devices Not Approved for Testing

- Contact testers like Wiggys, Series Test Lamps, Test pencils and similar devices are not to be used as test to prove de-energised devices.
- Non-contact testers like Volt sticks. Volt alert, Volt sensor and similar devices are not to be used as test to prove de-energised devices. However these devices can be used to assist with fault finding and other tasks as suitable.

Proving Units (field generators, voltage sources)

- Model: TE TES-PU TES Meter proving unit (220V AC), by Energex & Ergon (for low voltage)
- Model: SP- 200 Socket & See Voltage Ind proving unit (50V to 690V) (for low voltage)
- SCL Internally Manufactured Device (for low voltage)
- Model: PT-DET Fameca Tester (for high voltage)
- Model: Modielive Modiewark Non Contact Tester (for high voltage)
- Model: CL-1-05/06 CATU High Voltage Proving Unit
- Model: Piezo Verifier Detex Tester (for high voltage) (being phased out at Tarong)