VULCAN MINE

Standard Operating Procedure

Access to High Voltage Conductors

Contents

1. PURPOSE

The purpose of this procedure is to effectively manage the hazards and risks associated with (low voltage) electrical work or tasks.

In particular, the procedure has been developed to ensure compliance with the following sections of Coal Mine Safety and Health Regulation 2017 that pertain to the electrical engineering activities, electrical work, and electrical activities for the Vulcan surface mine:

- s17 Qualifications for appointment as Electrical Engineering Manager;
- s18 Duties of Electrical Engineering Manager;
- s19 Duty to give notice of proposed introduction of electricity;
- s20 Competencies of persons carrying out work on electrical equipment;
- s21 Access to exposed electrical conductors;
- s22 Locating and dealing with electrical faults;
- s23 Design, installation, and maintenance of electrical equipment;
- s24 Isolators for equipment driven by electricity;
- s25 Standard for electrical control systems;
- s26 Control circuits;
- s27 Modification of electrical control systems;
- s28 Electrical protection for power outlets for low voltage electrical equipment;
- s29 Operating times and tripping current for circuit protection devices;
- s30 Changing electrical protection settings;
- s31 Unearthed electrical installations;
- s32 Drawings of electrical installations;
- s33(1abc)(4b)(5) Plan of coal mine's main electrical installation;
- s34 Records;
- s38(3) Accidents involving electricity;
- s64 Providing personal protective equipment;
- s111 Appointment of person to control and manage electrical engineering activities;
- s112 Live testing electrical equipment;
- s113 Electrical protection for Electrical Distribution System; and
- s135 Using plant near electricity.

2. SCOPE

This procedure applies to all Coal Mine Workers undertaking (Low Voltage) electrical engineering activities at Vulcan Mine. This procedure excludes works High Voltage conductors or equipment.

3. DEFINITIONS

ABS	Air Brake Switch.
ATPV	Arc Thermal performance Value.
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.
Circuit Protection Device	An earth leakage, earth fault, short circuit and overcurrent device.
Close Proximity	Within reach of a Low Voltage Conductor.
CMW	Coal Mine Worker.
Competent Person	A person who has, through a combination of training, education and experience, acquired knowledge and skills enabling that person to perform correctly a specified task.
Direct Contact	contact with an exposed conductor or an exposed part of an electrical article with bare hands or another part of the body or by a conductive tool.
EEM	Electrical Engineering Manager • person appointed to control and manage the mine's electrical engineering activities
Electrical Activity	Electrical Activity means: a) installing, maintaining, repairing, testing or disconnecting electrical equipment or an electrical installation for coal mining operations; b) operating electrical equipment or an electrical installation for coal mining operations. Electrical activity does not include: a) operational switching; b) connecting or disconnecting electrical equipment using a jacking type restrained connector with pilot wire protection underground; c) simple push button testing of earth leakage breakers or similar tasks.
Electrical Equipment	An item used for generating, converting, transmitting, distributing, or using electrical energy at a voltage greater than Extra Low Voltage.
Electrical Installation	A group of items of electrical equipment that: a) are permanently electrically connected together; and b) can be supplied with electricity from the works of an electricity entity or from a generating source; and c) do not include items that are works of an electricity entity.
Electrical Work Licence	A licence authorising an individual to perform electrical work.
Electrical Operating Area	An area or enclosure in which electrical equipment or an electrical installation is housed.
Electrical Protection Setting	Electrical Protection Setting for a circuit protection device, means the current, voltage or operating time at which the device is set to trip when the device detects an electrical fault in the circuit.
Electrical Safety Equipment	Includes an instrument for testing electrical equipment, a ladder, a safety harness, an insulating tool and insulating gloves.
Electrical Work	a) connecting electricity supply wiring to electrical equipment or disconnecting electricity supply wiring from electrical equipment; or b) manufacturing, constructing, installing, removing, adding, testing, replacing, repairing, altering or maintaining electrical equipment or an electrical installation.
Electrical Licence	An electrical work licence or an electrical contractor licence.

Electrical Worker	A person who has been appointed on site to undertake electrical activity.
Extra Low Voltage	Voltage a) 50V or less a.c. r.m.s; or b) 120V or less ripple-free d.c.
Indirect Contact	Contact with an exposed conductor or an exposed part of an electrical article by an insulated tool or insulating equipment.
JHA	Job Hazard Analysis.
Isolated Electricity Supply	'Isolated Electricity Supply' means an electricity supply: a) other than the main electricity supply, that is totally insulated from conductive material; or a) supplied with electricity from the main electricity supply; and b) totally isolated from the main electricity supply; and c) totally insulated from earth.
Live Testing	Testing equipment or an installation while: a) some or all of it is energised; and b) live conductors may be exposed Does not include testing equipment or an installation, under an isolation procedure, for zero potential.
LV	Low Voltage • voltage greater than extra low voltage, but not more than 1200V a.c. r.m.s. or 1500V ripple-free d.c.
LVR	Low Voltage Rescue.
Mine Inspectorate	The Mines Inspectorate is part of Resources Safety & Health Queensland (RSHQ), the independent statutory body responsible for administering safety and health legislation in the Queensland mining, petroleum and gas, explosives and fireworks industries.
Mobile Plant	Plant capable of being moved under its own power (e.g.) Rear Dump Truck
MCC	Motor Control Centre.
PPE	Personal Protective Equipment • clothing, equipment or a device designed to protect a person from harm.
Positive Isolation	Isolation is considered to be positive when the main power conductors supplying the apparatus are open circuited.
Prospective Touch Voltage	The highest voltage a person is liable to be exposed to if the person contacts simultaneously accessible parts in an electrical installation during an electrical fault.
Recognised Competency	A competency recognised by the committee as appropriate for the position or task.
SOP	Standard Operating Procedure.
SSE	Site Senior Executive.
VMM	Vulcan Mine Management; the 'mine'.
Electric Shock	A sudden discharge of electricity through a part of the body.
Electrocution	The injury or killing of someone by electric shock.

4. Working Around Electrical Conductors

4.1. Operation of Mobile Equipment in Electrical Substations

For Operation near electrical installations, refer to VUL-SOP-135??

Where Vehicles such as cars, trucks, mobile cranes, earthmoving vehicles etc are taken in or out of a substation area, the route to be followed must be agreed and defined on site by the EEM or delegate with the person in charge of the work.

The limits of operation of equipment such as mobile cranes and earthmoving vehicles must be defined on site by the EEM or delegate with the person in charge of the work.

The limits of operation of equipment such as mobile cranes and earthmoving vehicles must be defined by the EEM or delegate to the person in charge of the work in accordance with approach limits (exclusion zones) specified in AS/NZ 3007 Electrical Equipment in mines and Quarries – surface installations and associated processing plant.

The equipment should be connected to the substation earthing system by a fault rated trailing earth lead as soon as practical to do so.

4.2. Work in Substations and Switchboards

When carrying and handling objects of a length, such as pipes, rods, ladders or similar items that could contact electrical installations, these items must not be carried on or above the shoulder. Objects must be carried in a horizontal position as close to the ground practical. Any items longer than two (2) metres must be carried by (2) CMWs.

When working in a substation or switch yard with an energised HV System, the boundary must be demarcated and a barrier in place. Any barrier must be included in the HV Access Permit and HV Test Permit.

5. Decommissioning

5.1. Work on De-Commissioned HV Systems

Work on HV System, which is de-commissioned, may be performed without issuing a HV Access Permit provided that the minimum approach distance specified in **Appendix 2** can be maintained with any adjacent exposed energised HV Conductors.

Only a HV Switching Operator can place the HV System into a decommissioned state. Decommissioning point/s must be as close as practical to the equipment or apparatus and must be the point/s of isolation for all works.

All relevant information indicating the current decommissioned state must be clearly placed on the HV system for visual identification of this state.

The Risk Assessment must be followed for earthing to perform work on decommissioned systems.

If the minimum approach distances with adjacent exposed energised HV Systems cannot be maintained, the associated HV System must be made safe to approach and a HV Access Permit must be issued.

Recommissioning of the HV System requires a visual inspection and relevant approved commissioning tests of the HV System on the equipment or apparatus and requires a HV Switching Sheet/HV Access Permit to re-energise.

6. Isolation of HV Systems

Positive Isolation of HV Systems is required for all points of supply of affixing appropriate HV locks and tags at isolation and earthing points in accordance with HV Switching Sheet Instructions. This may be achieved by:

a) Opening an isolator or link;
b) Removing HV fuses or portions of a circuit such as droppers or bridges; and
c) Withdrawing a circuit breaker of the draw-out type from its service position.

When corrdinating and directing a swithcing program, multiple HV lock boxes can be used under the same HV Swithcing Sheet.

To prevent inadvertent or unathorised re-closure of isolation points by locking and affixing appropriate HV Electrical Isolation Locks and Tags. This includes:-

a) All HV isolatinos will use the **BLACK** electrical HV keyed alike locks within a lock box;
b) Once the forward switching Operator must place the **BLACK** HV Keys into the HV Lock box;
c) A **GREEN** control lock, uniquely keyed, will be lcoed on the HV lock box by the HV Switching Operator with a HV isolation tag to control the isolation.
d) The control key and HV lock box are handed to the receipent on issuing the HV Access; and
e) The working Party will place their personal isolation locks and tags onto the HV lock box, and sign onto the HV Access Permit.

If a circuit breaker is withdrawn from service, and the work is within the approach limits of HV conductors, shutters are not considered a barrier of protection and the electrical system must be isolated further upstream.

Motorised isolators, when used as isolation points, must be positively isolated, rendered inoperative by mechanical means and locked.

An Isolator must not be used to interrupt a load carrying circuit unless it is designed to do so. It must be opened after the cicuit has been opened elsewhere, and closed before the circuit is closed elsewhere.

7. Visual Inspection of Switching

HV Switching Operator must confirm by means of a visual inspection, that all contact are functioning correctly.

If the visual inspection is not possible, isolation must not be regarded as effective until a confirmatory check or test for de-energised has been carried out.

8. Test for De-energised and Earthing of HV Electrical Systems

8.1. Electrical protection for Power Outlets for LV Electrical Equipment (s28)

Testing of HV mains and electrical apparatus to prove that each conductor is de-energised is required at each location where earths are to be applied, immediately before the application of the earthing connections.

Two (2) exemptions exist to this:

a) Integral type switching/earthing mechanisms where the earths are applied int eh same action as the opening of the isolator are exempt from his requirement; and
b) Where interlocking is incorporated between the isolator and coinciding earthing switch, a confirmatory check is adequate before closing the earthing switch.

For the (2) exemptions above, a test for de-energised must be carried out before accessing HV conductors.

All conductors of the circuit must be individually tested even if only one (1) conductor is to be worked on (this condition may be waived in the case of trailing cables where the method of testing may be by detection of voltage by the use of a suitable proximity testing device):

a) Testing must be carried out by means of a suitable voltage indicator, which must itself be tested immediately before and after use.
b) Care must be taken to ensure that the indictor is an instrument of a type that meets relative industry standards and of the correct type and voltage rating for the electrical systems being tested and that extension rods are clean and free from surface cracks and other physical defects.

Trailing cables:

a) Before dismantling trailing cable plugs , the cable route must be confirmed on each occasion; and
b) After confirming the cable route, confirmatory checks must be performed. Once dismantled, the plugs must be tested for re-energised.

Earthing of HV Systems should be effected by means of permanently installed earthing switches.

HV Systems should be earthed as close as practical to each of the isolation points.

Work on HV conductors should be carried out between two (2) sets of earths where reasonable and practical. Operator earths for all sources of supply and working earths for potential back feeds.

When there is a disconnection of HV conductors within the HV System being accessed, such that a HV conductor is no longer earthed, consideration should be given to the following:

a) Additional working earths.
b) Shorting the HV conductors together.
c) For trailing cables, fitting caps to plugs immediately upon disconnection.
d) For switchgear following the manufacturer's procedures/instructions; and
e) For underslung or parallel circuits, controls to manage the risk of inducted voltages.

If permanently installed earthing switches are not available, then portable operator earths must be used and applied as soon as possible, after the conductors have been tested and provide de-energised.

If the earth switch or operator earths for aerials are not in clear view, additional operator's earths or working earths must be applied adjacent to the work site.

The placement of earths must be entered on the HV Switching Sheet (for operator earths) or HV Access Permit (for working earths).

When portable earth connections are being applied, the leads must be applied to the earth system before being secured to the phase conductors before the earth system clamp is removed.

Portable earth clamps must be affixed to a permanent earth such as the substation earthing system, a transmission tower leg or transmission pole earth wire. If this is not practical, the EEM must be consulted.

9. Records

9.1. Completed HV Forms

All completed hardcopy HV Switching Sheets, HV Access Permit and HV Test Permits must be returned to the relevant area where they must be registered.

All completed electronic HV Forms must be sorned within the electronic system.

10. Emergency HV Switching

In this case, normal procedures may be waived in that any competent person can open the switch without prior instruction, in order to de-energise HV Systems whilst having due regard to their own safety and the safety of others.

Emergency HV Switching swill follow the normal access to HV Processes, except for the completion of the HV Switching sheet and HV Access Permit. Rescue team members must not access the area until isolation is confirmed by an authorised HV Switching operator and a HV Switching assistant at a minimum. Once this is done, normal rescue procedures are to be followed.

In case of an emergency the following procedures must apply: -

a) Determine which section of the HV Systems requires de-energisation
b) Determine which pieces of HV System require operating to de-energise and make safe the HV Systems; and
c) The switching operations should be written down as the switching is performed or as soon as possible after emergency (on a notepad or preferably a HV Switching Sheet).

Any action taken following an emergency HV switching rescue must be reported as soon as possible to the appropriate supervisor. HV Systems thus made de-energised must not be re-energised except on the instruction of the EEM responsible for the work area.

For Isolations of non-Vulcan Mine Assets, contact is required to be made with our owner or emergency contact (e.g. for Ergon – SWER Lines, Aurizon – Rail Network).

11. HV Switching Sheet Preparation

11.1 General Requirements for HV Switching Sheet Preparation

Before preparing and checking HV Switching Sheets, the HV Switching Coordinator or HV Switching Operator must conduct a visual examination of the equipment concerned as follows :

a) If the installation is returning to service or being removed from service of for the first time after original commissioning; or
b) If not familiar with the equipment concerned.

A HV Switching Assistant must check HV Switching Sheets at the work-site prior to commencement of switching operations.

Any HV Switching Operator carrying out switching on a HV System for the purpose of gaining access, must be accompanied by a HV Switching Assistant or another HV Switching Operator.

11.2 Pre-Written HV switching

The HV Switching Sheet Authoriser and the HV Switching Operator recorded on the HV Switching Sheet must be two (2) different people. Switching instructions must be completed by one (1) HV Switching Operator and checked and accepted by another HV Switching Operator.

When using pre-written HV Switching Sheets:

a) Determine which section of the HV System requires access or isolation.
b) Determine which pieces of HV electrical apparatus require operating to isolate and make safe the HV electrical systems referred to above (a). Use single line diagrams of the HV System to ensure the layout and location of equipment is correct.
c) Using the appropriate pre-written HV Switching Sheet, fill in the required information in the isolation and restoration sections.
d) Re-check to ensure the HV Switching Sheets are correct.
e) Fill in the Date field.
f) The HV Switching Sheet must be checked to ensure it is correct by an authorised HV Switching Operator, who must enter their name and the date in the spaces provided.
g) The HV Switching Operator carrying out either the isolation or restoration must sign in the space provided on the HV Switching Sheet to indicate acceptance of the instructions.
h) The detail entered on the HV Switching Sheet must be checked by the HV Switching Assistant at the work site prior to commencement of switching.
i) The HV Switching instructions may now be carried out and must be in the sequence set down on the HV Switching Sheet.
j) As each HV switching operation is completed, the time must be noted in the space provided. The authorised HV Switching Operator must place their initial in the space provided and the HV Switching Assistant must place their initial in the space provided; and
k) Each pre-written HV Switching Sheet must be uniquely numbered.

11.3 Non-Pre-Written HV Switching Sheets

The HV switching sheet authoriser and the HV switching operator recorded on the HV Switching Sheet must be two (2) different people. Switching instructions must be written by one (1) HV Switching Operator and checked and authorised by a HV Switching Coordinator.

When using non-pre-written HV switching sheets:

a) Determine which section of HV System requires access or isolation.
b) Determine which pieces of HV electrical apparatus require operating to isolate and make safe the HV electrical systems. Use single line diagrams and schematics of the HV System to ensure the layout and location of equipment is correct.
c) Write down each step in the HV Switching Sheet in a logical and orderly manner.
d) Each step must be written in the same format and content (to ensure critical information is not overlooked) as the pre-written HV Switching Sheets.

e) Re-check the steps in the HV Switching Sheet to ensure it is correct.
f) The completed HV Switching Sheet must be checked to ensure it is correct by the HV Switching Coordinator, who must authorise the document.
g) The HV Switching Operator carrying out either the isolation or restoration must sign in the space provided on the HV Switching Sheet to indicate the acceptance of responsibility for correctness of the instructions.
h) The HV Switching instructions may now be carried out and must be in the sequence set down on the HV Switching Sheet.
i) As each HV switching operation is completed, the time must be noted in the space provided. The authorised HV Switching Operator and the HV Switching Assistant must also place their initial in the space provided; and
j) Each HV Switching Sheet must be uniquely numbered.

11.4 HV Switching with Multiple Workgroups

Where it is necessary to utilise more than one (1) HV Switching party for sections of the HV Switching Sheet with the aid of positive communication (e.g. radios, telephones) switching must be carried out in the following manner:

a) A copy of the HV Switching Sheet must be provided to each HV Switching Party and the relevant sections to be carried out by each HV Switching Party must be highlighted in different colours.
b) One (1) HV Switching Operator must be nominated to manage the HV Switching. This person must coordinate all steps on the HV Switching Sheet and issue the HV Access Permit to the Recipient.
c) Steps on the HV Switching Sheet must not be undertaken unless specific instructions are issued by the HV Switching Operator managing the HV Switching Sheet.
d) The managing HV Switching Operator must read out each step of the HV Switching Sheet when instructing the additional switching party/parties to carry out the designated steps in the HV Switching Sheet. The additional HV switching party/parties must repeat the steps of the HV Switching Sheet as instructed, to be carried out by the coordinating HV Switching Operator.
e) The additional HV switching party/parties must enter on the copy/copies of the HV Switching Sheet:
    i The completion time of each step; and
    ii Initial/sign the sections 'Checked By Initials' and 'Switching Operator'.
f) The additional switching party/parties must relay to the managing HV Switching Operator the following:
    i The step number and the operation; and
    ii The completion time of each step
g) The managing HV Switching Operator must note f (i) and f (ii) on the original HV Switching Sheet, and initial the space 'Switching Operator'. In addition, the HV Switching Assistant must initial in the space 'Checked By'; and
h) Under this circumstance, multiple HV lock boxes can be used under the same HV Switching Sheet.

11.5 Continuity of Switching Operations

If the HV Switching Operator performing the switching for any reason cannot complete the isolation or restoration sequence a second HV Switching Operator must assume the role as follows:

a) Communicate, where possible, current status of switching operations with initial Switching Operator;
b) Confirm each completed step through to interruption.
c) Sign on to HV Switching Sheet.
d) Record date and time; and
e) Continue the switching sequence.

If a HV Switching Sheet cannot be completed for any reason, the following must apply for HV Switching Sheet cancellation:

a) Ensure the HV System has been made safe.
b) Cancel HV Access Permit (if applicable);
c) Replace the HV Tag with an Out of Service Tag; and
d) Record the reason, the time and date of HV Switching Sheet cancellation.

11.6 Interaction of Working Parties

Where multiple jobs are being carried out on related equipment, consideration must be given to interaction, which may defeat safety precautions carried out for other HV Access Permits. All parties must be fully briefed on the other work. Checking for the application of other HV Locks and Tags should be allowed for in the HV Switching Sheets.

12.HV Access Permits

12. 1 Issue with GV Access Permit

The HV Switching Operator must explain in detail to the Recipient the following:

a) Isolation points.
b) Position of operator earths.
c) Nearest energised points.
d) Equipment and apparatus to be accessed; and
e) Any other precautions as listed on the HV Access Permit.

12.2 Acceptance HV Access Permit

The Recipient must satisfy themselves that the isolation and earthing is correct and all safety precautions have been taken.

The Recipient must take the HV Access Permit and lockbox with them when leaving the worksite (i.e. comfort breaks) to ensure no additional persons enter the area or sign-on the HV Access Permit without the Recipient being present.

The Recipient may only leave the job for an extended period of time if there is a replacement Recipient available to transfer the responsibility of the HV Access Permit to or refer to **Transfer of Recipient** section.

In order for any person to perform part of the safety precautions relating to issuing of a HV Access Permit, they must be a HV Switching Operator or be a suitably qualified person acting under the direct supervision of a HV Switching Operator. Examples of suitably qualified persons include but not limited to, are:

a) Linesperson; and
b) People undertaking HV switching training e.g. Electrical apprentices

When accessing HV Systems, switching precautions include:

a) Operation of any HV circuit breaker, isolator, link, fuse or similar HV switching device.
b) Affixing or removing any HV Isolation Tag and Lock.
c) Applying or removing any earth; and
d) Erecting or dismantling barricading and or warning notice.

12.3 Signing “On” by Members of the Working Party

The recipient must explain in detail to the members of the Working Party:

a) Isolation points.
b) Position of operator earths.
c) Nearest Energised points.
d) Equipment and apparatus to be accessed; and
e) Any other precautions as listed on the HV Access Permit.

The recipient may then allow the Working Party to 'sign on'.

The recipient must then ensure that each member of the Working Party enters their name and initials in the spaces provided before they are allowed to proceed with the work. Personnel are not permitted to access any HV System specified

on the HV Access Permit unless they have signed on as a member of the Working Party and applied their personal lock and tag on the lock box.

If space is not available for the Working Party to sign on, a Continuation Form must be issued by the Recipient.

If the Recipient is part of the Working Party, they must sign on as a member of the Working Party and apply their personal lock and tag on the lock box.

12.4 Signing 'OFF' By Members of the Working Party

If any member of the Working Party leaves the job and is not returning before the HV Access Permit will be cancelled, they must 'sign off the HV Access Permit and remove their personal lock and tag on the lock box.

On completion of the work, or when it is stopped, all members of the Working Party must 'sign off the HV Access Permit and remove their personal lock and tag on the lock box.

Persons in the Working Party must sign on and off at the same number on the HV Access Permit and remove their personal lock and tag on the lock box.

Having signed off the HV Access Permit and removed their personal lock and tag on the lock box, persons must then treat such HV System as being energised and must not have further access to that HV System unless:

a) new name/initial sign on as per section ***Signing 'ON' By Members of the Working Party*** is provided on the open HV Access Permit.

12.5 Personnel Not available to "Sign Off" the HV Permits (Access or Test)

If personnel have not signed off the HV Permits or removed their personal lock and tag at the completion of the job, the following must apply:

a) Supervisor must make every endeavour to contact the person who has not signed off the HV Permits or removed their personal lock and tag on the lock box. When contacted the person should make themselves available to 'sign off the HV Access Permit and remove their personal lock and tag;
b) If the person who has not signed off the HV Permit or removed their personal lock and tag on the lock box cannot be contacted or is unavailable, the Supervisor must contact the EEM responsible for the work area.
c) If the person who has not signed off the HV Permit or removed their personal lock and tag cannot be contacted or is unavailable and the machinery, equipment or apparatus is to be re-energised, the HV Switching Operator performing the restoration section of the HV Switching Sheet, accompanied by the Recipient, must conduct an inspection to determine that:

i No personnel will be endangered; and
ii Equipment, machinery and apparatus are safe to operate.

d) The HV Switching Operator performing the inspection must sign off the HV Access Permit and remove the personal lock and tag in accordance VUL-SOP-076-Isolating & Tagging on behalf of the unavailable person. The person must be informed at the earliest opportunity, and
e) The circumstances relating to the failure of a person to sign off a HV Permit must be recorded.

12.6 Surrendering of HV Access Permit

The Recipient must ensure that:

a) All work is complete, and the area has been made safe;
b) All working earths and short circuits applied by the Working Party have been removed.
c) All members of the Working Party have been instructed that all parts of the HV System must be treated as energised; and
d) All members of the Working Party have signed off and removed personal isolation locks and tags.

The Recipient must:

a) 'Sign off the HV Access Permit in the space provided; and

b) Surrender the HV Access Permit to the HV Switching Operator performing the related restoration HV switching. If this is not possible, the surrendered HV Access Permit should be left with the area Supervisor or in a pre-arranged location.

12.7 Cancellation of HV Access Permit

The HV Switching Operator must check that:

a) All working earths are removed.
b) All work is completed or if unable to be completed, made safe and tagged out of service.
c) All members of the Working Party have left the work site; and
d) All members of the Working Party have signed off the HV Access Permit and removed their lock and tag.

The HV Switching Operator must cancel the HV Access Permit by filling in the Cancellation Statement.

12.8 Change of Scope Not Covered by the HV Permits (Access or Test)

If during the job, conditions change, or the job requires extending beyond the original scope covered:

d) The Working Party must be withdrawn.
e) All members of the Working Party must sign off the current HV Access Permit, which must be surrendered and cancelled.
f) A new HV Switching Sheet and HV Access Permit must be drawn up; and
g) The new HV Access Permit must describe the new conditions of access.

If the testing requirements change:

a) The test party must be withdrawn.
b) All members of the Test Party must sign off the current HV Test Permit, which must be surrendered and cancelled; and
c) A new HV Test Permit must be issued with new requirements.

12.9 Information on HV Access Permits

All HV Access Permits must provide the following information and provisions. Each HV Access Permit must:

a) Be uniquely numbered.
b) Contain provision for date and time for issue and surrender.
c) Have an area for the HV Switching Operator to sign and issue the HV Access Permit and indicate that the switching has been carried out as per the HV Switching Sheet and that the HV System is safe to work on.
d) Show all locations where equipment has been isolated and operator earths applied.
e) Have provision for a Working Earth Schedule.
f) Have provision for a Continuation Form record.
g) Show all necessary warnings.
h) Show location and erection details of any temporary screens and barriers.
i) Have provision for all persons in the Working Party to sign on before commencing work, and to sign off after the completion of work.
j) Have provision for the Recipient to accept and surrender the HV Access Permit to the HV Switching Operator.
k) Have provision for the HV Switching Operator to cancel the HV Access Permit.
l) Have an area to allow transfer of Recipient.
m) Have an area to note special safe work instructions (e.g. placement of barriers).

12.10 Transfer of Recipient

During the progression of the job through the shift/shifts, it may be necessary to transfer the responsibilities of the Recipient. Transfer of the responsibilities of the Recipient must be conducted in the following manner:

a) The outgoing Recipient must instruct the incoming Recipient in: Isolation points.

i Position of earths.
ii Nearest Energised points.

iii Equipment and apparatus to be accessed.
iv Any other precautions as listed on the HV Access Permit; and
v How far the job has progressed.

b) The original Recipient must inform all members of the Working Party that they are being relieved, and the new Recipient must be introduced to the members of the Working Party.
c) Depending on the complexity of the job it may be necessary for the outgoing Recipient to transfer responsibility (including the control key) to the incoming Recipient on the job so that the new Recipient may visually note the safety precautions taken and the progression of the job. In other cases, the transfer may occur remotely from the job; and
d) The new Recipient must satisfy themselves that the precautions on the HV Access Permit are adequate and have been carried out correctly before accepting the transfer.

Where no parties are working in the area associated with the HV Access Permit for an extended period (i.e. work is not continuous over work period), the HV Access Permit is to be placed "on hold". The Access Permit Recipient must ensure:

a) All Work Parties have signed off the active Access Permit before placing it in an inactive state (on hold);
b) A risk assessment is conducted, including at a minimum, determining a safe location for the Access Permit authorised isolator key/lockbox and HV Access Permit.
c) The work area is barricaded/signed as per site Barricading and Signage processes to communicate that the area is under the control of a HV Access Permit, including Recipient contact details.
d) The EEM or EEM Delegate approves the initial associated risk assessment and re- approves if job scope changes; and
e) The incoming Recipient conducts an inspection to determine the integrity of existing isolation and earthing points, including a test for de-energisation prior to Working Party signing on.

12.11 Lost HV Access Permits or HV Switching Sheets

Action taken when HV Switching Sheets or HV Access Permits are lost or illegible:

a) The Work Party must be withdrawn from the job.
b) The incident must be immediately reported to a supervisor and must be recorded;
c) The Supervisor must contact the EEM responsible for the work area.
d) An inspection must be carried out to determine existing isolation and earthing points.
e) The procedure to gain access to HV conductors must re-commence from the start by issuing a new HV Switching Sheet and new HV Access Permit; and
f) If the original is located after issue of a new Permit, it must be immediately cancelled and forwarded to the EEM.

13. Application of HV Test Voltages

The following precautions must be taken when HV electrical testing of equipment is to be carried out:

a) The area in which the equipment is to be energised at HV should be enclosed on all sides by temporary barricades and signage where it is not practical to use a permanent test enclosure.
b) All persons in the vicinity must be warned before the equipment is energised.
c) One (1) or more Safety Observer (electrical) should be nominated to keep in view all energised equipment during the test, and to ensure that unauthorised personnel remain outside the test area.
d) Earthing connections must not be removed from equipment until all persons, other than those engaged in the removal of the earthing connections, have left the enclosure.
e) Except where the nature of the tests dictates otherwise, no person must enter the test enclosure after the removal of earthing connections from the equipment under test, except to re-apply earthing connections after de-energising the equipment.
f) Immediately after de-energising, all equipment which has been energised during the test must be discharged and connected to earth; and
g) For specific test procedures refer to site Testing Processes.

14. HV Test Permits

14.1 General Requirements for HV Test Permit

If the Recipient is not a HV Switching Operator the permit must be transferred to a Recipient that is a HV Switching Operator prior to the Test Permit being issued.

A HV Test Permit is only permitted to be used under a HV Access Permit.

The HV Test Permit may only be issued from an open HV Access Permit once all members of the working party have signed off this HV Access Permit and removed their personal lock and tag and a line inserted in the work party sign on table to indicate that a HV Test Permit has been issued.

Whilst a HV Test Permit is opened, the Recipient must be in control of the HV Access Permit.

Where testing is to be carried out and the operational earths are to be removed, all members of the working party must sign off the HV Access Permit and remove their personal locks and tags before a HV Test Permit can be issued.

All operator earths that are fitted with a HV tag that are removed for testing purposes under the HV Test Permit must be fitted with an information tag, whilst the test is in progress.

Once testing is complete and all operator earths reinstated, the HV Test Permit must be cancelled, and control will revert back to the open HV Access Permit.

HV Test Permits must not be transferred. If a new HV Switching Operator in charge of the test is required, the existing HV Test Permit must be cancelled and a new HV Test Permit issued.

If the testing requires work on apparatus not covered by the HV Access Permit, the open HV Permits must be cancelled and a new HV switching sheet and HV Access Permit be issued.

14.2 Issue of HV Test Permit

On completion of the necessary isolation, tagging, earthing, locking, erection of screens, barriers and any other safety precautions as listed in the appropriate HV Test Permit, the Recipient must complete the statement section of the HV Test Permit.

The Recipient must explain in detail to the HV Switching Operator in charge of the test of the following:

a) Isolation points.
b) Position of operator earths.
c) Nearest Energised points.
d) Equipment and apparatus to be tested; and
e) Any other precautions as listed on the HV Test Permit.

14.3 Acceptance of HV Test Permit

The HV Switching Operator in charge of the test must satisfy themselves that the isolation and earthing is correct and all safety precautions have been taken. They may then accept the HV Test Permit and must sign the 'Acceptance Statement' in the space provided.

While persons are signed onto the HV Test Permit the HV Switching Operator in charge of the test must be required to stay on the job.

14.4 Special Safe Working Instructions

The HV Switching Operator in charge of the test must note any other instructions in the space provided on the HV Test Permit, e.g. when working in a switch yard where the work area is barricaded off, the Test Party may be required to only enter and exit from a specific opening left in the erected barriers.

14.5 Signing “on” of the Test Party

The HV Switching Operator in charge of the test must explain in detail to the members of the Test Party:

a) Isolation points.
b) Position of earths (operator and working earths) and when they will be removed and replaced.
c) Nearest energised points.
d) Equipment and apparatus to be tested.
e) Any other precautions as listed on the HV Test Permit; and
f) The HV Switching Operator in charge of the test may then allow the Test Party to sign on and apply their personal lock and tag on the lock box.

The HV Switching Operator in charge of the test must then ensure that each member of the Test Party enters their name and initials in the spaces provided before they are allowed to proceed with the work. No person must test any HV System specified on the HV Test Permit unless they have signed on as a member of the Test Party and applied their personal lock and tag on the lock box.

All members of the Test Party must obey all lawful directions issued by the HV Switching Operator in charge of the test.

14.6 Removal and Replacement of Earths for Testing

For the removal and replacement of Earths for testing:

a) Operator earths are to be removed and reapplied only as directed by the HV Switching Operator in charge of the test.
b) Working earths are to be removed and reapplied only as directed by the HV Switching Operator in charge of the test.
c) The HV Switching Operator in charge of the test must keep individuals in the Test Party informed of the state of the earthing.
d) Individuals of a Test Party must not be permitted to encroach within approach limits of unearthed lines and apparatus to apply test connections. Earths must only be removed after test connections have been made and individuals are clear of lines and apparatus under test.
e) Earths may only be removed immediately before application of test voltages.
f) Earths must be replaced as soon as possible after removal of test voltages; and
g) Nominated earths that are removed during the test must be recorded on the HV Test Permit.

14.7 Signing “off” by Members of the Test Party

If any member of the Test Party leaves the job and is not returning before the HV Test Permit will be cancelled, they must 'sign *off*' the HV Test Permit.

On completion of the work, or when it is stopped, all members of the Test Party must 'sign *off*' the HV Test Permit.

Persons in the Test Party must sign on and off at the same number on the HV Test Permit.

Having signed *off* the HV Test Permit and removed their personal lock and tag, persons must then treat such HV Systems as being energised. Further access to the HV System is not permitted unless members of the working party have signed onto the applicable open HV Access Permit and reapplied their personal lock and tag on the lock box.

14.8 Surrendering of HV Test Permit

The HV Switching Operator in charge of the test must ensure that:

a) All testing is complete.
b) All conditions have been returned to the state as covered in the open HV Access Permit.
c) All members of the Test Party have been instructed that all HV Systems must be treated as energised; and
d) All members of the Test Party have signed off and removed their personal lock and tag.

The HV Switching Operator in charge of the test must:

a) 'Sign off the HV Test Permit in the space provided; and
b) Surrender the HV Test Permit to the Recipient

14.9 Cancellation of HV Test Permit

The Recipient must check that:

a) All work is complete.
b) All members of the Test Party have left the work site; and
c) All members of the Test Party have signed off the HV Test Permit and removed their lock and tag.

The Recipient cancelling the HV Test Permit must fill in the Cancellation Statement on the HV Test Permit as well as complete the test section of the open HV Access Permit.

14.10 Information on HV Test Permits

All HV Test Permits must provide the following information and provisions. Each HV Test Permit must:

a) Be uniquely numbered.
b) Contain provision for date and time for issue and surrender.
c) Have an area for the Recipient to sign and issue the HV Test Permit and indicate that the switching has been carried out as per the HV Switching Sheet and that the HV System is safe to work on.
d) Have an area for the HV Switching Operator in charge of the test to sign on accepting the HV Test Permit as issued by the Recipient.
e) Show all locations where equipment has been isolated and operator earths applied.
f) Show all necessary warnings.
g) Show location and erection details of any temporary screens and barriers.
h) Have provision for all persons in the Test Party to sign on before commencing work, and to sign off after the completion of work.
i) Have provision for the HV Switching Operator in charge of the test to accept and surrender the HV Test Permit to the Recipient.
j) Have provision for the Recipient to issue and cancel the HV Test Permit.
k) Have an area to note special safe work instructions (e.g. placement of working earths); and
l) Have provision for changes to HV Access Permit Conditions (operator and working earths removed etc.).

14.11 Lost HV Test Permit

If a HV Test Permit is lost the following must apply:

a) The Test Party must be withdrawn from the job.
b) The incident must be immediately reported to a supervisor.
c) The Supervisor must contact the EEM responsible for the work area.
d) An inspection must be carried out to determine existing isolation and earthing points.
e) The procedure to gain access to HV conductors must re-commence from the start by issuing a new HV Switching Sheet, a new HV Access Permit and a new HV Test Permit.
f) If the original is located after issue of a new HV Test Permit, it must be immediately cancelled and forwarded to the EEM; and
g) The circumstances relating to the lost HV Test Permit must be recorded in EMS as an event and raised as an event notification.

15.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
- Recognised Standard 11: Training in coal mines
- Recognised Standard 20: Dust control in surface mines
- QGN14: Effective Safety and Health Supervision

- QGN16: Fatigue Risk Management
- Queensland Electrical Safety Act 2002
- Queensland Electrical Safety Regulation 2013
- Queensland Electrical Safety Code of Practice 2013 - Electrical Work.
- Code of Practice Managing Electrical Risks in the Workplace
- AS 1319 Safety Signs for the Occupational Environment
- AS 60529 Degrees of protection provided by enclosures (IP Code)
- AS 62040 Uninterruptible power systems (UPS)
- AS/NZS 3000 Electrical Installations
- AS/NZS 3007 Electrical Equipment in Mines and Quarries - Surface installations and associated processing plant
- AS/NZS 60079 Explosive Atmospheres
- AS/NZS IEC 60903:2020 Live working – Electrical insulating gloves
- VUL-APP-004-Electrical Engineering Manager Appointment
- VUL-APP-024-Electrical Worker Appointment
- VUL-FRM-02-03-Job Hazard Analysis
- VUL-PLN-082-Training Scheme
- VUL-MOP-094.1(b)Housekeeping
- VUL-PLN-035-Emergency Planning and Response
- VUL-SOP-042(a)-Fatigue
- VUL-SOP-042(b)-Physical and Psychological Impairment
- VUL-SOP-042(c)-Drugs
- VUL-SOP-049-Risk and Hazard Management
- VUL-SOP-065-PPE
- VUL-SOP-078-Isolation and Tagging
- VUL-SOP-094-Check, Examine and Restrict Work Areas
- VUL-MOP-071-Introduction-to-Site-Plant-and-Equipment

16.MONITORING and 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;
- A relative action issued by the Mine Inspectorate or Industry Safety and Heath Representatives
- 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.
- The passing of a review date on the document, set at two (2) years

17.AMENDMENTS

Version	Date	Description	Document Controller
01	17/09/2025	Document Development	Kelly Jensen

18. Appendix 2 – Approach Lines (Exclusion Zones)

Approach Limits to Exposed HV Conductors for Competent Person		Minimum Clearances for the Movement of Vehicles and Machinery under and in the Vicinity of Overhead Lines	
Voltage of Conductor	Approach Limit	Voltage of Conductor	Minimum Clearance (mm)
>1v≤ 33	700	≤ 1.1 V	1000
>33v≤ 50	750	>1.1V≤33	2300
>50v≤110	1000	>33V≤66	2500
>110v≤132	1200	>66v≤110	3000
>132v≤220	1800	>110v ≤220	4000
>220v≤275	2300		
>275v≤330	3000		
>330v≤400	3300		