

Electrical Safety Rules

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Introduction

The Horizon Power Electrical Safety Rules (ESRs) establish the mandatory requirements for working on or near with electrical apparatus owned, operated or managed by Horizon Power. Their purpose is to provide a consistent framework for managing electrical risks and preventing injury, fatality, equipment damage and service disruption arising from work activities.

The ESRs apply to all Horizon Power workers, contractors and authorised persons undertaking activities involving electricity generation, transmission, distribution, storage, testing, commissioning, operation and maintenance. They also establish requirements for apprentices, visitors and other persons who may enter operational areas or be exposed to electrical hazards.

The Rules are based on the fundamental principles that:

- Electrical apparatus must be considered live until proven otherwise.
- Work must be performed by trained, competent and authorised persons.
- Risks must be eliminated through de-energisation wherever reasonably practicable.
- Where de-energisation is not practicable, approved live work methods, safe approach distances and additional controls must be applied.
- Access to electrical apparatus must be controlled through approved permit, isolation and operating authority systems.
- Testing, commissioning, energisation and emergency response activities must be conducted using documented processes and competent personnel.

The ESRs support compliance with applicable legislative obligations, including the Work Health and Safety Act 2020 (WA), Work Health and Safety Regulations 2022 (WA), Electricity (Network Safety) Regulations 2015 and associated codes, standards and industry good practice.

1. Training, Competency & Authorisation

1.1 Summary of Key Requirements

The following key requirements must be met for work on or near electricity apparatus:

- All workers must be trained, competent and authorised for the tasks they undertake
- Worker training and competencies must align with Horizon Powers Skills Matrix
- Authorisations and competencies must be current and in date
- Contracting companies must complete WHS pre-qualification assessment and onboarding
- Apprentices must be supervised
- Visitors must be escorted and supervised
- Access to substations and power stations is restricted.

1.2 Training & Competency – Minimum Requirements

All work performed on or near Horizon Power's electrical assets must be conducted by workers who are trained, competent, and authorised for the specific tasks.

Training, competency and qualification requirements are listed in Horizon Powers [Skills Matrix](#).

All workers and their leaders must use the [Skills Matrix](#) to identify minimum requirements for their roles and the tasks they conduct.

Records Management

All qualifications, training, and competencies must be current and in date.

Records of all training, competencies, and qualifications must be maintained and made available for audit purposes.

1.3 Contractor Registration and Authorisation

Contracting Organisation Requirements

Contractor companies must be registered and approved as a vendor to Horizon Power.

Before commencing work with Horizon Power, contractor companies must complete WHS pre-qualification.

Individual Worker Registration and Authorisation

For work on or near Horizon Power electricity assets contractor workers must be authorised for the tasks that they conduct in accordance with the [Contractor authorisation matrix](#).

All workers training and competencies must be current to receive and maintain authorisation.

Contractor workers who do not work on or near electrical apparatus must complete contractor registration.

Any exceptions to contractor authorisation or registration requirements must be risk assessed and approved by the relevant Senior Manager.

See [Contractor registration and authorisation for further detail](#).

1.4 Working on Third Party Assets

Before work is undertaken on electrical apparatus owned or operated by another party, applicable safety rules, permit systems, operating authority arrangements and emergency response requirements must be formally agreed.

1.5 Apprentice Supervision

Apprentices must not work on or near any electrical apparatus unless they are supervised by an authorised person.

The level of supervision required must be based on the apprentice's demonstrated competency to perform the specific task safely and is detailed in the Horizon Power [Job Supervision Policy for Apprenticeships](#).

The following levels of supervision must be applied:

- **Direct supervision** by an authorised person who is always present at the work location and in constant visual and audible contact during work on or near exposed live apparatus and for all tasks that an apprentice has not formally demonstrated competency in
- **General Supervision** by an authorised person that includes regular oversight, instruction, and assessment of the work being performed for tasks that an apprentice has formally demonstrated competency in; and
- **Broad Supervision** by an authorised person where the apprentice does not require ongoing guidance and monitoring while performing familiar tasks.

The authorised person supervising an apprentice is responsible for:

- Ensuring the apprentice is not assigned tasks beyond their formal level of competency
- Ensuring they have the appropriate qualifications and current licences for the tasks
- Providing clear and unambiguous instructions
- Verifying that the apprentice understands the hazards, risks, and controls for the task; and
- Always maintaining the required level of supervision.

Prohibitions

An apprentice must not:

- Be the Officer in Charge, Tester in Charge or Recipient in Charge of an Access/work Permit or any other work authority
- Perform switching operations
- Act as a Safety Observer for live work

- Work alone on or near any electrical apparatus; or
- Perform live electrical work, except when under direct supervision as part of a formal training and assessment process.

1.6 Ordinary Persons/Visitors

General Rule

Ordinary persons/visitors entering operational sites must be supervised by an authorised host.

Host & Visitor Responsibilities

The Host is responsible for:

- Providing a site-specific safety briefing to the visitor(s) before entry
- Informing the visitor(s) of site hazards and risks
- Informing the visitor(s) of prohibited areas
- Communicating emergency procedures
- Ensuring visitors use required PPE
- Maintaining direct supervision of visitors; and
- Making sure every visitor signs in and out on the site access register or JRA when required.

Visitors are responsible for:

- Adhering to all safety instructions given by their host
- Always staying with their host; and
- Wearing required PPE as directed.

Visitor restrictions:

Visitors must not touch or contact any electrical apparatus, plant, or control equipment without direct consent from the host.

Visitors must not enter any delineated work area or restricted area unless explicitly permitted and accompanied by their host.

Visitors must not carry any tools or equipment that could pose an electrical hazard (e.g. long metallic, or large conductive objects).

Substation Entry

For unescorted access, all workers, including employees and contractors must have "Substation Access Authorisation" issued by Horizon Power.

Prior to entering a transmission substation, the authorised person must notify the Horizon Power Control Centre (HPCC):

1. Upon entry, detailing the purpose of their visit, and the intended duration; and
2. When exiting and securing the site.

All perimeter gates and doors must be closed and locked, except during entry or exit.

Substation keys must not be distributed without approval by the relevant Manager.

Power Station Entry

Unescorted power station entry is limited to qualified and authorised power station workers and managed through the issue of keys.

Power station site gates must be secured, except during entry or exit.

Power station keys must not be distributed without approval by the relevant Manager.

2. Plant, Equipment, Tools and PPE

2.1 Summary of Key Requirements

The following key requirements must be met for work on or near electricity apparatus:

- Electrical equipment must be Inspected before use, ensuring testing and calibration (where required) is current
- EWP's and other plant must only be operated by authorised persons
- EWPs must be correctly rated for the voltages of apparatus they are used on or near
- Conductive ladders or scaffolds must not be used near live electrical apparatus
- All workers working on or near electrical apparatus must wear wrist to ankle FR clothing (Cat 1 rated as a minimum)
- Defective plant, equipment, tools and PPE must be quarantined, repaired or replaced; and
- Defective plant, equipment, tools and PPE that are disposed of must be made unusable prior to disposal.

2.2 Testing and Calibration of Equipment

Equipment that is defective, damaged, or outside its test and/or calibration date must not be used.

Operating, testing, or commissioning equipment used on or near electrical apparatus must be kept in a serviceable and safe condition, and in test and/or calibration date.

Testing & Inspection Schedule

All plant, tools, equipment must be periodically inspected and tested in accordance with the relevant Australian Standard and the manufacturer's instructions.

A competent person must perform inspection and/or testing.

Table 1 outlines testing and inspection requirements for key PPE, tools and Equipment.

Table1: Inspection and Testing Requirements for Key PPE, Tools and Equipment

Equipment	Periodic inspection	Electrical/ Mechanical test	Australian standard
Gloves – HV (Class 1, 2, 3 and 4) Gloves – HV (Class 1 -3,300V) Gloves – HV (Class 2 – 17,000V) Gloves – HV (Class 3 – 26,500V) Gloves – HV (Class 4 -36,000V)	6 Monthly	6 Monthly	AS 5804.1-2010 High-voltage live working General. AS 5804.2-2010 High-voltage live working Glove and barrier work
Sleeves – HV (Class 3 and 4)	6 Monthly	6 Monthly	AS 5804.1-2010 High-voltage live working General. AS 5804.2-2010 High-voltage live working Glove and barrier work

Gloves – LV (Class 00 and 0)	6 Monthly	6 Monthly	AS/NZS IEC 60903
Portable earth (e.g., earth leads, phase and earth clamps, crimped lugs, bolted connection, mechanical stress, conductor strands)	6 Monthly	6 Monthly	ASTM F2249-03(2015) Standard Specification for In-Service Test Methods for Temporary Grounding Jumper Assemblies Used on De-energized Electric Power Lines and Equipment
Insulated EWP and basket liners	6 Monthly	6 Monthly	AS 5804.1-2010 High-voltage live working General. AS 5804.2-2010 High-voltage live working Glove and barrier work. AS5804.3-2010 High-voltage live working Stick work. AS/NZS 1418.10:2011 Cranes, Hoists and Winches – Mobile Elevating Work
Insulated Portable Ladders (fibreglass step/extension types)	6 Monthly		AS/NZS 1892.5:2020 (Selection, safe use, care; e.g. Cl. 4.2: inspections) AS/NZS 1892.3:1996 (Reinforced plastic ladders – design & marking).
Electrical test instruments used for testing and commissioning		12 monthly calibration	For test equipment connectable to a power outlet see: AS/NZS 3760:2022 In-service safety inspection and testing of electrical equipment and RCD's
Operating Sticks & Insulated Tools	6 Monthly	12 Monthly	AS 5804.1-2010 High-voltage live working General. AS 5804.2-2010 High-voltage live working Glove and barrier work. AS5804.3-2010 High-voltage live working Stick work
LV Insulating mats Class 0	12 monthly		AS – NZS IEC 61111 - Live working - Electrical insulating mats
HV Insulating mats Class 1, Class 2, Class 3, Class 4 (floor or ground cover)	12 monthly	12 monthly	AS – NZS IEC 61111 - Live working - Electrical insulating mats
LV Flexible covers, Blankets and Drapes	6 monthly		AS 4202-1994 Insulating covers for electrical purposes
HV Rigid covers	6 monthly	12 monthly	AS 5804.2-2010 High-voltage live working Glove and barrier work. AS5804.3-2010 High-voltage live working Stick work
HV Flexible blankets (overhead line use)	6 monthly	6 monthly	AS 5804.2-2010 High-voltage live working Glove and barrier work
Insulated bypass jumpers	6 monthly	12 monthly	AS 5804.1-2010 High-voltage live working General. AS 5804.2-2010 High-voltage live working Glove and barrier work. AS5804.3-2010 High-voltage live working Stick work

Test Records and Marking

- All equipment must be clearly marked with a unique identification number (may be a tag, stamp, or label).
- Records of all tests and calibrations must be maintained and made available for audit.
- Equipment test tags must contain test standard, test date, next test date, and the testers name.
- Test tags must be legible, suitable for operating environment (e.g., resistant to weather and chemicals).
- Colour-coding may be used to reflect testing intervals.

Defective Equipment

- All defective equipment must be quarantined and clearly tagged with an "OUT OF SERVICE - DO NOT USE" tag.
- Repair of defective equipment must be by a competent person.
- Repaired equipment must be re-tested in accordance with relevant standards prior to return to service.

- Equipment that cannot be repaired must be made unusable before disposal.

2.3 Mobile Plant

- All plant operators must hold a current High-Risk Work Licence and have been familiarised with the specific equipment being operated (including its safety features).
- A pre-use inspection and function test must be completed by the operator before commencing work each day.
- Mobile plant operating on or near live electricity network apparatus must be earthed.
- Uninsulated plant must not be operated within SADs.

2.4 Elevated Working Platforms (EWPs)

Insulated EWPs used for work on or near electrical apparatus must be rated, inspected, and tested to ensure insulation properties when working on or near live electrical apparatus.

General use

- EWPs must be set up on stable ground within manufacturer levelling tolerances.
- All fitted outriggers must be used.
- EWPs must not be operated where wind speeds exceed 45 km/h or the maximum wind speed indicated by the manufacturer.

Insulated EWPs

- All EWPs used near live electrical apparatus must be insulated to a voltage equal to or greater than the operating voltage.
- Approved, tested, and certified insulated EWPs must be used for live electrical work or where any part of the EWP (boom, basket, or operator) may enter the Safe Approach Distance (SAD) of live exposed equipment.
- Insulated EWPs must be tested and have a valid test certificate, in accordance with AS 2550.10:2025 and AS 1931.1.
- The insulated boom section must be kept clean and dry.

Emergency Preparedness

- Operators and occupants of the EWP must be trained and competent in the EWP's emergency procedures.
- Rescue equipment must be readily available.

2.5 Ladders & Scaffold

- Ladders and scaffold must be rated or protected to prevent inadvertent exposure to electricity.
- Conductive ladders are prohibited for use on or near any live electrical apparatus.
- Ladders and scaffold used for working on or near live electrical apparatus must be an approved type for electrical work.
- Ladders and scaffold accessible to the public must not be left unattended in the working position.

2.6 Personal Protective Equipment (PPE)

All PPE must be kept clean and serviceable.

Defective or damaged PPE must be discarded or destroyed.

Fire retardant clothing:

- All workers working on or near electrical apparatus must wear fire retardant (FR) clothing that provides full body coverage (neck-to-wrist-to-ankle).
- FR clothing must be minimum PPE Category 1.
- Shirt sleeves must be buttoned at wrist, and shirts must be tucked in at the waist during live work.
- Clothing should be replaced if there is any physical damage (tears, split seams, damaged buttons or zippers), when fabric thinning is evident or when heavily stained or contaminated with oil or other chemicals.

Arc Flash Clothing (Switching and High-Risk Tasks):

- Arc flash PPE must be worn for high-risk tasks, such as operating switchgear and racking circuit breakers.
- Arc flash PPE must be rated equal to or greater than the potential Arc flash rating energy for the task.

Arc flash boundaries and PPE requirements are addressed in Chapter 3: Approach Distances.

Head, Face, and Eye Protection

- Non-conductive safety helmets compliant with AS/NZS 1801 must be worn where signposted and on sites with a risk of falling objects, including all overhead transmission and distribution work.
- Safety glasses compliant with AS/NZS 1337.1 must be worn during work on operational sites.

Fall prevention equipment

- When working aloft on any overhead structure (generation, network or storage asset) where a fall risk exists, personnel must wear an approved full-body harness attached to a rated anchor point.
- When working from an insulated EWP, an approved full-body safety harness must be attached by lanyard to the EWP's designated anchor point.
- Dual lanyards must be used when climbing or transitioning from one surface to another to maintain attachment.

Hand Protection

- Insulating Gloves must be worn during switching, testing, the application and removal of shorts and during any live work.
- Insulating gloves must be compliant with AS 60903 and rated for the apparatus being work on.
- Leather protective outer gloves must be worn over insulating gloves to protect against mechanical damage.

Footwear

- Workers on operational sites must wear safety footwear that is compliant with AS 2210.3 and rated as electrically non-conductive (EH).
- Anti-static rated footwear must not to be used for work on or near electrical apparatus.

3. Approach Distances and Boundaries

3.1 Summary of Key Requirements

The following key requirements must be met for work on or near electricity network and generation apparatus:

- Safe approach distances (SADs) must be maintained when working near live electrical apparatus
- A safety observer must be in place when approaching or encroaching SADs for live apparatus
- Cabinets and other enclosures containing electrical apparatus must be locked or otherwise secured to prevent unauthorised access
- Arc Flash PPE, rated to the potential arc flash energy must be worn when accessing and operating apparatus with increased arc flash potential

Note: Rules relating to authorities, permits, switching and de-energisation are addressed in Chapter 4: Switching, Permits and Isolation.

3.2 Minimum Safe Approach Distances

Table 2 details safe approach distances (SADs) that must be maintained when working or operating vehicles or mobile plant near live electrical apparatus and includes:

- Overhead lines.
- Substations and Power Stations.
- Electrical structures and exposed conductive parts at different voltages.

The distances for ordinary persons are referred to as Danger Zones under the Work Health and Safety (WHS) Regulations 2022.

Table 2: Danger Zones and Minimum Safe Approach Distances

Nominal Voltage	Distance	
	Ordinary Persons (Danger Zones)	Authorised & Instructed Persons (SADs)
Extra Low Voltage		
0-60V dc	No mandatory controls to manage the risk of electric shock	
>60-120V dc	No contact allowed	Insulated contact only
0-25V ac	No mandatory controls to manage the risk of electric shock	
>25-50V ac	No contact allowed	Insulated contact only
Low Voltage (LV)		

>120 – 1500V dc and >50 – 1000V ac	3.0m	0.5m
High Voltage (HV)		
>1-11kV, 12.7kV SWER, 22kV. 33kV	3.0m	0.7m
66kV	3.0m	1.0m
132kV	3.0m	1.5m
220kV	6.0m	2.5m

Note:

- Danger Zones and SADs apply to the person and anything they are holding or operating
- SADs are measured from the nearest exposed energised conductor or exposed live part (not insulators or supporting structures unless those components are energised)
- Barriers, insulation or isolation must be used where SADs cannot be maintained; and
- Reduced distances are only permitted for approved live work activities or during de-energised work under access permit

Ordinary persons

Where an unauthorised or ordinary person is observed encroaching a danger zone the observer must intervene and report the incident.

Where arrangements are made for an ordinary person (e.g. 3rd party plant operator) to approach and work within a danger zone they must be under instruction of an authorised person, and the requirements for authorised and instructed persons (as below) must be met.

Authorised and Instructed persons

- All workers must adhere to SADs when working or operating vehicles or mobile plant near live electrical apparatus.
- For all work where SADs are encroached and apparatus is not de-energised a safety observer must be in place.
- A Vicinity Access Permit (VA) must be in place before encroaching a SAD.

3.3 Mobile Plant, Cranes, Loads and Temporary Structures

Mobile plant loads and temporary structures must be controlled near overhead electrical assets. Mobile plant, loads and temporary structures include, but are not limited to:

- Cranes, EWPs and elevated loads
- Excavators, tip trucks and drilling rigs
- Industrial and agricultural plant; and
- Scaffolding and temporary structures.

A trained safety observer must be used where there is a reasonable possibility that plant or loads could encroach the danger zone.

The distances in Table 3 below apply to plant, attachments, suspended loads, scaffolding and temporary structures.

Table 3: Minimum Safe Approach Distances for Mobile Plant and Temporary Structures

Nominal Voltage	Distance	
	No Safety Observer	With Safety Observer
>120 – 1500V dc and >50 – 1000V ac	3.0 m	1.0 m*
>1-11kV, 12.7kV SWER, 22kV, 33kV	3.0 m	1.2 m*
66kV	3.0 m	1.4 m*
132kV	3.0 m	1.8 m*
220kV	6.0 m	2.4 m*

* These distances are absolute minimums, and larger distances should be used to reduce risk where practicable.

3.4 Work on and near underground electrical cables

Before disturbing ground to access buried underground electrical apparatus:

- All relevant drawings and data relating to the area and assets must be collected and reviewed
- A BYD query must be made
- The work area must be checked for underground apparatus signs and demarcation; and
- Asset location must be confirmed.

When excavating to underground assets:

- Potholing must be used to physically locate assets
- Apparatus must be protected from mechanical contact
- If any damage to cable sheaths or insulation is identified, all cables must then be treated as live conductors and de-energised before work can commence.

3.5 Arc Flash Boundaries

Where there is arc flash potential associated with electrical apparatus:

- The apparatus must only be accessed and operated by authorised persons
- Minimum PPE requirements as outlined in Chapter 2: Plant, Equipment & PPE must be met
- Additional Arc flash PPE must be worn inside the arc flash boundary when accessing and operating specific apparatus, that
 - Meets the arc flash PPE requirements labelled at the apparatus; or
 - Where not labelled, meets the requirements for the apparatus as outlined in table 4 below.

Table 4 Arc Flash Boundaries and PPE Requirements

Apparatus	Arc flash boundary*	Arc rated Face shield	Arc rated flash hood	Arc rated Outer clothing
LV Uni Pillar Exposed Live Connections (switching/damaged pillars)	1m	Yes	-	Outer jacket (to achieve minimum 14 Cal protection)
Transformer LV Frame ≤315kVA Air Insulated	2m	Yes	-	Outer jacket (to achieve minimum 14 Cal protection)
Transformer LV Frame >315kVA Air Insulated	4m	Yes	-	40 Cal Switching Jacket and Trousers
HV RMU Air Insulated	6m	Yes	-	40 Cal Switching Jacket and Trousers
HV RMU Oil Insulated	8m	-	Yes	40 Cal Switching Jacket and Trousers
Indoor switchgear, Gas and Vacuum	4m	Yes	-	Outer jacket (to achieve minimum 14 Cal protection)
Indoor switchgear, Oil	8m	-	Yes	40 Cal Switching Jacket and Trousers

* Arc flash boundaries are provided as guidance only and differ based on voltage, design and protection settings.

4. Switching, Permits & Isolation

4.1 Summary of Key Requirements

The following key requirements are required for work on or near Electrical Apparatus:

- Electrical Apparatus must be considered live until it has been isolated, proved de-energised and fitted with earths or short-circuits
- Access to work on or near Electrical Apparatus is restricted and controlled by an Operating Authority.
- Clear communications are required when switching and managing permitting activities
- Only authorised persons can perform switching, issue and receive permits
- Planned Switching Schedules must be checked by a second authorised person and approved by the Operating Authority before proceeding
- Access to Electrical Apparatus must be controlled through an approved Permit to Work system
- An approved Isolation Process must be followed when isolating for access
- Unless approved live work techniques are used, access to primary Electrical Apparatus must include appropriate earths or short-circuits
- Suitably rated equipment must be used when switching and applying earths or short-circuits; and

- Signage, flagging or other means of demarcation should be used to identify safe areas of work where practicable.

4.2 Permit to Work and Operating Agreements

An approved Permit to Work system must provide formal, documented and auditable control of electrical safety for work on, near or associated with Electrical Apparatus.

The Permit to Work system must address the following key principles:

- Work requiring a permit must not commence until the required permit has been issued, accepted and signed on by all relevant work crews
- The permit must clearly define the authorised work, apparatus covered, location, work boundaries, other associated permits or operating agreements and access limits
- Permits must be tailored to the work being performed, ensuring specific requirements are covered for work in the vicinity of in-service equipment, primary and secondary access as well as testing
- Isolation, earthing, testing, barriers, signs and other safety precautions required to manage related residual energy hazards in or near the work area must be confirmed in the permit before work starts
- Only authorised and competent persons may issue, receive, hold, transfer, suspend, surrender or cancel permits. These critical roles must be defined in the Permit to Work system
- The person in charge of a permit must ensure the work party understands the permit limits, associated work risks, and requirements for signing on and off
- Clear communications must be maintained between the Operating Authority, work crews and other affected parties to ensure everyone fully understands the permit conditions
- Changes to the work scope, work party, isolation arrangements or operating conditions must be formally reviewed, documented on the permit and authorised
- Apparatus must not be returned to service until it is safe to do so, and all relevant permits are surrendered and cancelled; and
- Permit records must be retained to demonstrate authorisation, controls, handovers, changes, surrender and restoration.

4.3 Horizon Power Permit Types and Requirements

Electrical Access Permit (EAP)

An EAP must be issued before commencement of work If work requires electrical apparatus to be:

- Isolated
- Proven de-energised; and
- earthed or short-circuited.

Under an EAP access to electrical apparatus is only permitted after apparatus has been isolated, proved de-energised, and earthed (for HV work) or short-circuited (for LV work).

A Recipient in Charge (RiC) must be appointed and is responsible for controlling work under an EAP.

Vicinity Authority (VA)

A VA must be issued where work is performed near live electrical apparatus, and:

- There is a risk that workers or mobile plant could enter the Safe Approach Distance (SAD), but no contact with live parts is intended; or
- Excavation to expose or move live underground conductors is undertaken; or
- HV live work is conducted using Glove and Barrier techniques.

A Recipient in Charge (RiC) must be appointed and is responsible for controlling work under a VA.

Sanction to Test (STT)

A STT must be issued before testing or commissioning that requires removal of earths or application of hazardous voltages.

Any access permit must be suspended or cancelled prior to issue of STT.

A Tester in Charge (TiC) must be appointed and is responsible for controlling testing and commissioning under the STT.

Exclusion zones and safety observers must be in place to manage risk associated with injecting hazardous voltages into electrical apparatus.

Generation Permit to Work (GPTW)

A GPTW applies up to the defined power station boundary and must be selected based on the hazards of the work.

A GPTW must be issued before work starts on generation plant, equipment or systems where access, isolation, control of stored energy, or coordination with operating plant is required. The GPTW must:

- Consider operational impacts to power station output
- Consider mechanical and electrical isolations
- Clearly define the plant, equipment, work scope, work area, access limits and required isolation or control measures
- Identify and isolate relevant energy sources
- Identify supplementary permits where additional hazards apply, such as hot work, confined space entry, excavation, hazardous areas, electrical access or testing; and
- Workers must sign on before accessing the work area, comply with the GPTW conditions, and sign off before the permit is surrendered or cancelled.

Operating Agreement (OA)

An OA must be used to form agreement between two Operating Authorities when:

- One party needs to work on an item which requires isolation and/or earthing from the adjacent Operating Authority: or

- Work is conducted on secondary systems or mechanisms requiring the primary electrical apparatus to be held in a particular state for safety reasons.

An OA is not a work permit and does not authorise work.

4.4 Switching

A Switching Operator must be authorised by the Operating Authority before performing switching activities on a network or generation facility. Switching authorisations and activities must be governed by an approved suite of documentation which deliver a framework for performing these activities safely.

The Switching Operator must:

- Be trained, assessed and authorised for the level of switching activities being performed
- Understand where to access supporting documentation to guide them in performing switching activities safely
- Operate within the limits of the switching authority issued to them
- Switch in accordance with approved work practices, manufacturer instructions, supporting procedures and manuals
- Use approved, appropriately tested and inspected personal protective equipment and switching equipment
- Understand the risk and consequence of each switching step
- Ensure Planned Switching Schedules are written, independently checked by authorised personnel and approved by the Operating Authority before proceeding
- Allow sufficient planning time to notify customers at least three full business days before planned switching interrupts their electricity supply
- Obtain relevant Operating Authority approval before performing unplanned or emergency switching
- Consider personal and public safety, equipment condition, environmental factors, local procedures (including protection schemes/operations), as well as instructions from the Operating Authority
- Where practicable perform switching using remote operations or where possible at distance from the apparatus; and
- STOP, THINK and CHECK before each switching operation that the:
 - switching schedule step is correct
 - location is correct
 - apparatus is correct
 - apparatus status is as expected; and
 - impacts on permits, earths or work parties have been considered.

Levels of Horizon Power switching authorisation are outlined in Table 5 below:

Table 5: Switching Authorisation Levels

Switching Operator Levels	Level Description
Level 1	Fault Response Switching
Level 2	Distribution Switching
Level 3	Substation Switching
Level 4	Transmission Switching
Level 5.1	Protection Secondary Systems
Level 5.2	Metering Secondary Systems
Level 6.1	Low Voltage Generation Switching
Level 6.2	High Voltage Generation Switching
Level 7	Control Centre

4.5 Isolation Process

An approved Isolation Process must be followed to ensure isolations of Electrical Apparatus and other energy hazards are performed safely. The Isolation Process may form part of the Permit to Work system or be a standalone process.

The Isolation Process requires:

- All sources of electrical and stored energy to be identified before isolation
- Operational and safety impacts to be assessed prior to isolations being performed
- Isolation points to be secured by an approved means and labelled to protect from inadvertent operation of the isolation point
- Where a switching device must remain closed as part of a permitted area, it must be secured by approved means and labelled to prevent inadvertent operation, such as an earth switch
- Labels must clearly identify who has applied the isolation and what the isolation is for
- Isolations must be recorded, communicated and controlled during the work
- Locks, labels or isolation must only be removed by the authorised person; and
- Restricted use labels to be used where operation of a switching device is required for the purpose of performing the permitted works.

4.6 Earthing and Short-circuiting

Earths and short-circuits are critical controls for making primary Electrical Apparatus safe before work starts.

Applying earths or short-circuits can be inherently dangerous and because they are critical controls for accessing primary Electrical Apparatus, the following principles must be followed:

- Primary Electrical Apparatus must be isolated and proved de-energised immediately prior to earths or short-circuits being applied
- Primary Electrical Apparatus must be fitted with earths or short-circuits to establish and maintain a safe work condition

- Earths and short-circuits must be fault rated, approved for the application, in test, inspected prior to use and applied using approved connection points and methods
- Earths or short-circuits must be applied to all sources of supply, including potential back feed sources
- Earths or short-circuits should be placed as close as reasonably practicable to the work area and, where possible, visible to the work party
- Earth arrangements must manage induced voltages and transferred earth potential risks, particularly on long lines and parallel circuits
- Program Earths and Working Earths must be recorded, communicated and controlled through the approved Switching Schedule and permit
- Portable earth leads must be connected to the earth point first and removed from the earth point last, with persons kept clear of leads during application and removal
- Customer earth systems and neutral conductors must not be used as earthing points; and
- Electrical Apparatus that cannot be isolated or fitted with earths or short-circuits as required must be treated as live and controlled using live work techniques or exclusion controls.

5. Low Voltage Live Work

5.1 Summary of Key Requirements

The following key requirements must be met for live low voltage (LV) work:

- Only approved live LV tasks are undertaken
- Live LV work must only be performed by authorised persons who hold the relevant competencies
- Apparatus and surfaces within reach that have a different potential to the apparatus being worked on must be fitted with barriers or insulating covers
- Workers must only contact one potential at a time
- Appropriately rated LV insulating gloves with leathers outers must be always worn; and
- A safety observer must in place for all low voltage live work.

5.2 Live LV Tasks

Table 6 and 7 outline approved and prohibited live LV tasks for overhead and underground network apparatus. Tasks are listed under the following four categories:

- Category 1 (Approved Tasks): No additional insulation required due to work position.
- Category 2 (Approved Tasks): Temporary insulation required while conductors remain in their normal position.
- Category 3 (Approved Tasks): Movement of live conductors under tension and/or electrical load.
- Prohibited Tasks: Tasks too complex or hazardous to be performed live.

Table 6– Live Work Task List (Overhead)

Category 1 Approved Tasks
Install / remove temporary insulating material (tiger tails for warning to third parties)
Connect / disconnect service
Connect / disconnect testing, measuring, or recording instruments
Install low voltage spreader
Remove foreign object / animal from mains using insulated stick
Trim vegetation near live bare conductor using insulated stick
Maintain LV disconnector or LV links
Category 2 Approved Tasks
Connect / disconnect distribution mains underground cable connection to overhead bare conductors
Install / remove permanent bonding conductor
Connect / disconnect temporary bond or tap
Repair conductor
Remove foreign object / animal from mains by hand
Install / remove switch, link, or fuse assembly
Replace broken tie
Install / remove portable HV earthing apparatus above bare conductors
Install / replace pole cap
Install / replace streetlight and/or bracket on pole with live bare open wire mains
Install / remove pole stay wire through live bare open wire mains
Pulling up a HV cable termination between live bare open wire mains
Category 3 Approved Tasks
Pole Changeover Simple (single dead-end termination, 2-way termination or intermediate)
Replace crossarm Simple (single dead-end termination, 2-way termination or intermediate)
Replace insulator(s)
Replace transformer on existing pole with bare open LV mains live
Replace crossarm Complex (3-way or 4-way with upper crossarm to be replaced, need to work on upper circuit with lower circuit live)
Prohibited Tasks
Pole Changeover Complex (3-way or 4-way pole due to need to work on upper circuit with lower circuit live)*
Install / restring bare HV conductors over the top of live LV bare mains

- *Note: if lower circuit is ABC conductor type, this task can move to Cat 3

Table 7– Live Work Task List (Ground-Based or Underground)

Category 1 Approved Tasks
Connect / disconnect service or streetlight circuit to be safely terminated into back blocks (no live exposed connections)
Connect / disconnect testing or measuring instruments
Fuse replacement/ Operate low voltage links
Remove / replace non-metallic Mini pillar lid or base

Remove / replace non-metallic Uni pillar lid
Pull cable into pillar with no exposed live conductors
Repair outer sheath damage (plastic sheathed cables)
Category 2 Approved Tasks
N/A
Category 3 Approved Tasks
Install / repair fuses/links or connections in pillar
Connect / disconnect mobile generator (approved points)
Replace ground-mounted transformer with LV switchgear live
Pull new LV distributor into LV frame (providing modern insulated and arc protected switchgear and temp barriers/insulation can be safely installed)
Prohibited Tasks
LV distribution cable or >100A LV service cable pulled into uni pillar which requires connection to live exposed busbars
Make / Break bolted cable connections to live uninsulated/exposed bars in uni pillar
Cable jointing
Make / break paper/lead cable connections
Replace LV board or panel
Replace Uni Pillar base

5.3 Planning and Assessment of Live LV Work

Live LV work must be planned and assessed prior to commencement.

Those authorised to plan and perform live LV work must:

- Only plan and perform live LV work where de-energised work is not reasonably practicable
- Risk assess Category 3 live LV tasks prior to the day of planned work, addressing asset suitability for live work based on asset type and configuration, customer impact, switching complexity, asset condition (*confirming there is no known damage or defects that could introduce risk during work both on the asset to be worked on and adjacent assets*) and the availability of suitable plant, equipment, tools, and competent workers.
- Inspect the asset and adjacent apparatus prior to commencement of work through conducting a JRA engaging all workers involved in the work immediately prior to commencing live LV work to confirm there are no damage or defects that could introduce risk during work, and all critical controls can be implemented.

5.4 Conducting Live LV work

The following conditions must be met for all live LV work.

PPE and temporary insulation

- Insulating gloves must be worn on both hands when working on live LV apparatus, inclusive of testing activities
- Outer leather gloves must be worn over insulating gloves

- All conductive parts within reach that are a different potential to the apparatus being worked on must be fitted with barriers or covered with temporary insulation to prevent inadvertent contact
- For live low voltage panel work a panel rescue kit must be immediately available

Safety Observer

- A safety observer, competent in the work method must be in place at all times:
 - The safety observer must maintain a clear unobstructed view of work
 - The safety observer must be able to stop work if an unsafe condition is observed
 - The safety observer must not engage in any other tasks, including taking or making phone calls while observing work
 - The safety observer must confirm with the workers when workers enter the contact area.

Conductor displacement

- Displaced conductors must be controlled at all times.
- Live conductors must be secured using adequately rated non-conductive load bearing tools and equipment.

EWPs and Mobile Plant

- Work must only be conducted from an appropriately rated and tested EWP
- Insulated sections of EWPs or plant must never be bypassed by uninsulated equipment or conductors.

Work Position and movement

- A worker must only work on or contact one potential (one phase or the neutral) at a time
- Workers must maintain minimum approach distances for adjacent exposed conductors
- Workers in reach of each other must work on apparatus with the same potential
- Workers must have controls in place to insulate themselves from earth (i.e. using an insulated elevated work platform or approved insulating mat)
- Caution must be taken when handling tools and equipment to avoid contact with adjacent apparatus or conductive surfaces with different potential

Prohibitions

- Prohibited tasks as outlined in Tables 6 & 7 must not be conducted live.
- Work must not be undertaken simultaneously on live LV and HV conductors on the same structure.
- Neutral conductors that are part of a Multiple Earthed Neutral (MEN) system must not be broken.
- Apparatus with damage or faults that introduce risk must not be work on live.

5.5 Suspension of Work

Low Voltage Live Work must be suspended immediately where:

- A Safety Observer needs to cease observation of the work or leave their position for any reason
- Equipment or apparatus is damaged; and
- Environmental conditions deteriorate and introduce risk (e.g. high winds, rain, lightening).

5.6 New Low Voltage Live Work Tasks

New LV Live Work tasks must not be conducted until they are:

- Risk assessed
- Trialled de-energised; and
- Categorised and listed as approved tasks.

6. High Voltage Live Work

6.1 Summary of Key Requirements

The following key requirements must be met for high voltage (HV) live work overhead electricity network apparatus up to 33kV to prevent electric shock, electrical flashover, or inadvertent contact with energised electrical apparatus:

- HV Live Work must only be performed by authorised persons who hold current HV live work competencies
- Only approved work methods are permitted as outlined in the HV Live Work Manual
- An authorised safety observer must be appointed for all HV Live Work
- All requirements of the High Voltage Live Work Manual must be met before work can proceed and immediately suspended if any requirements can no longer be met.

6.2 Approved Live HV Tasks

Table 8 outlines approved live HV tasks and associated methods as addressed in the HV Live Line Manual. If the task to be undertaken is not included in Table 8 the work must be done de-energised.

Table 8 Approved HV Live Work Tasks and Associated Methods

Approved HV Live Work Tasks & Associated Methods
Energising/de-energising and bypassing switches and apparatus by: • Making and breaking open wire bridges • Energising overhead mains with TDO fuse • Installing and removing temporary bypass jumpers • Changing HV fuse units • Installing inline isolators • De-energising and re-energising underground cables connected to a 33 kV overhead system • Installing/removing temporary polymeric insulator with turnbuckle.
Recover and erect inline pin poles
Change RDA pole

Change pole-top switch or switch pole
Change surge diverters
Change pole-top switch using the temporary bypass method
Change tension insulator
Change suspension hardware
Change RDA insulator
Displace conductors with • Manual handling • Aichi auxiliary arm • Three-phase lift using crane and lifting beam • Crane boom-mounted auxiliary arm and mast • Crane single conductor lift • Pole or crossarm mounted conductor support brackets • Auxiliary arm • Anchor to crane boom • Tag lines.
Remove conductor sample mid-bay
Repair tensioned conductor
Displace and replace earth return wire
Trimming trees near live HV conductors
Installation and maintenance of switchgear/apparatus including: • Pole-top switches • Gas switches • Reclosers • Links (open/closed)
Animal proofing

6.3 Planning and Assessment of HV Live Work

Those authorised to plan and perform High Voltage Live Work must:

- Only plan and perform live HV work where de-energised work is not reasonably practicable
- Risk assess all live HV tasks prior to the day of planned work, addressing asset suitability for live work based on asset type and configuration, customer impact, switching complexity, asset condition (*confirming there is no known damage or defects that could introduce risk during work both on the asset to be worked on and adjacent assets*) and the availability of suitable plant, equipment, tools, and competent workers.
- Inspect the asset and adjacent apparatus prior to commencement of work through conducting a JRA engaging all workers involved in the work immediately prior to commencing live HV work to confirm there are no damage or defects that could introduce risk during work, and all critical controls can be implemented.

6.4 Conducting HV Live work

HV Live Work must only be performed using Glove & Barrier method in accordance with the requirements of the HV Live Work Manual.

No other work must be performed on the same structure during HV Live Work.

Permits and auto-reclose

- A Vicinity Authority / permit must be obtained before commencing HV live line work and cancelled upon completion.
- Auto reclose must be disabled and for the duration of the work
- HV Live Work involving energising or de-energising must only occur under an approved switching program.

Work zone

The work area must be controlled, including

- Establishing drop zones
- Preventing Ordinary persons from access to the work area.

Gloves and Barriers

- Gloves and sleeves must be inspected prior to use
- Mechanically protective outer gloves must be worn at all times
- Barriers must be fitted to second points of contact where separation cannot be maintained

Safety Observer

- A safety observer, competent in the work method must be in place at all times:
 - The safety observer must maintain a clear unobstructed view of work
 - The safety observer must be able to stop work if an unsafe condition is observed
 - The safety observer must not engage in any other tasks, including taking or making phone calls while observing work
 - The safety observer must confirm with the workers when workers enter the contact area

Conductor displacement

- Displaced conductors must be controlled at all times
- Live conductors must be secured using adequately rated non-conductive load bearing tools and equipment.

EWPs and Mobile Plant

- Work must only be conducted from an appropriately rated and tested EWP
- Insulated sections of EWPs or plant must never be bypassed by uninsulated equipment or conductors.

Working position and movement

- Work must only be conducted on one phase at a time
- Body position, tools and unsecured live parts must be controlled at all times
- Workers must maintain safe approach distance (as outlined in Table 9) from parts of different potential at all times.

6.5 Safe Approach Distances

Table 9 provides Safe Approach Distances for Authorised HV Live Workers with Auto Reclose disabled.

Table 9 Safe Approach Distances for Authorised HV Live Workers with Auto Reclose Disabled.

System Voltage (kV)	Stick	G&B to Body
11	350mm	50mm
22	400mm	100mm
33	450mm	150mm

- Note 1: The Glove & Barrier clearances in Table 1 refer to the clearances from the un-insulated parts of the body
- Note 2: For voltages between 6.6kV to 33kV, the SAD may be reduced by half on condition that approved, rated and tested Insulating Barriers are positioned between the person and the live electrical apparatus

Table 10 provides recommended Safe Approach Distances for Mobile Plant Operated by an Authorised Person with the use of a Safety Observer with the Auto Reclose disabled.

Table 10: Safe Approach Distances for Mobile Plant - Auto Reclose Disabled

System voltage phase to phase	LV - 1000v	11kV - 33kV
Un-insulated portions to un-insulated conductor	300mm	750mm
Un-insulated portions to insulated conductor	150mm	450mm
Insulated portions to un-insulated conductor	150mm	450mm
Insulated portions to insulated conductor	Physical Separation	150mm

6.6 Suspension of Work

HV Live Work must be suspended immediately where:

- Safety Observer leaves position
- Required clearances cannot be maintained
- Equipment damage or defects are identified that introduce risk
- Environmental conditions deteriorate and introduce risk (e.g. high winds, rain, lightening).

Horizon Power Control Centre must be notified if work is suspended.

6.7 New HV Live Work Techniques

New HV Live Work tasks or techniques must be:

- Risk assessed
- Trialled de-energised
- Approved prior to implementation
- Documented in the HV Live Work Manual as approved tasks.

7. Testing, Commissioning & Energisation

7.1 Summary of Key Requirements

The following key requirements must be met for testing and commissioning of electricity network and generation apparatus:

- All testing and commissioning activities must only be carried out by competent, authorised personnel and must be conducted in accordance with approved Horizon Power technical standards, engineering specifications, procedures, and applicable Australian Standards.
- Commissioning and testing plans, test procedures, commissioning sheets, test sheets and checklists must be used for all works
- Commissioning and testing results must be formally documented on approved commissioning and test sheets and signed off by the person responsible prior to energisation
- Electrical apparatus must not be energised where any known defects, incomplete work or unsafe conditions exist that could affect safe operation.
- An SCT must be completed for new customer connections and any reconnection of customers to the network following incidents faults maintenance, repair or modification.
- Test equipment must be serviceable, suitable for the task and within its test and calibration date.

7.2 General Requirements

The following general safety requirements must be met with respect to testing and commissioning activities:

- Testing/commissioning must only be carried out by authorised and competent person
- Electrical apparatus must be tested and commissioned following construction, modification, repair or maintenance and in all cases prior to energisation.
- Hazards associated with testing and commissioning must be identified, risk assessed and controlled prior to work commencing
- Isolation, emergency response and test plans must be in place prior to work and communicated to relevant stakeholders.
- Exclusion zones must be established and maintained to prevent unauthorised access to the work area during testing and commissioning.
- Safe Approach Distances and arc flash boundaries must be applied in accordance with ESR 3 – Approach Distances and Boundaries.

- Electrical apparatus must remain isolated, earthed and treated as de-energised unless its electrical state is intentionally altered for testing under documented and authorised arrangements.
- The Tester in Charge is to ensure all personnel are safe, at a safe distance and must control the commencement of any testing, whether energised testing or application of any test voltage and current.
- Following completion of testing, electrical apparatus must be safely discharged and re-earthed (including dissipation of any stored charge) before general access or work resumes.

7.3 Testing and Commissioning Practice

Network and Generation Commissioning

A commissioning plan must be developed for major projects, complex electrical apparatus, and generation and storage assets. The commissioning plan must define the scope and methodology for commissioning and must include, as a minimum:

- The sequence and staging of commissioning activities and tests, including pre-energisation, energisation and post energisation staged
- The specific tests to be undertaken, including methodologies, acceptance criteria, and documentation requirements
- The required safety controls and precautions for all testing activities, including isolation, access management, permits, hazard identification and risk controls.
- The roles, responsibilities and authorities of all parties involved in commissioning and testing
- The conditions and controls under which energy may be safely applied to the system, network, equipment, asset or apparatus

Pre-start consultation and coordination must occur prior to testing, ensuring hazards are eliminated or minimised through appropriate controls.

Commissioning tests must be formally documented using approved Horizon Power Commissioning and Testing sheets or equivalent reviewed and approved test sheets designed to record the testing with sign off by an authorised responsible person (e.g. project engineer, supervisor, commissioning officer, tester in charge) to certify completion of required testing

When either new or replacement equipment and apparatus is installed and commissioned, phasing to all sources of supply must be undertaken.

Completion and sign off of commissioning and testing documentation is mandatory prior to energisation of electrical equipment or apparatus. If any test result, does not meet the approved acceptance criteria, energisation must not proceed until the fault or deficiency is rectified, the tests are re-conducted with results that meet the criteria or formally approved revised and documented criteria.

Testing and Commissioning records must include, as a minimum:

- Asset identification and location
- Work order or project reference
- Date, time and tester details
- Test step

- Test methodology / description / procedure to conduct the test
- Test results and measurements
- Pass or fail against acceptance criteria
- Test equipment utilised
- Authorising person's approval (e.g. commissioning engineer, commissioning officer, supervisor, tester in charge)
- Mandatory tests in accordance with Section 8 of AS/NZS 3000 where applicable.

7.4 Protection, Control and Safety Systems – Readiness for Continuous Operation

Protection, control and safety systems (including all mandatory and applicable signage) must be fully installed, verified, commissioned, and tested prior to energisation to confirm correct operation and compliance with design, standards and operational requirements.

Energisation and transition to continuous operation of electricity network and generation apparatus, equipment and systems must only occur once all systems have been demonstrated to operate correctly under defined test conditions, with all defects, non-conformances, and outstanding items addressed.

Continuous operation and use of equipment must not commence until an authorised person has formally signed off that the electrical apparatus, equipment, and associated systems are safe, compliant, and are ready for continuous operation and use.

7.5 Service Connection Test (SCT)

An SCT must be carried out on a customer's service prior to connection or reconnection. Test results must be recorded on a Horizon Power SCT form, see Service Connection Test form.

An SCT is required for:

- New service connection
- Service re-energised after disconnection or isolation
- Any service conductor altered (active, neutral, PEN)
- Metering work performed involving interruption, reconnection, or rewiring
- Point of attachment changed or disturbed
- Customer electrical work completed prior to reconnection
- Earthing or MEN disturbed or modified
- Reported Electric shock from metallic items on the premise or there is any ambiguity over the origin of an electric shock.
- Suspected neutral issue (broken, shared, replaced, damaged or excessively high impedance induction)
- Storm damage or asset replacement affecting the service; or
- Any situation where uncertainty exists about service integrity, earth continuity or polarity.

7.6 Test Equipment, Tools and PPE

- Test equipment used for commissioning and testing must be within their test and calibration period and inspected prior to use.

- Voltage measurement/detection equipment must be proved before and after use.
- An Electrical Multifunction Network Analyser is the approved test instrument and must be used for SCT.
- Approved PPE must be worn for all testing and commissioning activities.
- Defective equipment, tools and PPE must not be used.

8. Emergency & Incident Management

8.1 Summary of Key Requirements

The following key requirements must be met for testing and commissioning of electricity network and generation apparatus:

- Incidents, including near hits, injuries and damage events must be reported
- For significant incidents the incident scene must be preserved
- Electric shock incidents must be reported
- Unsafe installations must not remain energised
- Damaged or faulty electrical apparatus must be treated as live until proven de-energised

8.2 Incident Reporting and Notification

Incident Reporting

All network faults and consumer electric shocks must be reported on in HP TCS via 13 23 51 or in an emergency through direct contact the Horizon Power Control Centre (HPCC).

Workers (including Contractors) must report all workplace incidents to their immediate Manager and where applicable the Horizon Power contract representative.

Horizon Power workplace incidents must be recorded in Cintellate.

For significant incidents workers must preserve the incident scene until either the SH&W or Asset Management team advise that the incident scene can be disturbed.

Notifiable Incidents (WorkSafe)

For all dangerous workplace incidents including near hits, injuries and damage events the SH&W team must be consulted to determine if WorkSafe notification is required.

Notification of incidents to WorkSafe is undertaken by the SH&W team.

Contractors must identify and notify their own WorkSafe notifiable incidents.

Notifiable and Reportable Incidents (ENSR)

Notifiable incidents as defined in the Electricity (Network Safety) Regulations 2015 must be reported immediately to the responsible manager and recorded in Cintellate.

A Performance and Compliance Advisor will review incidents and determine where reporting, notification and investigation are required for the regulator.

Workers must follow the direction of the Performance and Compliance Advisor for significant events and where directed collect and retain damaged apparatus or samples.

8.3 Major Emergencies

Major emergencies including fire, flood or cyclone events must be managed in accordance with the Horizon Power Crisis and Emergency Management Plan and [Natural Hazard Response Plan](#).

8.4 Damaged or Unsafe Consumer Installations

Electric Shocks

Consumer and electrical contractor electric shocks must be reported to Horizon Power on 13 23 51.

Following a report of electric shock, a risk assessment must be completed in accordance with the Horizon Power Fault Note and Electric Shock Process.

Where a safety risk is identified, the installation must be disconnected or de-energised as soon as practicable.

Where an installation is disconnected or de-energised, a Major Fault Note must be issued and the applicable temporary tag fitted.

The Fault Note number must be recorded on the temporary tag.

An installation associated with an electric shock report must not remain energised unless:

- A risk assessment determines it is safe to do so; and
- Approval is obtained in accordance with the Horizon Power Fault Note and Electric Shock Process.

Remote de-energisation may be used as an interim control where there is a risk of further electric shock and attendance cannot be achieved within an acceptable timeframe.

All reported electric shocks must be investigated by the Electrical Inspectorate in accordance with the Inspection System Plan.

Other Incidents

Where a customer installation is determined unsafe following an incident, observation of damage or a failed Service Connection Test the Horizon Power Fault Note and Electric Shock Process must be followed.

The installation must not be re-energised or reconnected until the unsafe condition has been repaired by a licenced electrical contractor, and the disconnection tag is signed and returned to Horizon Power.

8.5 Damaged and Unsafe Network or Generation Apparatus

Where damaged or unsafe electrical apparatus are identified:

- Contact the Operating Authority
- Assess and check for danger before commencing any response
- Advise emergency services if there is uncontrolled public safety risk
- Damaged apparatus and fallen conductors must be treated as potential sources of hazardous step and touch voltages
- The apparatus must be treated as live and must not be touched until proven deenergised, isolated and earthed/short circuited
- Immediate steps must be taken to secure the area and prevent unauthorised access:

- In Public areas A minimum of 10 meters clearance must be maintained between ordinary persons and fallen or otherwise exposed electrical conductors until made safe
 - In contained or otherwise controlled workplaces (e.g. Power Stations & Sub Stations) the apparatus must be demarcated with barriers and signage fitted until made safe.
- Emergency switching must be performed by an authorised person as soon as practicable.
- Emergency switching must be under the direction of an Operating Authority Where contact cannot be made, emergency switching may be performed in line with switching authority and competencies.
- Where emergency services are required to access an area affected by electrical apparatus, the apparatus must be de-energised unless alternative controls are approved by the Operating Authority and communicated to emergency services.

Definitions

Acceptance Criteria

Predetermined conditions or performance thresholds that each test result must meet to be considered a pass during commissioning.

Arc Flash

A sudden, dangerous release of electrical energy that occurs when electric current leaves its intended path and travels through the air between conductive surfaces.

Arc Flash Boundary

The distance from a potential arc source at which an unprotected person would be exposed to incident energy capable of causing a second-degree burn, equal to 1.2 cal/cm^2 .

Authorised Person

A person formally authorised to undertake specified tasks and/or enter specified areas based on demonstrated qualifications, training and competency.

Commissioning

The process of planning, testing and verifying that new or modified electrical apparatus is installed correctly and operates safely and as intended.

Competent Person

A person who holds the required qualifications, licences and authorisations to perform a task, with competency evidenced through training records and the authorisation system.

Complex Works / Major Projects

Electrical works or projects of large scale, high complexity or elevated risk that require comprehensive planning, coordination and operational readiness.

Contact Area

The area within one metre of the nearest energised high-voltage apparatus while undertaking Glove and Barrier work.

Electrical Apparatus

Any equipment, plant, conductors, systems or components used for the generation, transformation, transmission, distribution, control, protection, storage or use of electricity.

Emergency

An incident or event that causes, or has the potential to cause, unacceptable impacts on Horizon Power or its stakeholders and requires an immediate and coordinated response.

EWP (Elevating Work Platform)

A mobile platform designed to raise or lower people and equipment from a supporting base using hinged, articulated or similar lifting mechanisms.

Exclusion Zone

A designated area around a hazard or work activity where entry is restricted to prevent injury or harm.

Functional Handover

Formal acceptance that nominated assets associated with complex works or major projects have achieved the required level of construction completion, testing and verification, satisfy acceptance criteria, contain no unresolved safety-critical defects and are ready for energisation.

Glove and Barrier

A high-voltage live work method using approved insulated gloves, sleeves and barriers to protect workers from energised apparatus.

Incident

An event or occurrence that results in, or has the potential to result in, injury, illness, damage, loss, environmental harm or asset harm.

Instructed Person

A person undertaking work under the supervision, guidance or direction of an Authorised Person.

Inspection and Test Plan (ITP)

A documented plan defining what will be inspected or tested, how and when verification will occur, the applicable acceptance criteria and the required records.

Isolation Process

An approved process used to secure isolation points and apply controls to prevent inadvertent operation or energisation.

JRA

Job Risk Analysis. A job specific risk assessment process completed by a work crew immediately prior to the commencement of work.

Live

Energised or subject to hazardous induced, capacitive or stored electrical energy.

Mobile Plant

Plant or machinery that is self-propelled and normally operated under the direct control of an operator.

Operating Authority

The authority responsible for operational control of electrical apparatus, an electricity network, or generation facility.

Ordinary Person

A person who is not authorised to undertake electrical work, operational activities, or access restricted operational areas.

Permit to Work

An approved process used to authorise, control and record work on, near or associated with electrical apparatus.

Potential

The presence of a voltage difference between two points capable of causing current flow.

Primary Electrical Apparatus

Equipment that directly generates, converts, switches, stores or conducts electrical energy within a power system.

Program Earth

Approved earthing or short-circuiting equipment applied as a requirement for the issue of a Permit to Work.

Safe Approach Distance (SAD)

The minimum distance that must be maintained between persons, plant, equipment, tools or conductive objects and live electrical apparatus unless approved controls are in place.

Safety Observer

A dedicated competent person assigned solely to continuously monitor the work activity and surrounding conditions and to immediately warn workers or stop work if unsafe conditions arise.

Service Connection Test (SCT)

A prescribed suite of tests performed on a customer's service connection to verify the integrity and safety of the connection between the network and the customer's installation.

Significant Incident

An incident with actual or potential consequences including fatality, permanent disabling injury, serious electrical injury, or regulatory enforcement action.

Switching Operator

A competent person authorised by the Operating Authority to perform switching activities.

Switching Schedule

A documented sequence of switching operations used to change the operating state of electrical apparatus.

Testing

A formal, evidence-based verification process used to confirm that equipment, systems and subsystems meet applicable design, specification, performance and safety requirements under controlled conditions.

Work Near

Work undertaken sufficiently close to electrical apparatus that electrical hazards may affect the safety of persons, plant or equipment.

Work On

Direct interaction with electrical apparatus, whether live or isolated and earthed.

Working Earth

Approved earthing or short-circuiting equipment applied following issue of a Permit to Work to maintain a safe work condition at or near the worksite.