



VULCAN MINE

Standard Operating Procedure

Live Electrical Testing



1.	PURPOSE	3
2.	SCOPE	3
3.	DEFINITIONS.....	3
4.	PROCEDURE	3
	Step 1: Review live testing limitation.....	3
	Step 2: Instruments that may be used.....	3
	Step 3: Prepare for LV live testing	4
	Step 4: Conduct LV live testing	4
	Step 5: Test equipment discharging energy	4
	Step 6: Dealing with high prospective fault currents.....	4
5.	COMMUNICATION & TRAINING	5
6.	RECORDS	5
7.	ROLES AND RESPONSIBILITIES	5
8.	REFERENCES.....	5
9.	RELEVANT DOCUMENTS	5
10.	MONITORING & REVIEW	5
11.	DOCUMENT CONTROL	5



1. PURPOSE

The purpose of this procedure is to effectively manage the risks associated with live electrical testing as required by Section 112 of the Coal Mining Safety and Health Regulation and is supported by VUL-RSK-112-Live Electrical Testing.

2. SCOPE

This procedure applies to all employees, contractors and visitors.

3. DEFINITIONS

Authorised person	A person who has the required competencies and has been appointed by the Site Senior Executive or delegate to carry out a designated scope of duties.
Conductors	Wire or bar designed for the purpose of carry electricity
Electrical Safety Observer	An electrical worker or other person, suitably trained and site-authorized to be present and observe live testing, to ensure safe processes are followed and to provide emergency assistance when required
Electrical worker	A person who has been appointed on site to undertake electrical activity.
Live testing	Testing exposed electrical circuits while the circuits are energised
Live Work	Working on exposed electrical conductors or apparatus while the circuits are energised
Extra-low voltage	Not exceeding 50 V a.c. or 120 V ripple-free d.c.
Low Voltage (LV)	Exceeding extra-low voltage, but not exceeding 1200 V a.c. or 1500 V d.c.
High Voltage (HV)	Exceeding low voltage
Electrical test equipment	Approved by the EEM and includes Multi Meters' Tong testers (Ammeters), Insulation testers, Low Ohm Meters, HV Voltage Detection Meters, HV Operating Sticks, HV Earths.

4. PROCEDURE

Step 1: Review live testing limitation

This procedure applies to testing of energised and exposed electrical conductors or apparatus above the limits of Extra Low Voltage (ELV), it does not apply to electrical test instruments that generate voltages above the limits of ELV except for high voltage surge generators that produces lethal currents.

It does not apply to using an approved test instrument with suitably shrouded and protected leads to test voltages at power socket outlets, designated test points or on 2X shrouded terminals.

Refer to arc flash labelling.

Step 2: Instruments that may be used

Electrical equipment for inspecting, live testing and repairing electrical conductors on site must:

- be approved by the EEM and suitably rated for intended voltage and prospective fault levels of electrical system it is used on
- where applicable, have suitably shrouded leads to prevent unintentional contact
- Have current calibrating / testing tag (6-monthly)

All electrical test equipment shall be inspected and tested in line with the following points:

- Inspected before and after use for condition and functionality
- Meters used for test for de-energised to be tested on known source before and after test
- Must be maintained in good condition with no visual defects
- tested and tagged (6-monthly)
- correctly calibrated by authorised third party (6-monthly) – inspection date and next due date recorded in site register and on label attached to equipment



Step 3: Prepare for LV live testing

Live testing on electrical conductors and apparatus is only permitted when other forms of fault diagnosis are unsuccessful and under the following conditions:

- It is impractical to isolate supply for testing or locating a fault
- An exposed conductor is within reach of a person carrying out electrical work and the risk assessment shows an acceptable level of risk
- The source of supply must be energised for calibrating an instrument/device and supply terminals are not suitably shrouded or touch proof (IP2X)
- When using high voltage (HV) surge generation device to locate a fault on a high voltage circuit.

Testing on exposed and energised electrical conductors or apparatus should be the last resort and shall only be carried out if the level of risk is acceptable, if the level of risk is not acceptable then the electrical equipment shall be isolated, locked out and tested for de-energised.

Consider using remote display electrical test instruments to enable equipment to be tested without doors being open, limiting access to live conductors.

1. Ensure reason for live testing meets requirements of this procedure and **VUL-SOP-21-Access to Exposed Electrical Conductors**.
2. Use electrical drawings to identify conductors to be tested before accessing conductors
3. A suitably trained and qualified Electrical Support Worker shall be appointed for the live work
4. Ensure isolation point has been clearly identified and communicated to the Electrical Support Worker
5. Ensure LV Rescue kit is placed in close proximity to the work site and is ready for use
6. Clear area and **barricade** work area to prevent unauthorised persons entering the area
7. To prevent inadvertent contact, use **appropriate PPE**, e.g. covers, shrouds, insulation, insulated gloves
8. Ensure all **testing equipment** is approved by the EEM and fit for purpose according to Electrical Testing Equipment procedures
9. Ensure test instruments set to appropriate range for the voltage being tested
10. Identify prospective fault levels and ensure electrical test instruments a suitably rated for these fault levels
11. Obtain **VUL-FRM-112-01-Low Voltage (LV) Live Testing Work Permit**, the Permit Issuer for this permit shall only be an electrical supervisor appointed to issue these permits

Step 4: Conduct LV live testing

If a VUL-FRM-112-01-Low Voltage (LV) Live Testing Work Permit has been issued and work approved to commence the following points must be applied when conducting live work or manufactures instructions are followed:

- Ensure clips or test probes are applied to correct point to be tested and are securely attached/placed so they cannot slip off to earth
- Where practical, close the enclosure doors during testing

Before repairing any defects or altering circuitry, isolate the equipment and test for dead before proceeding

Step 5: Test equipment discharging energy

After conducting live electrical testing, any stored energy in HV equipment must be safely discharged utilising discharging tools and verifying all stored energy is released.

Step 6: Dealing with high prospective fault currents

Use isolation devices like circuit breakers or fuses to safely disconnect the circuit in case of a fault. Testing must be done using equipment specifically rated to handle high fault currents, ensuring the equipment can safely manage and contain the electrical energy during testing.



5. COMMUNICATION & TRAINING

All mine workers required to work under this standard operating procedure will ensure that they have read and fully understand the requirements before proceeding.

6. RECORDS

Records generated as a result of the application of this standard operating procedure shall be retained for five (5) years.

7. ROLES AND RESPONSIBILITIES

SSE	Shall review and approve this procedure.
Electrical Engineering Manager	Shall Establish & maintain this standard operating procedure
Superintendents	Shall Implement this standard operating procedure
Supervisors	Shall apply and monitor this standard operating procedure
All CMWs	Shall comply with the requirements of this procedure.

8. REFERENCES

- Coal Mining Safety and Health Act 1999 (Qld)
- Coal Mining Safety and Health Regulation 2017 (Qld)
- Recognised Standard 02: Control of risk management practices
- Qld Electrical Safety Act 2002
- Qld Electrical Safety Regulation 2017
- Qld Electrical Safety Codes of Practice 2020 - Work
- Qld Electrical Safety Codes of Practice 2021 - Managing Electrical Safety Risks in the Workplace

9. RELEVANT DOCUMENTS

- VUL-SOP-21(1) Access to Exposed Electrical Conductors
- VUL-SOP-078-Isolation and Tagging
- VUL-MOP-049-Risk and Hazard Management
- VUL-SOP-21-Access to Exposed Electrical Conductors
- VUL-FRM-112-01-Low Voltage (LV) Live Testing Work Permit

10. MONITORING & REVIEW

A review of this Procedure can be triggered by:

- A site or external event directly related to the document contents.
- A legislated change directly related to the document contents.
- A change of method, technology and/or operation change that may affect the accuracy of this document;
- Outcomes from inspections, audits, hazard identification, risk assessment, or other processes where the actions recommended are directly related to the document contents.
- A change required by the site SSE directly related to the document contents.

11. DOCUMENT CONTROL

Version	Date	Description	Document Controller
01	11/11/2024	Development	Kelly Jensen
02	19/01/2025	Review & Formatting	Kelly Jensen