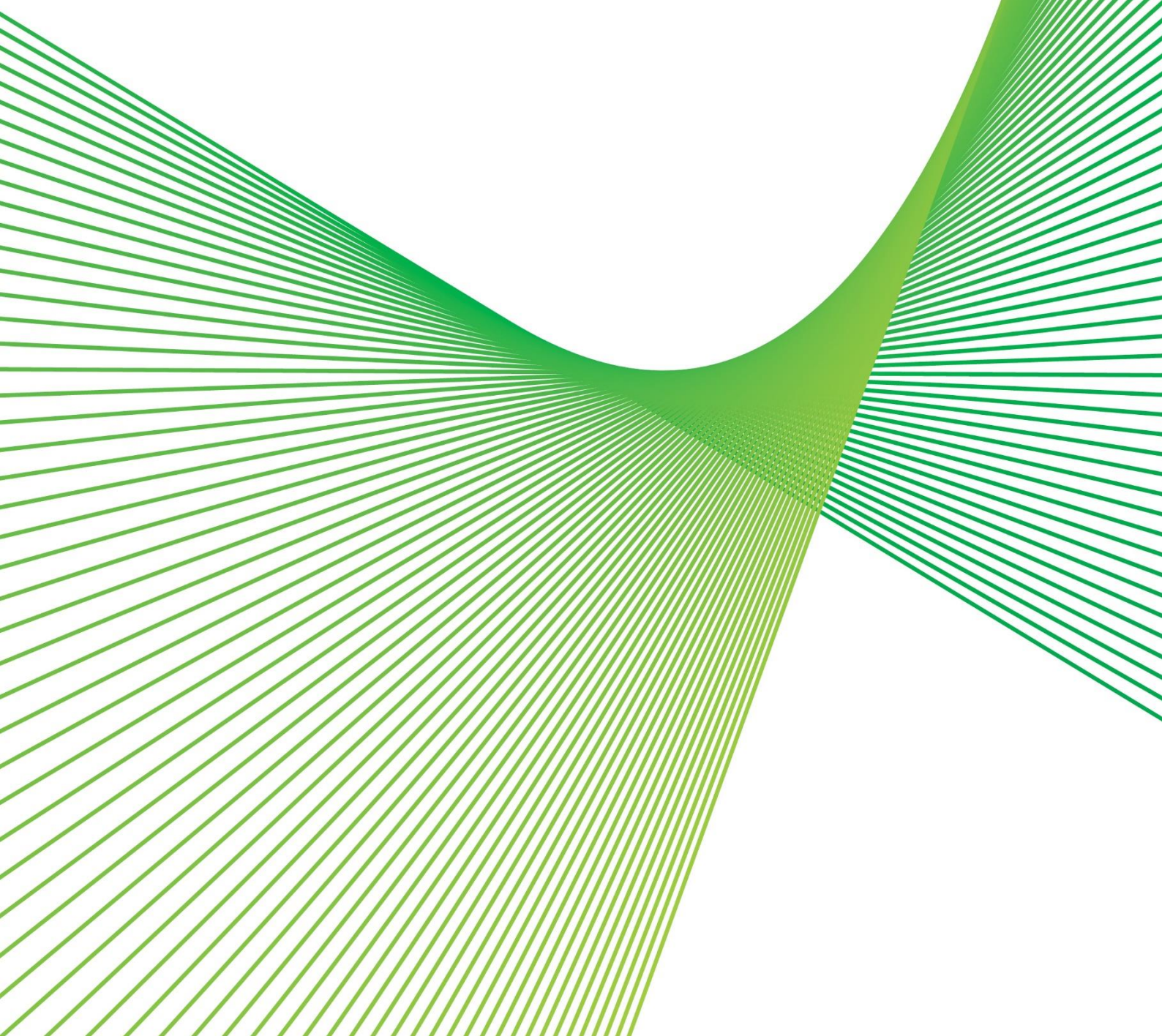




People. Power. Possibilities.

Power System Safety Rules

Revision 5.4



Summary					
This document sets out <i>approved</i> rules for safe access to substations, switchyards and to <i>Power System apparatus</i> .					
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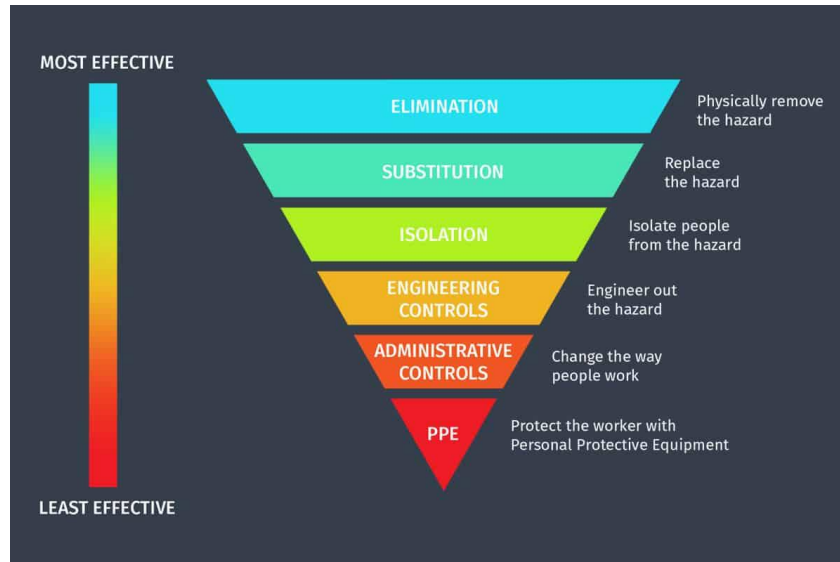
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Introduction

Purpose

Safety is Transgrid's highest priority, and the *Power System Safety Rules (PSSR)* are an essential part of Transgrid's Safety Management System. The PSSR are based on the 'Hierarchy of Controls' and were created to keep our people safe when exposed to the hazards of *working* on infrastructure such as *substations*, *transmission cables* and *transmission lines*.



Use of the word '*shall*' indicate mandatory provisions and use of the word '*should*' indicate advisory or discretionary provisions. Defined terms are identified in text by *italics* and are described in [Definitions](#).

Scope

This document sets out *approved* rules for safe access to substations, switchyards and to *Power System apparatus*.

Application

The PSSR apply to *Power System apparatus* located in or associated with:

- Substations, *switchyards* and *High Voltage (HV)* areas;
- *Transmission Cables*; and
- Transmission Lines.

Procedures associated with the application of the PSSR are set out in relevant supporting documents. These are in addition to the requirements of any Legislation, Codes of Practice or Guidelines.

Additional Jurisdictional Requirements

The PSSR stipulate the requirements for *work* in New South Wales (NSW) and the Australian Capital Territory (ACT). Other jurisdictions may have additional or unique requirements for *work*.

Work on equipment not *in the charge of a Controller*

Equipment not *in the charge of a Controller* includes electrical and *mechanical systems* which do not directly impact on the functioning of the *Power System*, for example *substation* electric gates; building auxiliary services including air conditioning or lighting and security *systems*.

Any electrical *work* of this type *shall* be performed in accordance with the requirements of the Safe Work Australia Code of Practice 'Managing Electrical Risks in the Workplace'.

Responsibilities

All persons *working* under the PSSR *shall* comply with them fully. If it is unclear how the PSSR are to be applied, it is the responsibility of the individual to seek clarification before proceeding. Any person found knowingly not complying with the PSSR will be subject to suspension or cancellation of their Authorisation. Wilful non-compliance will be treated as an extremely serious matter and may result in dismissal of the *worker* or *workers* concerned.

PSSR amendments *shall* be reviewed, endorsed, and approved in accordance with the PSSR Approval Strategy. The General Manager of Health Safety and Environment may temporarily suspend or amend any of these *Power System* Safety Rules in extraordinary circumstances when it is proper and safe to do so.

Training and Competency

Persons to be authorised under the PSSR *shall* be trained and *assessed* as *competent* in each of the relevant authorisations. Persons whose intended *work* duration is more than 3 days cumulative over 12 months *shall* not normally be engaged as *instructed persons* in preference to being authorised under the PSSR.

Authorised persons *shall* be re-assessed on their knowledge and application of the PSSR *applicable* to their categories of authorisation and other relevant pre-requisite requirements at intervals determined by the General Manager of Health Safety and Environment.

Supervision

- (a) Apprentices and trainees *shall* not be used in a way that would have them *working* unsupervised. They *shall* be supervised in accordance with the requirements of apprentice supervision *procedures*.
- (b) Any person who is not authorised under the PSSR for entry or the task they are required to perform is an *ordinary person*. In order to enter or perform *work* they must become an *instructed person*:
 - (i) An *instructed person* must be supervised and warned of site-specific risks to ensure their safety;
 - (ii) Ensuring *instructed persons* are safe is the responsibility of the designated supervisor.

Minimum Personal Protective Equipment (PPE)

All persons visiting or *working* at Transgrid *substations* or on transmission line and *cable* easements require the following PPE:

- (a) Full length clothing (shirt and trousers)
- (b) High visibility shirt or vest
- (c) Enclosed footwear
- (d) Safety glasses
- (e) Protective gloves

Additional PPE requirements

Certain *work* activities or *work* sites may require additional PPE, as determined by a *procedure*, *work* instruction, *risk assessment* or SWMS such as:

- (a) Safety helmet
- (b) Arc rated clothing
- (c) *Insulated* gloves and/or boots.

Work or Operating involving apparatus of other organisations

Access

Persons performing *work* on *apparatus* owned or under the operational control of another net *work* service provider within a Transgrid controlled boundary, *shall* be authorised in accordance with an *approved* Operating Agreement or Memorandum of Understanding (MOU). Where no agreement exists, the Transgrid *Power System* Safety Rules *shall* apply.

Apparatus of another Organisation installed in a Transgrid *substation*

Persons *working* on behalf of another organisation may *work* on or operate *apparatus* under their organisation's operational control within a Transgrid controlled boundary in accordance with the *procedures* of their organisation. If operational control is unclear or unknown, *work*, or operating activities *shall* not proceed until agreement is reached on who has operational control.

Isolation and/or earthing provided by another organisation

Where *work* at a Transgrid location requires another organisation to provide isolation and/or earthing using *apparatus* under their control, a clearance *shall* be obtained by the *Controller* in accordance with Transgrid's *procedures*. Where it is considered that the isolation or earthing is not adequate, additional precautions *shall* be taken before *work* commences.

Supporting Documentation

The following core documents outline additional *procedures* associated with the PSSR.



There may also be additional *procedures* and *work instructions* found at <https://www.Transgrid.com.au/working-at-Transgrid/workplace-safety/power-system-safety-rules>.

Emergency Provisions

De-energising apparatus in an emergency

In circumstances involving danger to life or damage to plant, *apparatus* may be *de-energised* by any person to eliminate the danger, provided they:

1. Consider that they can do so safely; and
2. The *Controller* is advised as soon as practicable.

Emergency requirements for Accessing Transmission Lines

Where there is immediate risk to human life or property that requires action regarded as *work* on or *near* transmission lines, *work* may proceed under the following conditions:

- (a) Receive approval from the Controller to commence emergency operations;
- (b) The conductors shall be isolated, proved de-energised and earthed (including the application of locks) at all sources of supply by a person authorised Category 9.1;
- (c) *Field Access Authority earths* shall be applied at the *work* location after proving *de-energised* by a person authorised Category 6.4. The requirements to apply *Do Not Operate Tags* and issue a *Field Access Authority* are not mandatory;
- (d) Persons *working* shall be under the continuous close and personal supervision of a person authorised Category 6.4; and
- (e) As soon as possible after the immediate emergency, normal safety precautions shall be applied.

Emergency Requirements for Accessing HV Substation Apparatus

Where there is immediate risk to human life or property that requires action regarded as *work* on or *near* *High Voltage exposed conductors*, *work* may proceed under the following conditions:

- (a) Receive approval from the Controller to commence emergency operations;
- (b) The *conductors* shall be *isolated*, proved *de-energised* and *earthed* (including the application of locks) by a person authorised Category 9.2;
- (c) The requirements to apply *Do Not Operate Tags*, erect a *designated work area* and issue an *Access Authority* are not mandatory;
- (d) Persons *working* shall be under the continuous close and personal supervision of a person authorised Category 5.4; and
- (e) As soon as possible after the immediate emergency, normal safety precautions shall be applied.

Structure of Authorisations

The *Power System Safety Rules* authorisations are permissions to access an area, perform a type of *work*, apply a specific control or execute a controlled process.

Category 1 Safe Access to Substations	Category 2. Network Access	Category 3 Substations	Category 4 LV/MECH	Category 5 Substations - HV
1.0 Substation Safe Access	2.1 Request for Access	3.1 Substations General	4.0 LV/MECH General	5.1 Working under a HV Access Authority
	2.2 Assessment of RFA	3.2 Not used	4.1 Receipt of a LV/MECH Access Authority	5.2 Receipt of a HV Access Authority
	2.3 Producing a HVPRI	3.3 Work in HV Areas	4.2 Issue LV/MECH Access Authority	5.3 Receipt of a HV Testing Access Authority
	2.4 Operating Switchgear via SCADA	3.4 Supervise Instructed persons	4.3 Operate LV/MECH Apparatus	5.4 Issue HV Access Authority
			4.4 Produce/Check LVMPRI	5.5 Disconnect Substation HV Apparatus

Category 6 Transmission Lines	Category 7 Transmission Cables	Category 8 Mobile Plant	Category 9 Field Operations	Category 10 Specific Functions
6.1 Transmission Lines General	7.1 Transmission Cables General	8.1 Safety Observer	9.1 Operate HV Apparatus Connection Point	10.1 Bridge Earthing TL Structure
6.2 Working under a Field Access Authority	7.2 Working under a Cable Access Authority	8.2 Mobile Plant Assessment	9.2 Operate HV Apparatus Advanced	10.2 Bridge Earthing Grids
6.3 Receipt of a Field Access Authority	7.3 Receipt of a Cable Access Authority			
6.4 Issue a Field Access Authority	7.4 Receipt of a Cable Testing Access Authority			
6.5 Disconnect Transmission Lines	7.5 Issue a Cable Access Authority			

1. Substation Safe Access

Persons authorised Category 1 may access Substations and HV areas for observation purposes only, including providing supervised access to visitors who are not authorised under the PSSR. Persons authorised Category 1 *shall* not:

- (a) Perform *work*;
- (b) Supervise *work*; or
- (c) Provide access for persons to perform *work*.

1.1. Substation Security

Substations and HV areas must be kept secure at all times to prevent access by *unauthorised persons*.

1.2. Safe Access

Visitors being supervised remain the responsibility of the person authorised Category 1 and *shall* not be left unattended at any time. The person authorised Category 1 and any visitors they are supervising *shall*:

- (a) Comply with PPE requirements for areas to be accessed;
- (b) Comply with *workplace risk assessment* and hazard board requirements;
- (c) Observe the requirements of signage, Warning and *Do Not Operate Tags*;
- (d) When accessing *High Voltage* areas:
 - (i) Check if anyone has medical implants and have them consult a physician before allowing access ;
and
 - (ii) Remain at ground level.
- (e) Persons authorised Category 1 and any visitors they are supervising *shall* not:
 - (i) Interfere with *Power System* controls or *apparatus*;
 - (ii) Open *LV/MECH* cabinets or tunnel boards;
 - (iii) Take long objects into HV areas or climb on HV structures.

2. Network Access

Network Access is the process of obtaining permission to *work on or near Power System apparatus in the charge of a Controller*.

2.1. Request for Access

To *work on or near Power System apparatus in the charge of a Controller*, a Request for Access (RFA) shall be submitted by a person authorised Category 2.1.

The submitter of the RFA shall ensure that:

- (a) The RFA accurately reflects the location of the *work*, the *apparatus* identification and the *description of work*.
- (b) An *approved earthing plan* is submitted for *work* on transmission lines outside a *substation* that involves the breaking of *conductors*.

2.1.1. Responsibilities of the Controller

The *Controller* shall ensure that the RFA is:

- (a) Assessed and *approved* by Network Operations prior to issue of an *Access Authority*; and
- (b) Assigned a unique number, cross-referenced to the *Access Authority*.

2.2. Assessment of a Request for Access (RFA)

Requests for Access shall be assessed by a person authorised category 2.2.

This assessment will establish:

- Whether the work as requested can be undertaken in accordance with these Rules.
- Whether the proposed timing of the work can be accommodated without having a detrimental impact on the security or reliability of the Power System.
- That, when required, an approved earthing plan has been submitted prior to the RFA being approved.

2.3. Producing a High Voltage Preparation and Restoration Instruction (HVPRI)

HVPRI shall be produced by a person authorised category 2.3.

- (a) A HVPRI shall be prepared in response to one or more Requests for Access where the description of work is assessed as requiring an Access Authority.
- (b) The HVPRI shall be:
 - (i) Prepared by a person authorised category 2.3.
 - (ii) Checked for correctness by a second person authorised under this category.
- (c) Each HVPRI shall have a unique reference number.
- (d) The HVPRI shall include:
 - (i) A reference to and a copy of the relevant RFAs;

- (ii) A description of each device and item of equipment that is to be rendered incapable of unintentional activation and the required status of those devices and equipment;
- (iii) A description of each device and item of equipment to which a tag is to be affixed and the type of tag;
- (iv) Steps required to ensure the integrity of the isolated apparatus if required, e.g., proving de-energised, etc.;
- (v) Steps required to carry out the preparation and restoration safely;
- (vi) Steps required for the granting or receipt of a clearance from another organisation;
- (vii) Means for recording the completion of each step, or related series of steps; and
- (viii) Where warnings are required.

2.3.1. Alteration to a High Voltage Preparation and Restoration Instruction

Alterations to HVPRI, once execution has commenced, shall be authorised by the Controller, who will determine whether making the required changes is acceptable. When the steps of a HVPRI are required to be altered, a person authorised category 2.3 shall:

- (a) Alter the HVPRI;
- (b) Ensure that the altered HVPRI includes steps requiring the cancellation of any affected Access Authority; and
- (c) Ensure that the altered HVPRI is checked for correctness by a second person authorised under this category.

2.4. Operating Switchgear via SCADA

Operating Switchgear via SCADA shall be carried out by a person authorised category 2.4.

SCADA provides remote control of switchgear and associated control systems from the System Operations Control Room.

Operating Switchgear via SCADA shall be in accordance with the PSSR and all associated documents.

3. Substations General

This section of the PSSR sets down requirements for ensuring the safety of personnel when *working* in *switchyards*, *substations* and *High Voltage* areas including *cable* tunnels.

Substation Security

Substations and HV areas *shall* be kept secure at all times to prevent access by *unauthorised persons*.

3.1. Work in Buildings and Carparks

General *work* at a *substation*, including buildings and carparks, *shall* be performed by persons authorised Category 3.1.

- (a) Prior to undertaking *work*, hazards *shall* be identified and controlled. The following hazards *shall* be considered:
 - (i) Near Approach to Energised High Voltage Conductors
 - (ii) Buried Services
 - (iii) Battery rooms and associated *systems*
 - (iv) LV and ELV exposed conductors
 - (v) Damage to or inadvertent operation of sensitive *apparatus*

3.1.1. Supervising instructed persons

Persons authorised Category 3.1 are *approved* to supervise *instructed persons* specifically engaged to assist them in carrying out their *work*.

- (a) All instructed persons shall be:
 - (i) Given warnings and/or demonstrations appropriate to the *work* being carried out; and
 - (ii) Adequately supervised at all times to ensure their safety.

3.2. Not Used

3.3. Work in HV Areas

Work within *switchyards* or HV areas *shall* be performed by persons authorised Category 3.3.

- (a) Persons authorised Category 3.3 *shall* not supervise *instructed persons* for *work* within a *switchyard* or HV area.
- (b) Prior to undertaking *work* in a *switchyard* or HV Area, hazards *shall* be identified and controlled. The following hazards *shall* be considered, and controls implemented:
 - (i) Near Approach to Energised High Voltage Conductors
 - (ii) Induced Voltages and Currents (Induction)
 - (iii) Enclosed Spaces
 - (iv) Earthing *Systems*
 - (v) Buried Services

(vi) *Work in the vicinity of HV Cables and Sealing Ends*

3.4. Supervise instructed persons

Instructed persons working in switchyards and HV areas shall be supervised by a person authorised Category 3.4.

- (a) All instructed persons shall be:
- (i) Given an appropriate entry briefing;
 - (ii) Given warnings and/or demonstrations appropriate to the *work* being carried out; and
 - (iii) Adequately supervised to ensure their safety.

4. LV/MECH (Low Voltage and Mechanical)

4.0. LV/MECH General

General access to panels, tunnel boards, secondary boxes and marshalling kiosks in the *vicinity* of *LV/MECH* shall be performed by persons authorised Category 4.0. This type of access includes:

- Visual inspection;
 - Design investigation; and
 - Auxiliary services located within or adjacent to *Power System apparatus*.
- (a) Prior to undertaking *work*, hazards shall be identified and controlled. The following hazards shall be considered for *LV/MECH* general *work*:
- (i) Exposed LV and ELV conductors;
 - (ii) Pressure Systems & Stored Energy; and
 - (iii) Rotating or moving parts.

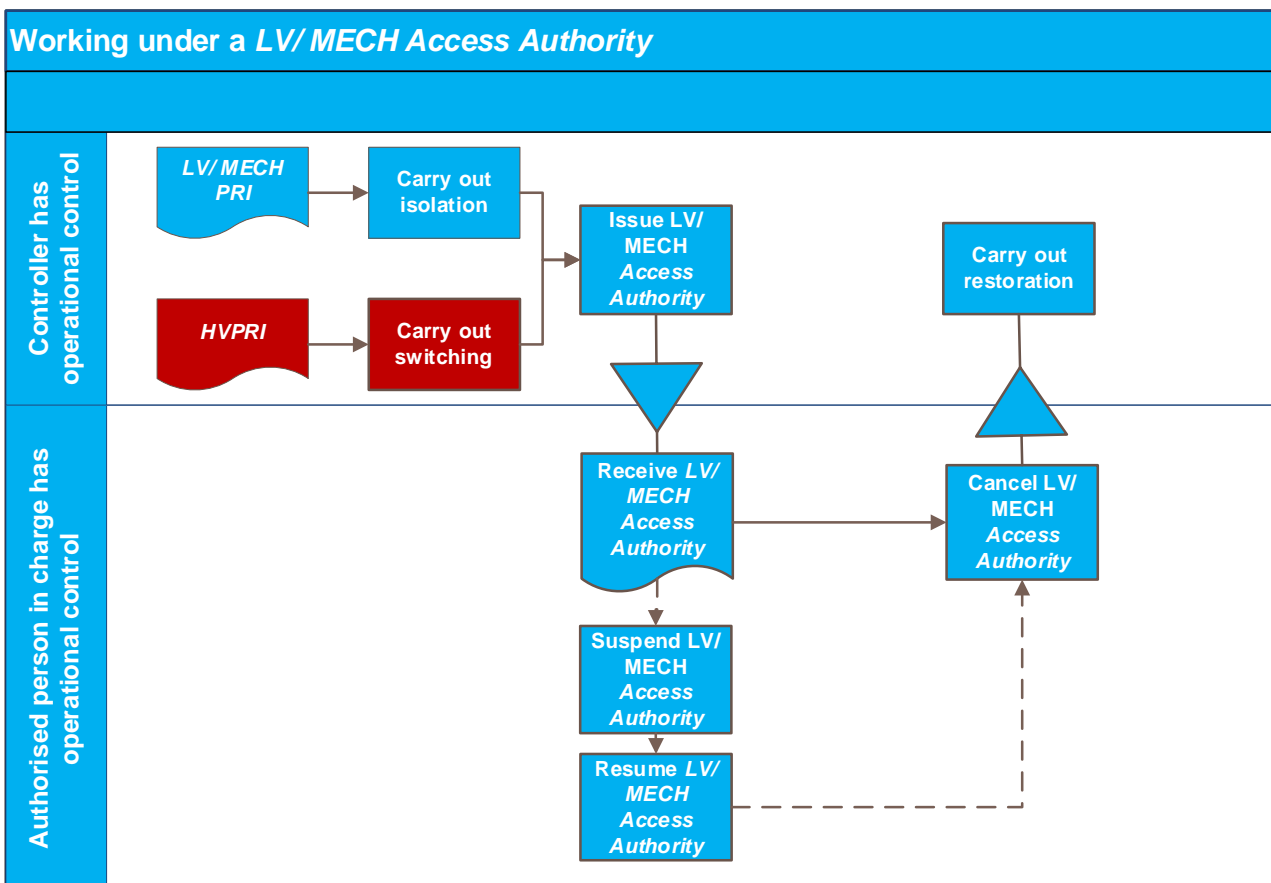
4.1. Working under a LV/MECH Access Authority

This section applies only to *LV/MECH apparatus in the charge of a Controller*. Work on Auxiliary services equipment not *in the charge of a Controller* is to be carried out under the requirements outlined in [‘Work on equipment not in the charge of a Controller’](#).

A *LV/MECH Access Authority* is required when work is to be performed on *Low Voltage or Mechanical apparatus in the charge of a Controller*. It is issued to provide a safe working environment for personnel when working on or near exposed conductors and to control access to apparatus which could affect the power system.

LV/MECH Access Authority Flow Chart

The following diagram illustrates the point at which operational control transfers from the *Controller* to the *Authorised person in charge* (i.e., the holder of the *LV/MECH Access Authority*).



4.1.1. Responsibilities of persons working under a LV/MECH Access Authority

All persons working under a *LV/MECH Access Authority* shall:

- (a) Participate in a pre-work risk assessment;
- (b) At the start of each day or shift, or upon returning after leaving site, sign on the *LV/MECH Access Authority* to indicate that they understand the warnings/demonstrations given and their responsibilities under the *LV/MECH Access Authority*;
- (c) Follow any safety directions given by the *authorised person in charge*;

- (d) If they temporarily leave the work area, check with the *authorised person in charge* or in their absence another person signed on the *LV/MECH Access Authority*, that they are in the correct work area before recommencing *work*;
- (e) Sign off the *LV/MECH Access Authority* at the completion of their *work* for each day/shift or when leaving site; and
- (f) Before recommencing *work* on any subsequent day or shift, verify that the conditions of the *LV/MECH Access Authority* covering the *apparatus* are still valid.

4.1.2. Receipt of a LV/MECH Access Authority

Persons authorised Category 4.1 are *approved* to perform the duties of the *authorised person in charge* and can receive / suspend / transfer / resume / cancel *LV/MECH Access Authorities*.

The *authorised person in charge* shall ensure:

- (a) The location, description of *apparatus*, *description of work* and the access required for *work* as shown on the *LV/MECH Access Authority* is identical to those on the relevant part on the *RFA*;
- (b) That the *apparatus* to be *worked* on is positively identified and is identical to that shown on the *LV/MECH Access Authority*;
- (c) They understand the warnings given by the issuer and their responsibilities under the *LV/MECH Access Authority*;
- (d) Before *work commences*, that all members of the *working party* have signed on the *LV/MECH Access Authority*;
- (e) Work is restricted to the description of work on the *LV/MECH Access Authority*;
- (f) The *LV/MECH Access Authority* is kept safe until it is cancelled;
- (g) *Additional control measures* are identified and applied so *work* can be carried out safely under the *LV/MECH Access Authority*;
- (h) That all persons required to *work* under the *LV/MECH Access Authority* are:
 - (i) Either authorised 4.1 or are given an appropriate briefing to enable them to *work* as *instructed persons*;
 - (ii) Informed as to the *apparatus* to be *worked* on, its identification details and the *description of work* to be carried out and the extent of access to the *apparatus*;
 - (iii) Given warnings and/or demonstrations appropriate to the *work* being carried out;
 - (iv) Conversant with the warnings/demonstrations given and their responsibilities under the *LV/MECH Access Authority*; and
 - (v) Signed off the *LV/MECH Access Authority* at the completion of their *work* for each day/shift or when leaving site.
- (i) That in the event of the *authorised person in charge* needing to temporarily leave the *work area* (< 15 minutes), instructions are given to all persons in the *working area* to ensure that the relevant provisions of the PSSR are observed during their absence;

4.1.3. Transfer of a LV/MECH Access Authority

Where there is a need to change the *authorised person in charge*:

- (a) The *authorised person in charge* shall ensure that the new recipient has received the *Access Authority* warnings and/or demonstrations from a person authorised Category 4.2;

- (b) The *LV/MECH Access Authority* shall be signed off by the person currently in receipt of the *LV/MECH Access Authority*;
- (c) The new recipient of the *LV/MECH Access Authority* shall be a person authorised Category 4.1 and sign on the *LV/MECH Access Authority*; and
- (d) The *Controller* shall be notified of the new recipient.

4.1.4. Suspension of a LV/MECH Access Authority

Suspension of a *LV/MECH Access Authority* is required when *work* is to cease for a period and may remain suspended for a period not exceeding seven days except at the discretion of the *Controller*.

When a *LV/MECH Access Authority* is to be suspended, the *authorised person in charge* shall ensure that:

- (a) All persons *working* under the *Access Authority* have signed off, to indicate that permission to *work* is suspended;
- (b) The *Access Authority* is endorsed to indicate that the *apparatus* is serviceable/ is not serviceable;
- (c) The *Controller* is notified of the suspension of the *work* and whether the *apparatus* is/is not serviceable so far as this *work* is concerned; and
- (d) The *Access Authority*, together with attachments, is *delivered* to the *substation* control point.

4.1.5. Alterations to conditions of work under a LV/MECH Access Authority

Where the description of *apparatus* and/or the *description of work* shown on a *LV/MECH Access Authority* is to be altered:

The *LV/MECH Access Authority* requiring the alteration(s) shall be cancelled.

4.1.6. Resumption of Work Following Suspension of a LV/MECH Access Authority

When resuming *work* following suspension of a *LV/MECH Access Authority*:

- (a) If the *authorised person* is the person who held the *LV/MECH Access Authority* immediately prior to suspension, then the *authorised person in charge* shall:
 - (i) Obtain permission from the *Controller*;
 - (ii) Sign on the *LV/MECH Access Authority* as the authorised person in charge;
 - (iii) Allow all persons signed onto the *LV/MECH Access Authority* prior to its suspension to sign back on; and
 - (iv) Ensure any persons not signed on to the *LV/MECH Access Authority* prior to its suspension receive appropriate warnings.
- (b) If the *authorised person* is not the person who previously held the *LV/MECH Access Authority*, then the *authorised person* shall comply with 'Transfer of a *LV/MECH Access Authority*'.

4.1.7. Cancellation of a LV/MECH Access Authority

On completion of *work*, the *authorised person in charge* shall cancel the *LV/MECH Access Authority* by:

- (a) Prior to cancellation, carry out necessary checks to confirm:
 - (i) All additional control measures have been restored and tools are removed;
 - (ii) That all persons signed on the *LV/MECH Access Authority* have signed off;
 - (iii) Whether any warnings or adjustments are required prior to or on return to service; and

- (iv) Whether *apparatus* is serviceable or not.
- (b) Cancel the LV/MECH Access Authority by:
 - (i) Completing the cancellation section of the *LV/MECH Access Authority*;
 - (ii) Ensuring that the necessary details are communicated to the *Controller*; and
 - (iii) *Delivering* the cancelled *LV/MECH Access Authority* to the relevant control point or directly to the person responsible for the restoration of *apparatus*.

4.1.8. Receipt of LV/MECH Testing Access Authority

A *LV/MECH Testing Access Authority* shall be issued where the *work* includes:

- (a) Modifications of some or all safety isolations are required for the *work* on the *LV/MECH apparatus in the charge of a Controller*
- (b) The use of a *test* source, which is capable of producing currents hazardous to the human body, on the *conductors* of the *electrical apparatus*; or
- (c) The application of Extra Low Voltages or *voltages* produced by an insulation *testing* device operating at 1,000 volts or below, connected to *electrical apparatus* with a capacitance greater than 4,000 pF.

In addition to the requirements of receiving an *LV/MECH Access Authority*, the *authorised person in charge* shall:

- (d) Instruct those persons *working* under the *LV/MECH Testing Access Authority* regarding *work* that may proceed safely during the *testing* and provide any additional warnings that may be *applicable*; and
- (e) Ensure that the *apparatus* is left in a safe condition.
- (f) That *workers* are warned whenever the hazards associated with *working* on the *apparatus* change due to the application of *test voltages* or the restoration or removal of electrical or *mechanical* energy isolations.

4.1.9. Transfer of a LV/MECH Testing Access Authority

In addition to the requirements of '[Transferring a LV/MECH Access Authority](#)' the new *authorised person in charge* shall:

- (a) Verify the status of the *test* devices and all other equipment associated with the *testing*; and
- (b) Understand the warnings, instructions and *applicable* demonstrations regarding the devices and equipment that may be operated in conjunction with the *test*.

4.2. Issue of LV/MECH Access Authority

- (a) The issue of a *LV/MECH Access Authority* shall be carried out by a person authorised Category 4.2;
- (b) More than one *LV/MECH Access Authority* may be issued using the same *PRI*, provided that the *PRI* covers all the descriptions of *apparatus* and *descriptions of work* as requested;

4.2.1. Responsibilities of the person issuing a LV/MECH Access Authority

The person issuing the *LV/MECH Access Authority* shall ensure that:

- (a) The person receiving the *LV/MECH Access Authority* is a person authorised Category 4.1;
- (b) Each *LV/MECH Access Authority* shall have a unique number provided by the *Controller*;

- (c) The location, the description of *apparatus*, the *description of work* and the nominated access required for *work* set out on the *LV/MECH Access Authority* are identical to those stated in the relevant parts on the *RFA*;
- (d) The steps of the *PRI* relevant to the *description of work* on the *LV/MECH Access Authority* to be issued, have been recorded as having been carried out;
- (e) The *LV/MECH Access Authority* number received from the *Controller* is recorded;
- (f) The *LV/MECH Access Authority* is not issued if it is not safe for the *work* to proceed;
- (g) All required applicable warnings are entered on the *LV/MECH Access Authority*, and are communicated to the *authorised person in charge* and any members of the *working party* present;
- (h) The *LV/MECH apparatus* which is safe to *work* on is demonstrated and the precautions taken to make the *LV/MECH apparatus* safe to *work* on are demonstrated, including points of isolation and *Do Not Operate Tags*.
- (i) The *LV/MECH Access Authority* is endorsed as having been issued; and
- (j) The details of the issued *LV/MECH Access Authority* are communicated to the *Controller*.

4.2.2. Additional responsibilities of the authorised person issuing a LV/MECH Testing Access Authority

In addition to the requirements of issuing a *LV/MECH Access Authority*, the *authorised person* shall ensure that:

- (a) A *testing Access Authority* is not issued where the *test* as requested may affect the safety of personnel *working* under another *Access Authority*;
- (b) *Warning Tags* are affixed to all control points that are able to operate the *apparatus* during the *test*, in accordance with the *PRI*; and
- (c) Warnings, instructions, and applicable demonstrations are given to the person in charge of the *test*.

4.2.3. Responsibilities of the Controller

The *Controller* shall ensure that the following details are recorded:

- (a) *LV/MECH* or *LV/MECH Testing Access Authority* number;
- (b) Time and date of issue, suspension, transfer, resumption and cancellation of the *LV/MECH* or *LV/MECH Testing Access Authority*; and
- (c) Authorised person to whom the *LV/MECH* or *LV/MECH Testing Access Authority* is issued.

4.3. Operate LV/MECH Apparatus

- (a) Operations shall be carried out under the direction of the *Controller*;
- (b) All messages relating to the operation of *Low Voltage apparatus* shall be logged:
 - (i) In describing *apparatus*, the *apparatus* shall be given its full name and number;
 - (ii) The purpose of each message and the time of transmission shall be recorded.
- (c) Preparation and Restoration *work* associated with a *LVMPRI* or *PMWI* shall not be regarded as *work* on or near *Low Voltage exposed conductors* when carrying out electrical operating *work* in accordance with *approved procedures*.

- (d) *LV/MECH* Field operations associated with:
- (i) *LVMPRI*s, shall be performed by a person authorised Category 4.3.

4.3.1. Operate LV/MECH Apparatus - LVMPRI

Before *work* commences on or *near LV/MECH apparatus* the following shall be carried out:

4.3.1.1. LV Isolation

- (a) Ensure that *exposed conductors* are *isolated* from all sources of *supply*;
- (b) Where practical, circuit isolating devices shall be locked open and/or covers locked to prevent the circuits from being *energised*, and *Do Not Operate Tags* or *Warning Tags* affixed as specified in the *LVMPRI*;
- (c) Where power and/or control fuses or plug-in circuit breakers are installed, the fuse carriers or circuit breakers shall be removed and *Do Not Operate Tags* or *Warning Tags* affixed as specified in the *LVMPRI*;
- (d) Prove the exposed conductors de-energised with an approved testing device; and
- (e) Where hazardous *voltages* are likely to be present:
 - (A) Use live working procedures; or
 - (B) Earth and short-circuit the *exposed conductors* in an *approved* manner.

4.3.1.2. MECH Isolation

- (a) Ensure mechanical apparatus is isolated;
- (b) Discharge all sources of energy within the limits of the isolation; and
- (c) Take appropriate measures to secure any discharge point or vent and affix *Do Not Operate Tags* or *Warning Tags* as appropriate. Where practical, devices used for this purpose shall be locked to prevent inadvertent operation
- (d) Prove the effectiveness of the isolation.

4.3.1.3. Restoration of LV/MECH Apparatus

The *authorised person* restoring the *apparatus* shall:

- (a) Ensure all relevant Access Authorities are cancelled;
- (b) Ensure *apparatus* is in a suitable state to return to service;
- (c) Have approval from the *Controller* to commence restoration; and
- (d) Restore the *apparatus* per the *LVMPRI*.

4.3.2. LV/MECH Fault Finding or Operating Work

- (a) All exposed conductors and electrical apparatus shall be regarded as energised until isolated and proved de-energised.
- (b) Before commencing *work* on or *near energised LV* and/or *ELV exposed conductors*, the *authorised person* shall:
 - (i) Identify the voltage of the exposed conductors;
 - (ii) Ensure that *approved safe working* methods will be used; and

- (iii) Take suitable precautions by screening or other means to avoid inadvertent contact with *energised LV and ELV exposed conductors* or earth.

4.4. Produce/Check LVMPRI

LV/MECH Preparation and Restoration Instructions (LVMPRI) shall be prepared where the *description of work* is assessed as requiring *LV/MECH* safety:

- (a) The LVMPRI shall be:
 - (i) Prepared by a person authorised Category 4.4; and
 - (ii) Checked for accuracy by a second person authorised Category 4.4.
- (b) Each *LVMPRI* shall have a unique reference number; and
- (c) The *LVMPRI* shall include:
 - (i) A description of each device and item of equipment that is to be rendered incapable of unintentional activation and the required status of those devices and equipment;
 - (ii) A description of each device and item of equipment to which a tag is to be affixed, including the type of tag;
 - (iii) Steps required to confirm the effectiveness of the isolations e.g., proving *de-energised*, draining, venting, etc.;
 - (iv) Steps required to carry out the preparation and restoration safely;
 - (v) Steps required for the granting or receipt of a clearance from another organisation;
 - (vi) Means for recording the completion of each step, or related series of steps; and
 - (vii) Where warnings are required.

5. Substation HV Access

5.1. Working under a HV Access Authority

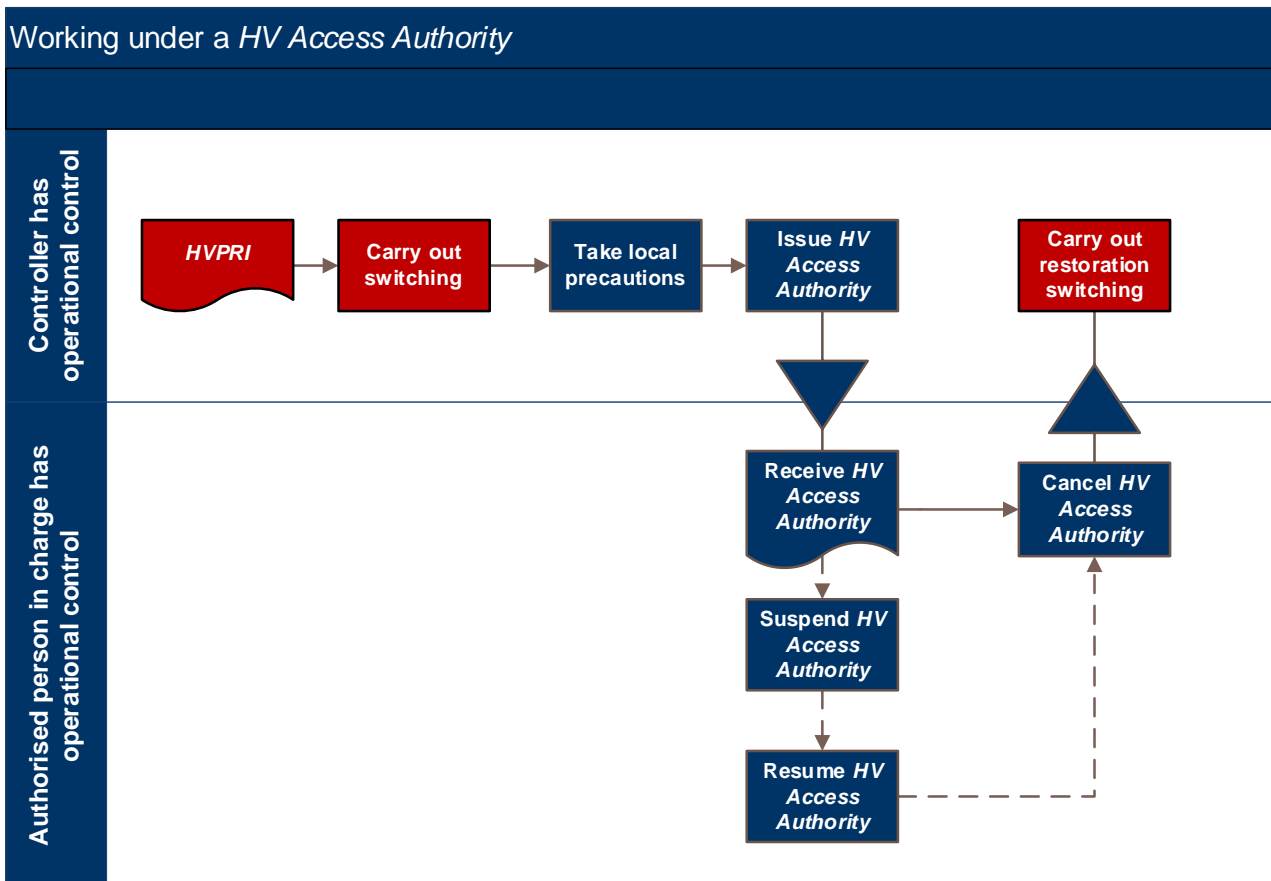
A *HV Access Authority* is required when *work* is to be performed on or *near substation HV apparatus in the charge of a Controller*. A *HV Access Authority* is issued to provide a safe working environment for personnel when *working on or near exposed conductors*.

A *HV Access Authority* is only applicable to *apparatus* within a *switchyard*. The *switchyard fence* is the physical limit of the *Access Authority*. For *work* on the landing span of transmission line, both a *HV Access Authority* (covering the *work* within the *switchyard*) and a *Field Access Authority* (covering the landing span outside the *switchyard* fence) are required.

Work on HV cables entirely within a *substation* shall be undertaken in accordance with the requirements of this section of the PSSR.

HV Access Authority Flow Chart

The following diagram illustrates the points at which operational control transfers from the *Controller* to the *Authorised person in charge* (recipient of the *HV Access Authority*).



5.1.1. Responsibilities of persons working under a HV Access Authority

All persons *working* under a *HV Access Authority* shall:

- (a) Be authorised Category 5.1 or *work* as an *instructed person*;

- (b) At the start of each day or shift, or upon returning after leaving site, sign on the *HV Access Authority* to indicate that they understand the warnings/demonstrations given and their responsibilities under the *HV Access Authority*;
- (c) Follow any safety directions given by the *authorised person in charge*;
- (d) If they temporarily leave the *designated work area*, check with the *authorised person in charge* or in their absence another person signed on the *HV Access Authority*, that they are in the correct *designated work area* before recommencing *work*;
- (e) Sign off the *HV Access Authority* at the completion of their *work* for each day/shift or when leaving site; and
- (f) Before recommencing *work* on any subsequent day or shift, verify that the conditions of the *HV Access Authority* covering the *apparatus* are still valid.

5.1.1.1. Entry to designated work areas (DWA)

Persons shall only enter a *designated work area*:

- (a) When signed on to the *HV Access Authority*;
- (b) With the permission of the *authorised person in charge* subject to any safety directions given; and
- (c) Only enter or leave the *designated work area* using the *approved* entrance.

5.2. Receipt of a HV Access Authority

A *HV Access Authority* shall be received by a person authorised Category 5.2.

5.2.1. Responsibilities of the Authorised person in charge (authorised person in charge)

Persons authorised Category 5.2 are *approved* to perform the duties of the *authorised person in charge* and can receive / suspend / transfer / resume / cancel *HV Access Authorities*.

The *authorised person in charge* shall ensure:

- (a) The location, description of *apparatus*, *description of work* and the access required for *work* as shown on the *HV Access Authority* is identical to those on the relevant part on the *RFA*;
- (b) They understand the warnings given by the issuer and their responsibilities under the *HV Access Authority*;
- (c) That the *apparatus* to be *worked* on is positively identified and is identical to that shown on the *HV Access Authority*;
- (d) All members of the *working party* have signed on the *HV Access Authority*;
- (e) *Work* is restricted to the description of *work* on the *HV Access Authority*;
- (f) The *HV Access Authority* is displayed at the entrance to the *designated work area*;
- (g) The *HV Access Authority* is kept safe until it is suspended or cancelled;
- (h) There is a minimum of one additional person authorised Category 5.1, always signed on the *HV Access Authority*;
- (i) *Additional control measures* are identified and applied, so *work* can be carried out safely under the *HV Access Authority*;
- (j) That all persons required to enter the *designated work area* are:

- (i) Either authorised Category 5.1 or are given warnings and/or demonstrations appropriate to the *work* being carried out and adequately supervised to enable them to *work as instructed persons*;
 - (ii) Informed as to the *apparatus* to be *worked* on, its identification details and the *description of work* to be carried out and the extent of access to the *apparatus*;
 - (iii) Given warnings and/or demonstrations appropriate to the *work* being carried out;
 - (iv) Conversant with the warnings/demonstrations given and their responsibilities under the *HV Access Authority*;
 - (v) Enter or leave the *designated work area* using the *approved* entrance; and
 - (vi) Signed off the *HV Access Authority* at the completion of their *work* for each day/shift or when leaving site.
- (k) If it is necessary to make a temporary additional entrance to the *designated work area* to permit the passage of plant or materials, precautions are taken to ensure that the safety of persons *working* under the *HV Access Authority* are maintained and that the temporary additional entrance is closed as soon as the task has been completed;
 - (l) That in the event of the *authorised person in charge* needing to temporarily leave (< 15 minutes) the *designated work area*, instructions are given to all persons in the *work* area to ensure that the relevant provisions of the PSSR are observed during their absence;
 - (m) That *should* the whole *work* party temporarily leave the *designated work area* the *Access Authority* remains displayed at the entrance to the *designated work area* and the entrance is closed off. On returning to the *designated work area*, confirm that the *apparatus* is in the same condition as when it was left.
 - (n) That *bonding leads* are applied to ensure equipotential conditions are maintained between *mobile plant* and *conductors* during the *work*;
 - (o) That *bridging leads* are applied, where necessary, to maintain a current path when a *conductor* is to be broken or disconnected;
 - (p) Any *unearthed conductors* are *earthed* prior to being accessed by the *work* party;
 - (q) *Working earths* are only applied to *conductors* within the *designated work area*, once it has been proved safe to do so, in accordance with *approved procedures*.
 - (r) That any equipment that can store capacitive charge *shall* be fully discharged using a suitable means of earthing before approaching, or *working* on or *near* the *apparatus*, and before *working* on the *apparatus* after electrical *testing* has been performed.

5.2.2. Testing permitted under a HV Access Authority

When the proposed *test* involves a *test* source which is not capable of producing currents hazardous to the human body and *Access Authority earths* are unaffected, *testing* may be carried out without a *testing Access Authority*, provided the person in charge of the *test*:

- (a) Warns any persons who could make inadvertent contact with the *conductors* during the course of the *test*, that *voltage* is to be applied and, in return, obtain an assurance that they will remain clear of the *conductors* during the *test*;
- (b) Ensures at the conclusion of the *work* any *apparatus* under *test* which may have become electrically charged during the course of the *test* is fully discharged and left in a safe condition; and

- (c) Ensures that the *test* source is not connected to *electrical apparatus* with a capacitance greater than 4,000 pF.

5.2.3. Transfer of a HV Access Authority

Where there is a need to change the *authorised person in charge*:

- (a) The *authorised person in charge* shall ensure that the new recipient has received the *Access Authority* warnings and/or demonstrations from a person authorised Category 5.4;
- (b) The *HV Access Authority* shall be signed off by the person currently in receipt of the *HV Access Authority*;
- (c) The new recipient of the *HV Access Authority* shall be a person authorised Category 5.2 and sign onto the *HV Access Authority*; and
- (d) The Controller shall be notified of the new authorised person in charge.

5.2.4. Alterations to conditions of work under a HV Access Authority

Where the description of *apparatus* and/or the *description of work* shown on a *HV Access Authority* is required to be altered:

- (a) The *HV Access Authority* requiring the alteration(s) shall be cancelled.

5.2.5. Suspension of a HV Access Authority

Suspension of a *HV Access Authority* is required when *work* is to cease for a period and may remain suspended for a period not exceeding seven days except at the discretion of the *Controller*.

When a *HV Access Authority* is to be suspended, the *authorised person in charge* shall ensure that:

- (a) All persons *working* under the *HV Access Authority* have signed off, to indicate that permission to *work* is suspended;
- (b) The *HV Access Authority* is endorsed to indicate that the *apparatus* is serviceable / is not serviceable;
- (c) The entrance to the *designated work area* is closed off;
- (d) The *Controller* is notified of the suspension of the *work* and whether the *High Voltage apparatus* is/is not serviceable so far as this *work* is concerned; and
- (e) The *HV Access Authority*, together with attachments, is delivered to the *substation* control point.

Where a *HV Access Authority* has been suspended as serviceable and *apparatus* is required for immediate service, the *HV Access Authority* may be cancelled at the direction of the *Controller*.

5.2.6. Resumption of Work Following Suspension of a HV Access Authority

When resuming *work* following suspension of a *HV Access Authority*:

- (a) If the *authorised person* is the person who held the *HV Access Authority* immediately prior to suspension, then the *authorised person in charge* shall:
 - (i) Obtain permission from the *Controller*;
 - (ii) Sign on the *HV Access Authority* as the authorised person in charge;
 - (iii) Allow all persons signed onto the *HV Access Authority* prior to its suspension to sign back on; and
 - (iv) Ensure any persons not signed on to the *HV Access Authority* prior to its suspension receive appropriate warnings.

- (b) If the *authorised person* is not the person who previously held the *HV Access Authority*, then the *authorised person shall* comply with '[Transfer of a HV Access Authority](#)'.

5.2.7. Cancellation of a HV Access Authority

On completion of *work*, the *authorised person in charge shall*:

- (a) Prior to cancellation, carry out necessary checks to:
- (i) Confirm all additional control measures have been restored and tools are removed;
 - (ii) Confirm that all persons signed on the *HV Access Authority* have signed off;
 - (iii) Confirm whether any warnings or adjustments are required prior to or on return to service; and
 - (iv) Confirm whether *apparatus* is serviceable or not.
- (b) Cancel the HV Access Authority by:
- (i) Closing off the entrance to the *designated work area*;
 - (ii) Completing the cancellation section of the *HV Access Authority*;
 - (iii) Ensuring that the necessary details are communicated to the *Controller*; and
 - (iv) *Delivering* the cancelled *HV Access Authority* to the relevant control point or directly to the person responsible for the restoration of *apparatus*.

5.3. Receipt of a HV Testing Access Authority

A HV Testing *Access Authority shall* be issued where the *work* includes:

- (a) The removal and/or replacement of *Access Authority earths*;
- (b) The use of a *test source*, which can produce currents hazardous to the human body, on the *conductors of High Voltage electrical apparatus*; or
- (c) The application of Extra *Low Voltages* or *voltages* produced by an insulation *testing* device operating at 1,000 volts or below, connected to *electrical apparatus* with a capacitance greater than 4,000 pF.

Persons authorised Category 5.3 are *approved* to perform the duties of the *authorised person in charge* and can receive / suspend / resume / cancel *HV Testing Access Authorities*.

5.3.1. Responsibilities of the authorised person in charge of a HV Testing Access Authority

In addition to the requirements of receiving a *HV Access Authority* the *authorised person in charge shall*:

- (a) Have knowledge of the *work*, verify the status of the *test* devices and control the *testing*;
- (b) Instruct those persons *working* under the *HV Testing Access Authority* regarding *work* that may proceed safely during the *testing* and provide any additional warnings that may be applicable;
- (c) Direct the control of the switching of the *test source energising* the *conductors* covered by the *HV Testing Access Authority*;
- (d) Ensure adequate communications are maintained with all persons involved in the *testing*;
- (e) Warn any person:
 - (i) In the *vicinity* of the *conductors* under *test* that *voltage* is to be applied and in return receive an assurance that such person will remain clear of such *conductors* during the *test*; and

- (ii) Signed on the HV Testing *Access Authority* that they can only *work* on or *near* the *conductors* under *test* when the *authorised person in charge* is present to show such persons which *conductors* are safe to approach.
- (f) Where induced or *test voltages* could be present, ensure that safe *working* methods are used which restrict persons coming within the *Safe Approach Distance* of *energised conductors* and any *testing* equipment or connection leads;
- (g) Ensure that for the duration of electrical *testing*, the entrance to the *designated work area* is closed and an *approved* notice warning that electrical *testing* is in progress is erected at this closed entrance;
- (h) If any *exposed conductors* to which *test voltages* are to be applied are out of sight of the person switching the *test* source, ensure that *approved* notices are placed to warn against approach to the *exposed conductors* at such points and either:
 - (i) A person is posted to warn others not to approach the *exposed conductors* during the *test*; or
 - (ii) Fences or equivalent *barriers* are erected, or shutters closed to prevent any person gaining inadvertent access to the *exposed conductors*.
- (i) If the *testing* is being carried out by a 3rd party, they *shall* be accompanied at all times during the electrical *test* by a person with sufficient knowledge of the *work* and the *test* devices, to confirm with the person in charge of the electrical *test* that the *High Voltage conductors* being *tested* are safe to be touched or approached whenever this becomes necessary during the progress of the electrical *test*; and
- (j) Ensure that, at the conclusion of the *work*, any *apparatus* under *test* which may have become electrically charged during the course of the *test* is fully discharged and left in a safe condition.

5.3.2. Special requirements HV Testing

Equipment under the test shall be adequately isolated from the Power System or any other work party by opening disconnectors and/or removing conductors as required. A section of earthed conductor shall be provided between these points of isolation and the apparatus under test.

The earth on this section shall not be removed under the testing Access Authority and shall be identified with a Do Not Operate Tag.

This is not required when:

- The *test voltage* is less than 3000 volts; or
- The *test voltage* is less than ten per cent (10%) of the *nominal voltage* of the equipment under *test*; or
- The points of isolation are provided by a racked-out circuit breaker on totally enclosed apparatus.

5.3.3. Transfer of a HV Testing Access Authority

In addition to the requirements of Transferring a *HV Access Authority* the new *authorised person in charge* shall:

- (a) Verify the status of the *test* devices and all other equipment associated with the *testing*; and
- (b) Understand the warnings, instructions and applicable demonstrations regarding the devices and equipment that may be operated in conjunction with the *test*.

5.4. Issue HV or HV Testing Access Authority

The issue of a *HV* or *HV Testing Access Authority* shall be carried out by a person authorised Category 5.4.

More than one *HV Access Authority* may be issued using the same *PRI*, provided that the *PRI* covers all the descriptions of *apparatus* and *descriptions of work* as requested.

5.4.1. Responsibilities of the authorised person issuing a HV Access Authority

The *authorised person* issuing a *HV Access Authority* shall ensure that:

- (a) The person receiving the *HV Access Authority* is a person authorised Category 5.2;
- (b) A *HV Access Authority* is not issued where the *work* as requested would affect the safety of personnel working under another *Access Authority*;
- (c) The steps of the *PRI* relevant to the *description of work* on the *HV Access Authority* to be issued, have been recorded as having been carried out;
- (d) Where *GIS* switchgear is used for isolation, gas pressure on that *GIS* switchgear is adequate;
- (e) The unique *Access Authority* number received from the *Controller* is recorded on each *HV Access Authority*;
- (f) The *HV Access Authority* is not issued if it is not safe for the *work* to proceed;
- (g) The location, the description of *apparatus*, the *description of work* and the nominated access required for *work* set out on the *HV Access Authority* are identical to those stated in the relevant parts on the *RFA*;
- (h) Prior to issuing the *HV Access Authority*:
 - (i) The designated work area is established using an approved procedure;
 - (ii) All required applicable warnings are entered on the *HV Access Authority*, and are communicated to the *authorised person in charge* and any members of the *working party* present;
 - (iii) The *working party* is assembled at the *designated work area*;
 - (iv) The *conductors* which are safe to *work* on are identified and the precautions taken to make the *conductors* safe for *work* are demonstrated, including local points of isolation, *Do Not Operate Tags* and *Access Authority earths*;
 - (v) A demonstration is given to the satisfaction of the *working party* that any *unearthed* or remotely *earthed conductors* are safe to *work* on or *near*;
 - (vi) The *working party* are warned of the dangers of *near* approach to *energised High Voltage apparatus* and *LV/MECH apparatus*.
 - (vii) The *working party* are warned to confine their *work* to the *designated work area*, the *work* as described on the *HV Access Authority* and of their responsibilities under [Working under a HV Access Authority](#);
 - (viii) The *working party* are warned of any *conductors* in the *work* area which are, or which could become, *unearthed* during the *work*.
- (i) The *HV Access Authority* is endorsed as having been issued;
- (j) The details of the issued *HV Access Authority* are communicated to the *Controller*.

5.4.2. Additional requirements when issuing a HV Testing Access Authority

In addition to the requirements of issuing a *HV Access Authority*, the *authorised person shall* ensure that:

- (a) The person receiving the *HV Testing Access Authority* is a person authorised Category 5.3;
- (b) *Warning Tags* are affixed to all control points that are able to operate the *apparatus* during the *test*, in accordance with the *PRI*;
- (c) Warnings, instructions and applicable demonstrations are given to the person in charge of the *test*;
- (d) Confirmation has been received from the *Controller* that all current *Access Authorities*, for *work* on or *near* the *conductors* required to be electrically *tested*, are suspended; and
- (e) The planned *test voltages shall* not exceed those specified on the *RFA*.
- (f) A *testing Access Authority* must not be issued where the *test* as requested may affect the safety of personnel *working* under another *Access Authority*;
- (g) Where two or more *HV Testing Access Authorities* are issued on the same *conductors*, then the *HV Testing Access Authorities shall* be:
 - (i) Cross referenced on each *HV Testing Access Authority*; and
 - (ii) Issued to the same person where the *designated work areas* are at a single site.

NOTE: The cross referenced *HV Testing Access Authorities* are deemed to be part of the one *HV Testing Access Authority* issued to the *authorised person in charge* of the electrical *test* at the *test* source location.

5.4.3. Responsibilities of the Controller

The *Controller shall*:

- (a) Ensure that the following details are recorded:
 - (i) HV or HV Testing *Access Authority* number;
 - (ii) Time and date of issue, suspension, transfer, resumption, and cancellation of the *HV or HV Testing Access Authority*; and
 - (iii) *Authorised person* to whom the HV or HV Testing *Access Authority* is issued.
- (b) If there is a section(s) of *earthed conductor* providing separation described in '[Special requirements HV Testing Access Authorities](#)', then this earth *shall* be identified by a *Do Not Operate Tag*.
- (c) Ensure that where a *HV Testing Access Authority* is to be issued on *conductors* leaving a *switchyard* and another *work* party requires access to those *conductors* at a different location. Two sets of *Do Not Operate Tagged Access Authority earths* are applied between the *work* parties, from each point of supply.

5.5. Disconnect Substation HV Apparatus

Disconnected Substation HV *Apparatus* may be made safe for *work* and excluded from the *Access Authority* requirements of the *PSSR*.

Disconnected Substation HV *Apparatus shall* be *approved* by a person authorised Category 5.5.

Note: HV *Apparatus* being prepared for installation/transport or being stored is not required to be declared disconnected.

Prior to HV *Apparatus* being declared Disconnected, a person authorised Category 5.5 *shall* ensure the following conditions are met:

- (a) The HV *apparatus* is disconnected from all sources of HV electrical energy by the removal or absence of *conductors* and cannot be *energised* by electrical operating *work*;
- (b) Any risks associated with induced *voltages* or transferred potentials are appropriately controlled;
- (c) There is no possibility of coming on or *near* the HV *exposed conductors* of other HV *electrical apparatus*;
- (d) Appropriate *LV/MECH isolations* have been carried out in accordance with '[LV/MECH Field Operating](#)';
- (e) Exposed terminal connections of any *cable* or overhead line within the *vicinity* of the *disconnected apparatus shall* be identified;
- (f) Disconnected *HV Substation apparatus* – safe for *work shall* be identified within a *switchyard* by enclosing the *apparatus* by a rigid fence which:
 - (i) Complies with Australian Standard 'Temporary Fencing and Hoardings' AS 4687. All temporary fences *shall* be a minimum height of 1800 mm with all entrances closed except when in immediate use. No more than one entrance is to be open at any time.
 - (ii) Is appropriately *earthed* and connected to the *substation earth grid*; and
 - (iii) Has signs "*disconnected apparatus*" affixed at regular intervals around the outside of the fence.

All other PSSR requirements *shall* be complied with.

5.5.1. Additional requirements for GIS Apparatus

In addition to the requirements of [Declaring Substation HV Apparatus disconnected](#), the *authorised person shall* ensure that the following conditions are met for *GIS Apparatus*:

- (a) Physical separation of the gas zones chambers by removal and capping of the enclosure, and
- (b) No reliance on gas pressure for disconnection.

5.5.2. Testing disconnected Substation HV apparatus

A *Testing HV Access Authority* is not required when *testing* disconnected Substation *HV Apparatus*.

5.5.3. Connection of Substation HV Apparatus

Prior to any disconnected *Substation HV Apparatus* being connected or reconnected to the *Power System*, a person authorised Category 5.5 *shall* confirm that:

- (a) All measures taken to identify the *HV apparatus* as *disconnected apparatus* are removed;
- (b) All necessary *apparatus* identification, warning signs, locks, fences, gates, etc., are in place;
- (c) Advice has been provided to all persons associated with the *work* that the *apparatus* is now in the charge of the *Controller* and an *Access Authority* is required for *work* on or *near exposed conductors*; and
- (d) The *Substation HV Apparatus* is in a fit state to be connected to the *Power System*.

6. Transmission Lines

This section of the PSSR sets down requirements for ensuring the safety of personnel when *working* in the *vicinity* of Transgrid owned and/or managed Transmission Lines.

6.1. Transmission Lines General

Work in the *vicinity* of Transgrid Transmission Lines *shall* be performed by persons authorised Category 6.1.

- (a) Prior to undertaking *work* in the *vicinity* of Transmission Lines, hazards *shall* be identified and controlled. The following hazards *shall* be considered:
 - (i) Near Approach to Energised High Voltage Conductors
 - (ii) Induced Voltages and Currents (Induction)
 - (iii) Earthing Systems
 - (iv) Buried Services

6.1.1. Supervising instructed persons for work

Persons authorised Category 6.1 are *approved* to supervise *instructed persons* specifically engaged to assist them in carrying out their *work* in the *vicinity* of Transmission Lines.

- (a) All instructed persons shall be:
 - (i) Given warnings and/or demonstrations appropriate to the *work* being carried out; and
 - (ii) Adequately supervised at all times.

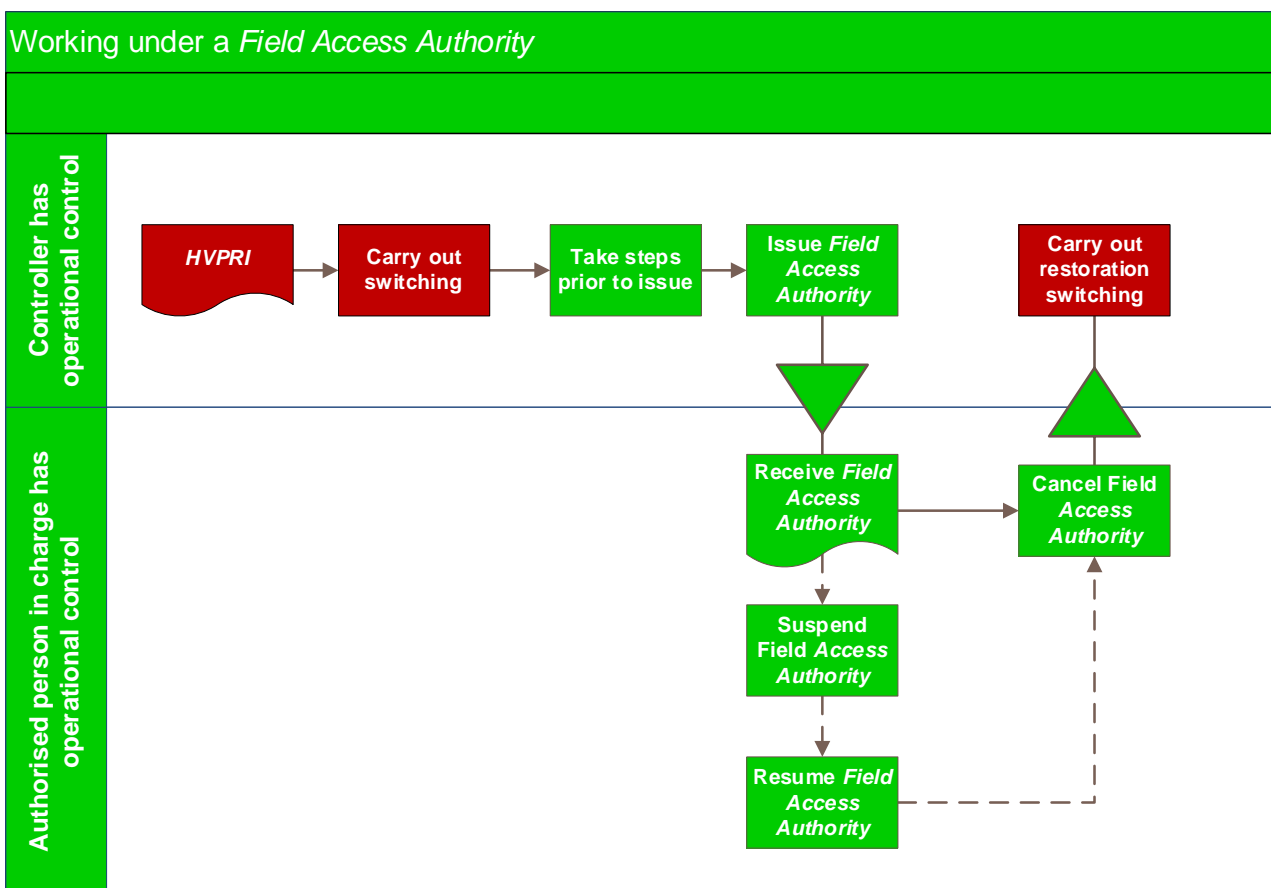
6.2. Working under a Field Access Authority

A *Field Access Authority* is required when *work* is to be performed on or *near* transmission lines *in the charge of a Controller*. A *Field Access Authority* is issued to provide a safe working environment for personnel when *working on or near exposed conductors*.

Field Access Authorities cover *transmission lines* outside a *switchyard*. A *Field Access Authority* cannot extend inside a *switchyard* fence. *Work on landing spans* requires both a *Field Access Authority* and a *HV Access Authority*. For *work on or near transmission lines* within a *switchyard*, the requirements of '[Substation HV Access](#)' shall apply.

Field Access Authority Flow Chart

The following diagram illustrates the points at which operational control transfers from the *Controller* to the *Authorised person in charge* (i.e., the holder of the *Field Access Authority*).



6.2.1. Responsibilities of persons working under a Field Access Authority

All persons *working under a Field Access Authority* shall:

- Be authorised Category 6.2 or *work* as an *instructed person*;
- At the start of each day or shift, or upon returning after leaving site, sign on the *Field Access Authority* to indicate that they understand the warnings/demonstrations given and their responsibilities under the *Field Access Authority*;
- Follow any safety directions given by the *authorised person in charge*;
- Upon entry or any return to the *work* area and before commencing or recommencing *work*, confirm the identity of the *apparatus* on which they intend to *work*;

- (e) Sign off the *Field Access Authority* at the completion of their *work* for each day/shift or when leaving site; and
- (f) Before recommencing *work* on any subsequent day or shift, verify that the conditions of the *Field Access Authority* covering the *apparatus* are still valid.

6.3. Receipt of a Field Access Authority

Persons authorised Category 6.3 are *approved* to perform the duties of the *authorised person in charge* and can receive / suspend / transfer / resume / cancel *Field Access Authorities*.

The *authorised person in charge* shall ensure:

- (a) The location, description of *apparatus*, *description of work* and the access required for *work* as shown on the *Field Access Authority* is identical to those on the relevant part on the *RFA*;
- (b) *Control measures* are identified and applied, such as the installation of any *barriers* or signage, the appointment of a *safety observer* etc. so that *work* can be carried out safely under the *Field Access Authority*;
- (c) They understand the warnings given by the issuer and their responsibilities under the *Field Access Authority*;
- (d) That the *apparatus* to be *worked* on is positively identified and is identical to that shown on the *Field Access Authority*;
- (e) Before *work* commences, that all members of the *working party* have signed on the *Field Access Authority*;
- (f) *Work* is restricted to the *work area* and the *description of work* on the *Field Access Authority*;
- (g) The *Field Access Authority* is kept safe until it is suspended or cancelled;
- (h) There is a minimum of one additional person authorised Category 6.2, always signed on the *Field Access Authority*;
- (i) That all persons required to *work* under the *Field Access Authority* are:
 - (i) Either authorised Category 6.2 or are given an appropriate briefing to enable them to *work* as *instructed persons*;
 - (ii) Informed as to the *apparatus* to be *worked* on, its identification details and the *description of work* to be carried out and the extent of access to the *apparatus*;
 - (iii) Given warnings and/or demonstrations appropriate to the *work* being carried out;
 - (iv) Conversant with the warnings/demonstrations given and their responsibilities under the *Field Access Authority*; and
 - (v) Signed off the *Field Access Authority* at the completion of their *work* for each day/shift or when leaving site.
- (j) That in the event of the *authorised person in charge* needing to temporarily leave (< 15 minutes) the *work area*, instructions are given to all persons in the *working area* to ensure that the relevant provisions of the PSSR are observed during their absence;
- (k) That *bonding leads* are applied to ensure equipotential conditions are maintained during the *work*;

- (l) That *bridging leads* are applied, in accordance with the *earthing plan*, where necessary, to maintain a current path when a *conductor* is to be broken, connected, or disconnected; and
- (m) Field Access Authority earths, bridging leads and bonding leads are only rearranged in accordance with an approved earthing plan.

6.3.1. Transfer of a Field Access Authority

Where there is a need to change the *authorised person in charge*:

- (a) The new recipient of the *Field Access Authority* shall be a person authorised Category 6.3
- (b) The *authorised person in charge* shall ensure that the new recipient has received the *Access Authority* warnings and/or demonstrations from a person authorised Category 6.4;
- (c) The *Field Access Authority* shall be signed off by the person currently in receipt of the *Field Access Authority*;
- (d) The new recipient of the *Field Access Authority* shall sign on the *Field Access Authority*; and
- (e) The *Controller* shall be notified of the new recipient.

6.3.2. Alterations to conditions of work under a Field Access Authority

Where the description of *apparatus* and/or the *description of work* shown on a *Field Access Authority* is to be altered:

The *Field Access Authority* requiring the alteration(s) shall be cancelled.

6.3.3. Suspension of a Field Access Authority

Suspension of a *Field Access Authority* is required when *work* is to cease for a period and may remain suspended for a period not exceeding seven days except at the discretion of the *Controller*.

When a *Field Access Authority* is to be suspended, the *authorised person in charge* shall ensure that:

- (a) All persons *working* under the *Field Access Authority* have signed off, to indicate that permission to *work* is suspended;
- (b) The *Controller* is notified of the suspension of the *work* and that the line is not serviceable; and
- (c) The *Field Access Authority*, together with attachments, is kept safe.

6.3.4. Resumption of Work Following Suspension of a Field Access Authority

When resuming *work* following suspension of a *Field Access Authority*:

- (a) If the *authorised person* is the person who held the *Field Access Authority* immediately prior to suspension, then the *authorised person in charge* shall:
 - (i) Obtain permission from the *Controller*;
 - (ii) Verify that the conditions of the *Field Access Authority* covering the *apparatus* are still valid;
 - (iii) Sign on the *Field Access Authority* as the authorised person in charge;
 - (iv) Allow all persons signed onto the *Field Access Authority* prior to its suspension to sign back on; and
 - (v) Ensure any persons not signed on to the *Field Access Authority* prior to its suspension receive appropriate warnings
- (b) If the *authorised person* is not the person who previously held the *Field Access Authority*, then the *authorised person* shall comply with '[Transfer of a Field Access Authority](#)'.

6.3.5. Cancellation of a Field Access Authority

On completion of *work*, the *authorised person in charge shall cancel the Field Access Authority* by:

- (a) Confirming all bonding/ bridging/ tools and working earths are removed;
- (b) Confirming that all persons signed on the *Field Access Authority* have signed off to indicate that *work* under the *Field Access Authority* has ceased;
- (c) Either:
 - (i) Removing earths related to the *Field Access Authority* being cancelled; or
 - (ii) When the earths are to remain in place for the immediate issue of a new *Field Access Authority*, removing all tags related to the *Field Access Authority* being cancelled
- (d) Completing the cancellation section of the *Field Access Authority*; and
- (e) Ensuring that the necessary details are communicated to the *Controller*.

6.4. Issue a Field Access Authority

The issue of a *Field Access Authority shall* be carried out by a person authorised Category 6.4.

6.4.1. Responsibilities of the authorised person issuing a Field Access Authority

The *authorised person* issuing the *Field Access Authority shall* ensure that:

- (a) They personally transmit to and receive all messages from the *Controller* concerning the issue of the *Field Access Authority*.
 - (i) When it is not possible to establish direct communications, such messages may be relayed between the *Controller* and the person issuing the *Field Access Authority*, by another person *authorised* Category 6.4.
- (b) Prior to the issue of a *Field Access Authority*, the following *are* satisfied:
 - (i) Where the *work* to be carried out on the *HV transmission line* will be on or *near* any other *transmission* or *overhead line* (e.g., over or undercrossing), then the *authorised person shall* receive confirmation from the *Controller* that the other *transmission* or *overhead line* has been made safe;
 - (ii) They receive advice from the *Controller* that the *High Voltage Transmission line* has been *isolated* and *earths* applied at all points of *supply* from which it can be *energised*;
 - (iii) They receive clearance from the *Controller* to:
 - (A) Prove de-energised;
 - (B) Apply *Field Access Authority* earths; and
 - (C) Issue the *Field Access Authority*.
 - (iv) The *HV transmission line* at the *work* location, *shall* be identified, proven *de-energised* and *earthed* by the application of *Field Access Authority* earths;
 - (v) Additional *Field Access Authority* earths, applied as part of an *earthing plan* have appropriate tags applied;
 - (vi) On multi-circuit *HV transmission lines* structures, *approved* methods are used to identify any *conductors* that are to be regarded as *energised*.
- (c) The person receiving the *Field Access Authority* is a person authorised Category 6.3;

- (d) The location, the description of *apparatus* and the *description of work* on the *Field Access Authority* are identical to those stated in the relevant parts on the *RFA*;
- (e) The unique *Access Authority* number received from the *Controller* is recorded on the *Field Access Authority*;
- (f) The *Field Access Authority* is not issued if it is not safe for the *work* to proceed;
- (g) All required applicable warnings are entered on the *Field Access Authority* and are communicated to the *authorised person in charge*;
- (h) They assemble all persons who are to *work* under the *Field Access Authority* and:
 - (i) Demonstrate to them the *conductors* which are safe to be *worked* on;
 - (ii) Warn them of any other *conductors*, in the *vicinity* of the *work*, which *shall* be regarded as *energised*; and
 - (iii) Warn them to confine their *work* to that described on the *Field Access Authority* and of their [‘Responsibilities of persons working under a Field Access Authority’](#).
- (i) The *Field Access Authority* is endorsed as having been issued; and
- (j) The details of the issued *Field Access Authority* have been communicated to the *Controller*.

6.4.2. Field Access Authority earthing principles

Field Access Authority earths shall be managed in accordance with the following principles:

- (a) Applied at locations specified on the *RFA* or *earthing plan*;
- (b) Applied as close as practical to, and within sight of, the *work* location. The *work shall* be carried out in such a manner that any movement of the *conductor* during the *work shall* not interfere with the effectiveness of the *Field Access Authority earth*;
- (c) A person authorised Category 6.4 *shall* directly supervise any other persons assisting in the application and/or rearrangement of *Field Access Authority earths*.
- (d) Where the *work* involves the connection, cutting or disconnection of a *High Voltage conductor* (the point of *work*) then:
 - (i) *Field Access Authority earths shall* be connected to a common *earthed* point and then applied, one to each side of the point of *work*; or
 - (ii) *Bridging leads shall* be applied across the point of *work*, after first applying a set of *Field Access Authority earths* to the *conductor*. A *bridging lead* used in this way is considered a *Field Access Authority earth* and *shall* have appropriate tags applied.
- (e) Where *Field Access Authority earths* will be rearranged during the *work* an *approved earthing plan* is required in accordance with ‘Request for Access’.
- (f) All *Field Access Authority earths shall* have an appropriate Tag affixed to each end as follows (exception for tower earths where only one tag is required on the cold end of the earth lead):
 - (i) *Warning Tags shall* be affixed when earths are required to be re-arranged during the *work* in accordance with an *approved earthing plan*; and
 - (ii) *Do Not Operate Tags shall* be affixed in all other circumstances.

6.4.3. Responsibilities of the Controller

The *Controller* shall ensure that the following details are recorded:

- (a) Field Access Authority number;
- (b) Time and date of issue of the *Field Access Authority*;
- (c) Authorised person to whom the Field Access Authority is issued; and
- (d) The earthing is at locations specified on the RFA or *earthing plan*.

6.5. Disconnect Transmission Lines

Sections of disconnected Transmission Lines, wholly outside *substation* boundaries, may be *approved safe for work* to be undertaken by *ordinary persons* and excluded from the requirements of the *Power System Safety Rules* if the following conditions are satisfied.

Prior to a Transmission Line being declared Disconnected, a person authorised Category 6.5 shall ensure the following conditions are met:

- (a) The *Transmission Line* is disconnected from all sources of *supply* by the removal or absence of *conductors* and cannot be *energised* by *electrical operating work*;
- (b) Any risks associated with induced voltages or transferred potentials are appropriately controlled;
- (c) Any section of disconnected transmission line to be worked upon does not and will not, during the course of the work, come on or near any other High Voltage exposed conductors;
- (d) For a single circuit of double circuit transmission line to be declared as disconnected apparatus, an approved hazard management plan is issued to ensure that the risks of working adjacent to an energised circuit are appropriately controlled;
- (e) Where practical, Disconnected Transmission Lines made safe for work, shall be identified by “Disconnected apparatus” signs affixed at every structure and at substation boundaries.
 - (i) Where it is not practical to affix a “*Disconnected apparatus*” sign at every structure on a section of disconnected transmission line, an *approved* method shall be used to advise all persons involved in the *work* that the transmission line is disconnected.

6.5.1. Connection of Disconnected Transmission lines

Prior to any disconnected *Transmission Line* being connected or reconnected to the *Power System*, a person authorised Category 6.5 shall confirm that:

- (a) All measures taken to identify the *transmission line* as *disconnected apparatus* are removed;
- (b) All necessary *apparatus* identification, warning signs, locks, fences, gates, etc., are in place;
- (c) Advice has been provided to all persons associated with the *work* that the *apparatus* is now in the charge of the *Controller* and an *Access Authority* is required for *work* on or *near exposed conductors*; and
- (d) The *transmission line* is in a fit state to be connected to the *Power System*.

7. Transmission Cables

This section of the PSSR sets down requirements for ensuring the safety of personnel when *working* in the *vicinity* of Transgrid owned and managed *Transmission Cables*.

7.1. Transmission Cables General

General *work* on and in the *vicinity* of Transgrid owned and managed *Transmission Cables* shall be performed by persons authorised Category 7.1.

Prior to undertaking *work* in the *vicinity* of *Transmission Cables*, the following hazards shall be identified and controlled:

- (a) *Cable* Earthing and Sheath Connections
- (b) Identification of *Transmission Cables*
- (c) *Switchyard* Earth Grid *Voltage* Rise and Transferred Earth Potentials
- (d) Capacitance Associated with *Transmission Cables*
- (e) *Pilot Cables*
- (f) Buried services

7.1.1. Cable work not requiring a Cable Access Authority

Work may be carried out on or in the *vicinity* of a *cable* or its associated equipment without a *Cable Access Authority* where the *work* involves:

- (a) Excavation above the protective slab level or above the concrete encasement layer if slabs are not present;
- (b) No risk of persons making direct contact with the metallic *cable* sheath or armouring of the *cable*;
- (c) Minor *work* or repairs involving the serving of a *cable* by methods that avoid direct contact with the metallic *cable* sheath or armouring;
- (d) *Work* on gas or oil pressure *systems*, provided oil or gas pressures are maintained and there is no danger to persons from induced *voltages* or transferred earth potentials;
- (e) Insertion of *test* instruments in bonding or earthing connections provided electrical continuity of the bond or earth is maintained and *insulated working* methods are used; or
- (f) Using permanently or temporarily applied monitoring equipment on the *cable* surface, such as capacitively coupled partial discharge foils which require the *cable energised* for *testing*.

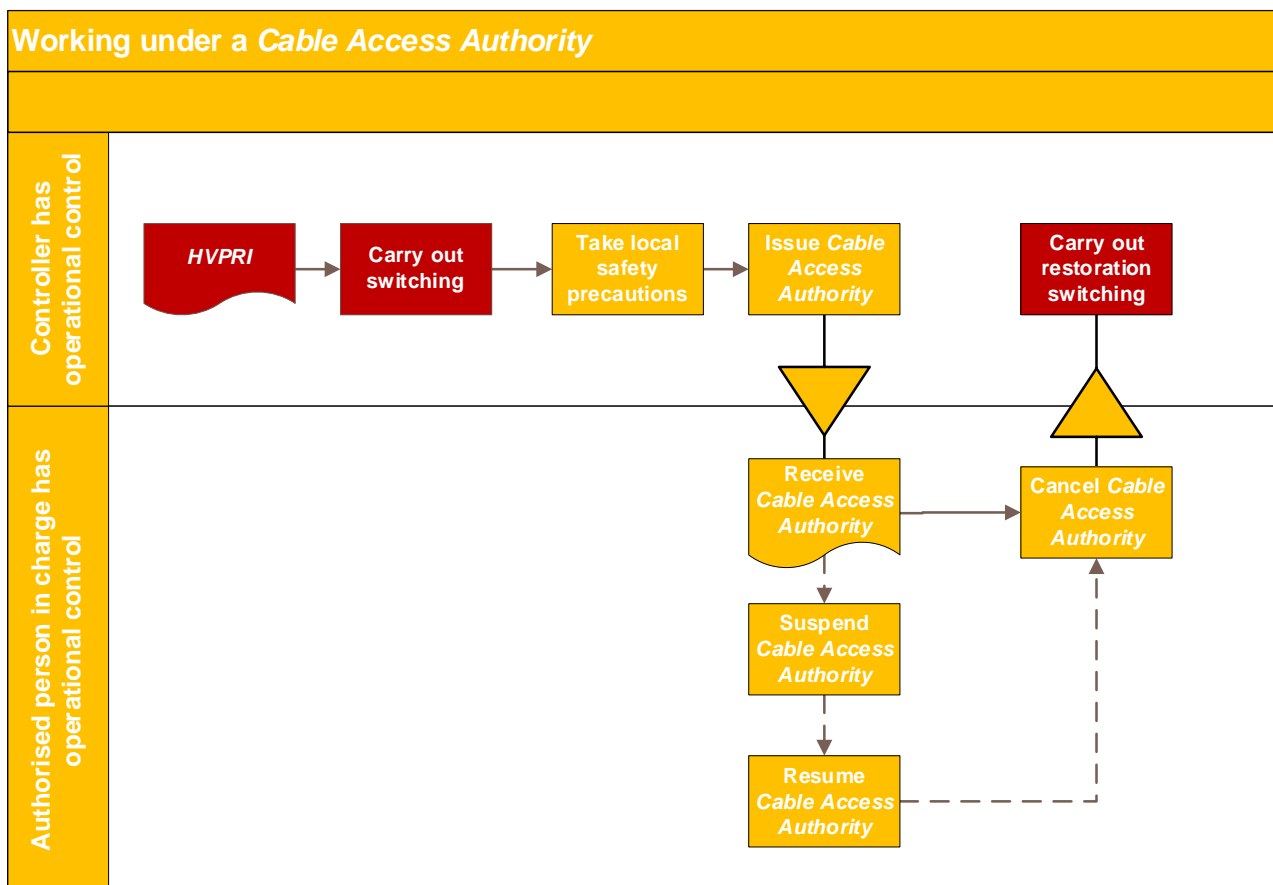
7.2. Working under a Cable Access Authority

A *Cable Access Authority* is required when work, other than that listed in [Cable work not requiring a Cable Access Authority](#), is to be performed on a HV transmission Cable in the charge of a Controller. A *Cable Access Authority* is issued to provide a safe working environment for personnel when working on or near exposed conductors.

A *Cable Access Authority* can provide access to any portion of the cable and associated equipment as described on the RFA, including the section inside the *switchyard* fence and the sealing ends.

Cable Access Authority Flow Chart

The following diagram illustrates the points at which operational control transfers from the *Controller* to the *Authorised person in charge* (i.e., the holder of the *Cable Access Authority*).



7.2.1. Responsibilities of persons working under a Cable Access Authority

All persons working under a *Cable Access Authority* shall:

- Be authorised Category 7.2 or work as an *instructed person*;
- At the start of each day or shift, or upon returning after leaving site, sign on the *Cable Access Authority* to indicate that they understand the warnings/demonstrations given and their responsibilities under the *Cable Access Authority*;
- Follow any safety directions given by the *authorised person in charge*;
- Upon entry or any return to the *work* area and before commencing or recommencing *work*, confirm the identity of the *apparatus* on which they intend to *work*;

- (e) Sign off the *Cable Access Authority* at the completion of their *work* for each day/shift or when leaving site; and
- (f) Before recommencing *work* on any subsequent day or shift, verify that the conditions of the *Cable Access Authority* covering the *apparatus* are still valid.

7.3. Receipt of a Cable Access Authority

A *Cable Access Authority* shall be received by a person authorised Category 7.3.

7.3.1. Responsibilities of the Authorised person in charge (authorised person in charge)

Persons authorised Category 7.3 are *approved* to perform the duties of the *authorised person in charge* and can receive / suspend / transfer / resume / cancel *Cable Access Authorities*.

The *authorised person in charge* in charge shall ensure:

- (a) The location, description of *apparatus*, *description of work* and the access required for *work* as shown on the *Cable Access Authority* is identical to those on the relevant part on the *RFA*;
- (b) *Control measures* are identified and applied, such as the installation of any *barriers* or signage, the appointment of a *safety observer* etc. so that *work* can be carried out safely under the *Cable Access Authority*;
- (c) They understand the warnings given by the issuer and their responsibilities under the *Cable Access Authority*;
- (d) That the *apparatus* to be *worked* on is positively identified and is identical to that shown on the *Cable Access Authority*;
- (e) Before *work* commences, that all members of the *working party* have signed on the *Cable Access Authority*;
- (f) *Work* is restricted to the description of *work* on the *Cable Access Authority*;
- (g) The *Cable Access Authority* is kept safe until it is suspended or cancelled and displayed at the entrance when *work* is carried out in a Designated Work Area.;
- (h) There is a minimum of one additional person authorised to Category 7.2, always signed on the *Cable Access Authority*;
- (i) That all persons required to *work* under the *Cable Access Authority* are:
 - (i) Either authorised Category 7.2 or are given an appropriate briefing to enable them to *work* as *instructed persons*;
 - (ii) Informed as to the *apparatus* to be *worked* on, its identification details and the *description of work* to be carried out and the extent of access to the *apparatus*;
 - (iii) Given warnings and/or demonstrations appropriate to the *work* being carried out;
 - (iv) Conversant with the warnings/demonstrations given and their responsibilities under the *Cable Access Authority*; and
 - (v) Signed off the *Cable Access Authority* at the completion of their *work* for each day/shift or when leaving site.

- (j) That in the event of the *authorised person in charge* needing to temporarily leave (< 15 minutes) the *work area*, instructions are given to all persons in the *working area* to ensure that the relevant provisions of the PSSR are observed during their absence;
- (k) That *bonding leads* are applied to ensure equipotential conditions are maintained during the *work* or *insulated work* methods are maintained and used; and
- (l) That *bridging leads* are applied, where necessary, to maintain a current path when a *conductor* is to be broken or disconnected.
- (m) The initial and ongoing adequacy of *insulating* equipment and *work* methods.
- (n) That any equipment that can store capacitive charge is fully discharged using a suitable means of earthing before approaching, or *working on or near* the *apparatus*, and before *working on the apparatus* after electrical *testing* has been performed.

7.3.2. Testing permitted under a Cable Access Authority

When the proposed *test* involves a *test* source which is not capable of producing currents hazardous to the human body and *Access Authority earths* are unaffected, *testing* may be carried out without a *Cable testing Access Authority*, provided the person in charge of the *test*:

- (a) Warns any persons who could make inadvertent contact with the *conductors* during the course of the *test* that *voltage* is to be applied and, in return, obtains an assurance that they will remain clear of the *conductors* during the *test*;
- (b) Ensures at the conclusion of the *work* any *apparatus* under *test* which may have become electrically charged during the course of the *test* is fully discharged and left in a safe condition; and
- (c) Ensures that the *test* source is not connected to *electrical apparatus* with a capacitance greater than 4,000 pF.

7.3.3. Transfer of a Cable Access Authority

Where there is a need to change the *authorised person in charge*:

- (a) The *authorised person in charge* shall ensure that the new recipient has received the *Access Authority* warnings and/or demonstrations from a person authorised Category 7.5;
- (b) The *Cable Access Authority* shall be signed off by the person currently in receipt of the *Cable Access Authority*.
- (c) The new recipient of the *Cable Access Authority* shall be authorised Category 7.3 and sign on the *Cable Access Authority*; and
- (d) The *Controller* shall be notified of the new recipient.

7.3.4. Alterations to conditions of work under a Cable Access Authority

Where the description of *apparatus* and/or the *description of work* shown on a *Cable Access Authority* is to be altered:

- (a) The *Cable Access Authority* requiring the alteration(s) shall be cancelled;

7.3.5. Suspension of a Cable Access Authority

Suspension of a *Cable Access Authority* is required when *work* is to cease for a period and may remain suspended for a period not exceeding seven days except at the discretion of the *Controller*.

When a *Cable Access Authority* is to be suspended, the *authorised person in charge* shall ensure that:

- (a) All persons *working* under the *Cable Access Authority* have signed off, to indicate that permission to *work* is suspended;
- (b) The *Cable Access Authority* is endorsed to indicate that the *apparatus* is serviceable / is not serviceable;
- (c) The *Controller* is notified of the suspension of the *work* and whether the *High Voltage cable* is/is not serviceable so far as this *work* is concerned; and
- (d) The *Cable Access Authority*, together with attachments, is *delivered* to a designated person/location.

Where a *Cable Access Authority* has been suspended as serviceable and *apparatus* is required for immediate service, the *Cable Access Authority* may be cancelled at the direction of the *Controller*.

7.3.6. Resumption of Work Following Suspension of a Cable Access Authority

When resuming *work* following suspension of a *Cable Access Authority*:

- a) If the *authorised person* is the person who held the *Cable Access Authority* immediately prior to suspension, then the *authorised person in charge shall*:
 - (i) Obtain permission from the *Controller*;
 - (ii) Sign on the *Cable Access Authority* as the authorised person in charge;
 - (iii) Allow all persons signed onto the *Cable Access Authority* prior to its suspension to sign back on; and
 - (iv) Ensure any persons not signed on to the *Cable Access Authority* prior to its suspension receive appropriate warnings.
- b) If the *authorised person* is not the person who previously held the *Cable Access Authority*, then the *authorised person shall* comply with '[Transfer of a Cable Access Authority](#)'.

7.3.7. Cancellation of a Cable Access Authority

On completion of *work*, the *authorised person in charge shall*:

- (a) Prior to cancellation, carry out necessary checks to:
 - (i) Confirm all bonding/ bridging/ tools are removed;
 - (ii) Confirm that all persons signed on the *Cable Access Authority* have signed off;
 - (iii) Complete the cancellation section of the *Cable Access Authority*; and
 - (iv) Confirm whether *apparatus* is serviceable or not.
- (b) Cancel the *Cable Access Authority* by:
 - (i) Completing the cancellation section of the *Cable Access Authority*;
 - (ii) Ensuring that the necessary details are communicated to the *Controller*; and
 - (iii) *Delivering* the cancelled *HV Access Authority* to the relevant control point or directly to the person responsible for the restoration of *apparatus*.

7.4. Receipt of a Cable Testing Access Authority

A *Cable Testing Access Authority shall* be issued where the *work* includes:

- (a) The removal and/or replacement of *Cable Access Authority earths*;

- (b) The use of a *test* source which is capable of producing currents hazardous to the human body on the *conductors* of *High Voltage electrical apparatus*; and
- (c) The application of extra *Low Voltages* or *voltages* produced by an insulation *testing* device operating at 1,000 volts or below, connected to *electrical apparatus* with a capacitance greater than 4,000 pF.

Persons authorised Category 7.4 are *approved* to perform the duties of the *authorised person in charge*, supervise *instructed persons* and can receive/ suspend/ resume/ cancel *Cable Testing Access Authorities*.

7.4.1. Responsibilities of the authorised person in charge of a Cable Testing Access Authority

In addition to the requirements of receiving a *Cable Access Authority* the *authorised person in charge* shall:

- (a) Have knowledge of the *work*, verify the status of the *test* devices and control the *testing*;
- (b) Instruct those persons *working* under the *Cable Testing Access Authority* regarding *work* that may proceed safely during the *testing* and provide any additional warnings that may be applicable;
- (c) Direct the control of the switching of the *test* source *energising* the *conductors* covered by the *Cable Testing Access Authority*;
- (d) Ensure adequate communications are maintained with all persons involved in the *testing* including persons at the remote end of the section or cable under test;
- (e) Warn any person:
 - (i) In the *vicinity* of the *conductors* under *test* that *voltage* is to be applied and in return receive an assurance that such person will remain clear of such *conductors* during the *test*; and
 - (ii) Signed on the *Cable Testing Access Authority* that they can only *work* on or *near* the *conductors* under *test* when the *authorised person in charge* is present to show such persons which *conductors* are safe to approach.
- (f) Where induced or *test voltages* could be present, ensure that safe *working* methods are used which restrict persons coming on or *near energised conductors* and any *testing* equipment or connection leads;
- (g) Ensure that for the duration of electrical *testing*, the entrance to the *cable work* area is closed and an *approved* notice warning that electrical *testing* is in progress is erected at this closed entrance;
- (h) If any *exposed conductors* to which *test voltages* are to be applied are out of sight of the person switching the *test* source, ensure that *approved* notices are placed to warn against approach to the *exposed conductors* at such points and either:
 - (i) A person is posted to warn others not to approach the *exposed conductors* during the *test*; or
 - (ii) Fences or equivalent *barriers* are erected, or shutters closed to prevent any person gaining inadvertent access to the *exposed conductors*.
- (i) Ensure that the High Voltage conductors being tested are safe to be touched or approached whenever this becomes necessary during the progress of the electrical test; and
- (j) Ensure that, at the conclusion of the *work*, any *apparatus* under *test* which may have become electrically charged during the *test* is fully discharged and left in a safe condition.

7.4.2. Special Requirement for Sheath Testing

To achieve an adequate and safe separation between the section of metallic sheath being electrically *tested* and any other *work* parties, the person in charge of each *work* party carrying out electrical *testing* shall ensure:

- (a) A *conductor* is connected to the general mass of earth and is applied to all adjacent sections of sheath during the *testing*.
- (b) Where electrical *testing* on the metallic sheath of a *High Voltage cable* involves the opening of any link for the purpose of the *test*, and the electrical *test* is in progress, the following *shall* occur:
 - (i) A person *shall* be posted to warn others not to approach the open link and sheath; or
 - (ii) Fences or equivalent *barriers shall* be erected, or shutters closed to prevent any person gaining inadvertent access to the *exposed conductors*.

7.4.3. Transfer of a Cable Testing Access Authority

In addition to the requirements of Transferring a *Cable Access Authority* the new *authorised person in charge shall*:

- (a) Verify the status of the *test* devices and all other equipment associated with the *testing*; and
- (b) Understand the warnings, instructions and applicable demonstrations regarding the devices and equipment that may be operated in conjunction with the *test*.

7.5. Issue a Cable or Cable Testing Access Authority

The issue of a *Cable* or *Cable Testing Access Authority shall* be carried out by a person authorised Category 7.5.

7.5.1. Responsibilities of the authorised person issuing a Cable Access Authority

The *authorised person* issuing the *Cable Access Authority shall* ensure that:

- (a) They personally transmit to and receive all messages from the *Controller* concerning the issue of the *Cable Access Authority*.

NOTE: When it is not possible to establish direct communications, such messages may be relayed between the *Controller* and the person issuing the *Cable Access Authority*, by another person authorised Category 7.5.

- (b) They receive advice from the *Controller* that the *cable* has been *isolated* and *Access Authority earths* applied at all points from which it can be *energised*;
- (c) The unique *Access Authority* number received from the *Controller* is recorded on the *Cable Access Authority*;
- (d) A *Cable Access Authority shall* not be issued where the *work* as requested would affect the safety of personnel *working* under another *Access Authority*.
- (e) The person receiving the *Cable Access Authority* is authorised Category 7.3;
- (f) The location, the description of *apparatus*, the *description of work* and the nominated access required for *work* set out on the *Cable Access Authority* are identical to those stated in the relevant parts on the *RFA*;
- (g) The *Cable Access Authority* is not issued if it is not safe for the *work* to proceed;
- (h) The *cable* has been identified using *approved procedures*;
- (i) The *cable work* area is established using an *approved procedure*.

NOTE: When *working* within the boundary of a *switchyard*, a *designated work area shall* be set up around the sealing end and/ or *cable work* site.

- (j) All required applicable warnings are entered on the Cable Access Authority Warning & Hazard Form;
- (k) They assemble all persons who are to *work* under the *Cable Access Authority* and:
 - (i) Demonstrate to them the *conductors* which are safe to be *worked* on;
 - (ii) Warn them of any other *conductors* or transmission *cables*, in the *vicinity* of the *work*, which *shall* be regarded as *energised*; and
 - (iii) Warn them to confine their *work* to that described on the *Cable Access Authority* and of their [‘Responsibilities of persons working under a Cable Access Authority’](#).
- (l) The *Cable Access Authority* is endorsed as having been issued; and
- (m) The details of the issued *Cable Access Authority* have been communicated to the *Controller*.

7.5.2. Additional requirements when issuing a Cable Testing Access Authority

In addition to the requirements of issuing a *Cable Access Authority* the *authorised person* shall ensure that:

- (a) The person receiving the *Cable Testing Access Authority* is a person authorised Category 7.4;
- (b) A *Cable Testing Access Authority* is not issued where the *test* as requested may affect the safety of personnel *working* under another *Access Authority*;
- (c) *Warning Tags* are affixed to all control points that are able to operate the *apparatus* during the *test*, in accordance with the *PRI*;
- (d) Warnings, instructions and applicable demonstrations are given to the person in charge of the *test*;
- (e) Confirmation has been received from the *Controller* that all current *Access Authorities*, for *work* on or *near* the *conductors* required to be electrically *tested*, are suspended; and
- (f) The planned *test voltages* shall not exceed those specified on the *RFA*.

7.5.3. Sheath Testing Requirements

The issue of a *Cable Testing Access Authority* for electrical *testing* of a section of metallic sheath of a *Transmission Cable* shall not prevent the issue of further *Access Authorities* for:

- (a) Work or electrical *test* on other section(s) of the metallic sheath of the same *Transmission Cable*; or
- (b) Work on the main *conductor* of other section(s) of the same *Transmission Cable*;

Provided that the *Controller* is satisfied that an adequate and safe separation can be achieved between the section of metallic sheath being electrically *tested* and the other *work* parties. This requires that:

- (c) Between any *work* party carrying out electrical *testing* and any other *work* or electrical *test* party, there shall be a location where the sheath is *earthed* via an *earthed* link box or other bonding system. This location shall be excluded from any *Cable Access Authority*.

7.5.4. Responsibilities of the Controller

The *Controller* shall ensure that the following details are recorded:

- (a) Cable Access Authority number;
- (b) Time and date of issue and cancellation of the *Cable Access Authority*; and
- (c) Authorised person to whom the *Cable Access Authority* is issued.

7.5.5. Disconnect Transmission Cables

Sections of disconnected Transmission Cables, wholly outside *substation* boundaries, may be *approved safe for work* to be undertaken by *ordinary persons* and excluded from the requirements of the *Power System Safety Rules* if the following conditions are satisfied.

Prior to a *Transmission Cable* being declared Disconnected, a person authorised Category 7.5 *shall* ensure the following conditions are met:

- (a) The *transmission cable* is disconnected from all sources of electrical energy by the removal or absence of *conductors* and cannot be *energised* by electrical operating *work*;
- (b) Any risks associated with induced *voltages* or transferred potentials are appropriately controlled;
- (c) Any section of disconnected transmission cable to be *worked* upon does not and will not, during the course of the *work*, come on or *near* any other *High Voltage exposed conductors*;
- (d) Appropriate *LV/MECH* isolations have been carried out;
- (e) Exposed terminal connections of any transmission *cable* or line within the *vicinity* of the *disconnected apparatus* *shall* be identified.

7.5.5.1. Additional requirements within a *substation* boundary

In addition to the requirements of [Declaring Transmission Cables disconnected](#), sections of disconnected *Transmission Cables* within a *substation* boundary, may be made *safe for work* and excluded from the *Access Authority* requirements of the *PSSR*. All normal *PSSR* requirements for *work* in *substations* apply.

A person authorised Category 7.5 *shall* ensure the following conditions are met:

Disconnected *Transmission Cables* – *safe for work* *shall* be identified within a *switchyard* by enclosing the *apparatus* by a rigid fence which:

- (i) Complies with Australian Standard ‘Temporary Fencing and Hoardings’ AS 4687. All temporary fences *shall* be a minimum height of 1800 mm with all entrances closed except when in immediate use. No more than one entrance is to be open at any time.
- (ii) Is appropriately *earthed* and connected to the *substation* earth grid; and
- (iii) Has signs “*disconnected apparatus*” affixed at regular intervals around the outside of the fence.

All other *PSSR* requirements *shall* be complied with.

7.5.5.2. Testing Disconnected *HV* cables

A *Cable Testing Access Authority* is not required when *testing* a disconnected *transmission cable*.

7.5.5.3. Connection of Disconnected *HV* Cables

Prior to any disconnected *Transmission Cable* being connected or reconnected to the *Power System*, a person authorised Category 7.5 *shall* confirm that:

- (a) All measures taken to identify the *transmission cable* as *disconnected apparatus* are removed;
- (b) All necessary *apparatus* identification, warning signs, locks, fences, gates, etc., are in place;
- (c) Advice has been provided to all persons associated with the *work* that the *apparatus* is now in the charge of the *Controller* and an *Access Authority* is required for *work* on or *near exposed conductors*.
- (d) The *transmission cable* is in a fit state to be connected to the *Power System*.

8. Mobile Plant in the Vicinity of High Voltage Conductors

This section of the PSSR sets down requirements for *mobile plant* travelling and operating in the *vicinity* of HV *conductors*, at Substations or on Transmissions Line easements.

8.1. Safety Observer

A *safety observer* shall be a person authorised Category 8.1, a person specifically assigned the duty of observing and warning against unsafe approach of *mobile plant* and its load when travelling and/or operating in the *vicinity* of *High Voltage conductors*.

The Safety Observer *shall*:

- (a) Only observe one item of *mobile plant* at a time;
- (b) Be informed of the *work* to take place and the *Safe Approach Distance(s)* to be maintained;
- (c) Ensure the *mobile plant* is attached to an earthing system;
- (d) Consult with the plant operator and establish limits for the travel or operation of *mobile plant*
- (e) Be able to immediately and effectively communicate with the operator of the *mobile plant*, and other persons if required;
- (f) Monitor the *work* activity being carried out and warn the operator if any part of the *mobile plant*, load or persons are about come within *Safe Approach Distances* to *Exposed conductors*;
- (g) Be positioned at a suitable location to effectively observe both the *mobile plant* and the HV *conductors*;
- (h) Not perform any other *work* while acting as a *safety observer*; and
- (i) Have the authority to suspend the *work* at any time.

8.2. Mobile Plant Assessment

Prior to Mobile Plant or Vehicles over 2.4m high *working* in the *vicinity* of HV *Exposed conductors*, a Mobile Plant *Assessment shall* be carried out by a person authorised Category 8.2 who shall:

- (a) Assess if controls are required;
- (b) Nominate any required controls; and
- (c) Provide approval for the *work* to commence once assessed controls have been implemented.

9. HV Field Operating

This section covers field operation of HV *AIS* and *GIS* switchgear. *High Voltage* field operations associated with isolating; or isolating and earthing:

- Transmission Lines, *Transmission Cables* or other forms of connection point to a *switchyard* shall be performed by a person authorised Category 9.1.
- HV *apparatus* for work within a *switchyard* shall be performed by a person authorised Category 9.2.

9.1. HV Field Operating - General

- (a) Operations shall be carried out under the direction of the Controller;
- (b) All messages relating to the operation of High Voltage apparatus shall be logged :
 - (i) In describing apparatus, the apparatus shall be given its full name and number; and
 - (ii) The purpose of each message and the time of transmission shall be recorded.
- (c) Preparation and Restoration work associated with a HVPRI shall not be regarded as work on or near High Voltage exposed conductors provided that:
 - (i) Safe Approach Distances are maintained; or
 - (ii) When carrying out electrical operating work in accordance with an approved procedure.

9.1.1. Specific Requirements - HV GIS Apparatus

9.1.1.1. Normal operation

For normal operation, *GIS apparatus* shall:

- (a) Be operated remotely; and
- (b) Have interlocking in service.

9.1.1.2. Local operation

Local operation shall:

- (a) Only occur when there is no available remote operation facility; and
- (b) Additional safety precautions are taken in accordance with approved procedures.

9.1.1.3. Abnormal operations

Operations that defeat interlocking shall only be used where interlocking will prevent essential operations from being carried out. The *authorised persons* carrying out the operations shall ensure:

- (a) Permission has been granted by the GM/Network Operations or delegate;
- (b) The HVPRI clearly indicates instructions to 'DEFEAT INTERLOCK' and 'RESTORE INTERLOCK';
- (c) Operations are conducted:
 - (i) Remotely wherever possible
 - (ii) By two HV Field Operators, with the first person identifying each action and the second person confirming that the identified action is correct before it is executed by the first person.
- (d) Interlocking is restored as soon as possible and confirmed to the Controller at the time.

9.1.2. Making HV Apparatus Safe for Work

Before *work* is performed on or *near High Voltage exposed conductors* the following *shall* be carried out in the order specified:

9.1.2.1. Isolation

Conductors shall be isolated from each point of supply. The points of isolation shall be locked (where practicable) and Do Not Operate Tags affixed.

- (a) The effectiveness of the points of isolation on HV AIS Switchgear shall be demonstrated by:
 - (i) A visible break; or
 - (ii) An approved testing or earthing procedure where it is not possible to provide a visible break because of the design of the particular isolation devices.
- (b) The effectiveness of points of isolation on HV GIS switchgear shall be demonstrated by:
 - (i) Indication of switchgear position; and
 - (ii) Satisfactory gas pressures.
- (c) These points of isolation shall include:
 - (i) Low Voltage sources, which can cause the conductors to become energised at High Voltage. Points of isolation on Low Voltage sources need not have a visible break but shall be provided by a device designed to provide an appropriate Low Voltage isolation. Integrity of the isolation shall be confirmed by a testing and earthing procedure.
 - (ii) SF6 drain points on GIS chambers used to provide isolation shall be marked with Do Not Operate Tag(s).
- (d) If during the course of work, it is necessary to transfer a point of isolation to an alternative position, any Access Authority held by parties at that location affected by this transfer shall be cancelled prior to the transfer taking place.

9.1.2.2. Earthing

HV Access Authority earths shall be applied to the High Voltage conductors, once it has been proved safe to do so, using an *approved* method. Their placement *shall not be affected by the work to be done and Do Not Operate Tags or Warning Tags shall be affixed.*

HV Access Authority earths shall be applied as follows:

- (a) As a three-phase set. Allowable exceptions are the earthing of neutrals or star points or DC and where apparatus is connected to one phase only of a three-phase supply;
- (b) As close as practicable to the point of work;
- (c) HV Access Authority earths that protect persons from danger of accidental energising of the conductors shall be applied in in-service protection zones from any point of supply;
- (d) Where there is a conductor at the point of work, which is not earthed, HV Access Authority earths shall be applied between the point of work and all points of supply;
- (e) Where work is to be performed on or near the High Voltage exposed conductors of totally enclosed apparatus, supplied from a single source via a cable(s), the HV Access Authority earths that protect persons from danger of accidental energising of the conductors shall be applied at the nearest practical point to the work area but shall be on the same earthing grid;

- (f) For work on a capacitor voltage transformer, Access Authority earths shall be applied on the High Voltage and Low Voltage conductors;
- (g) For work on a capacitor bank, HV Access Authority earths shall be applied in accordance with approved procedures for the type of capacitor bank;
- (h) Where the continuous electrical connection between the conductor required to be earthed and the Access Authority earth is provided by a disconnecter, a set of links or a similar device, these devices shall be closed, locked closed if practicable, and a Do Not Operate Tag affixed;
- (i) Conductors may be earthed by means of a closed circuit breaker or similar device, provided that the device is rendered inoperative in the closed position and a Do Not Operate Tag is affixed;
 - (i) If the circuit breaker is required to be opened for testing purposes a Warning Tag shall be affixed. When not being operated for testing purposes it shall remain inoperative.
- (j) A High Voltage conductor is regarded as earthed where the continuous electrical connection to an Access Authority earth passes through the primary of a current transformer;
- (k) Where the continuous electrical connection to an Access Authority earth passes through a relatively high impedance, such as a power or voltage transformer, reactor or PLC wave trap, a High Voltage conductor shall not be regarded as earthed; and
- (l) Where High Voltage conductors can be energised from a Low Voltage source, the conductors shall be short-circuited and connected to a HV Access Authority earth either on the High Voltage conductors to which it is connected or between the High Voltage conductors and the point of isolation on the Low Voltage side.
 - (i) The conductors used for this purpose shall be capable of carrying the fault current that would flow in the event of the circuit being energised from the Low Voltage source for the expected duration of the fault.
- (m) Conductors identified as a high induction risk, within the area specified for HV Access shall be earthed as part of the PRI.
- (n) Earths applied to transmission line conductors for HV Access, shall be applied by a person authorised Category 6.4 under the direction of the Controller.

9.1.2.3. Restoration of apparatus

The *authorised person* restoring the *apparatus* after work shall:

- (a) Restore the apparatus as per the PRI; and
- (b) Arrange for adjustments required to the apparatus to be carried out prior to or on return to service of the apparatus.

9.2. HV Field Operating - Advanced

9.2.1. Entry to HV Cages

The authorised person carrying out HV Field Operations *shall* only enter a HV cage if:

- (a) High Voltage conductors within the cage have been isolated;
- (b) They will not come on or near High Voltage exposed conductors; or
- (c) When carrying out electrical operating work in accordance with an approved procedure.

9.2.2. Dismantling of designated work areas (DWA)

Following the cancellation of a *HV or HV Testing Access Authority*, a person authorised Category 9.2 *shall* carry out either of the following:

- (a) When the High Voltage apparatus covered by the HV or HV Testing Access Authority is to be made ready for service, then the DWA and associated warning signs shall be dismantled prior to any restoration steps associated with the PRI; or
- (b) When the High Voltage apparatus is to remain out of service pending the issue of a new HV Access Authority for further work then, provided all PRI requirements remain unaltered, the DWA and associated warning signs may be left in place in readiness.

NOTE: If the new *HV Access Authority* is not planned to commence until the following *working* day, the *DWA* and associated warning signs *shall* be dismantled, unless agreed otherwise with the *Controller*.

10. Specific Functions

10.1. Bridge Earthing Transmission Line Structure

Where the *work* involves the connection, cutting, disconnection or potential to break or damage a transmission line structure leg earthing *system* (the point of *work*), then prior to the *work* commencing a person authorised Category 10.1 *shall* ensure:

- (a) A bridging lead is applied across the point of work;
- (b) Bridging leads are applied using an approved insulating handle or other approved insulated working method;
- (c) The clamps of each bridging lead are locked and a Do Not Operate Tag is affixed to each clamp to explain its purpose;
- (d) Bridging leads are only removed after:
 - (i) The parallel connection has been restored; or
 - (ii) Other bridging has been installed in parallel.

NOTE: Locks are not required when the *bridging lead* is applied for a short duration while repairs to the structure earthing *system* are completed. The person authorised Category 10.1 must remain in direct supervision of the repair *works*.

10.2. Bridge Earthing Grids

Where the *work* involves the connection, cutting, disconnection or potential to break or damage any part of a *substation* earthing *system* (the point of *work*), then prior to the *work* commencing a person authorised Category 10.2 *shall* ensure:

- (a) Connections between the earthing system and transformer neutrals or High Voltage cable sheaths are not disconnected except under Access Authority conditions;
- (b) Bridging is applied across the point of work unless working under Access Authority conditions;
- (c) Bridging leads are applied and/or removed using an approved insulated working method;
- (d) The clamps of each bridging lead are locked and a Do Not Operate Tag is affixed to each clamp to explain its purpose;
- (e) Earthing grid bridging is only removed after:
 - (i) The parallel connection has been restored;
 - (ii) Other bridging has been installed in parallel; or
 - (iii) It is confirmed that is safe to do so.

Reference Documents

Electricity Supply Act 1995;

NSW Electricity Supply (General) Regulation 2014;

NSW Electricity Supply (Safety and Network Management) Regulation 2014;

National Network Safety Code ENA DOC 001 – 2019;

National Guideline for *Safe Approach Distances to Electrical apparatus* ENA NENS 04 - 2006.

National Guideline for Safe Access to Electrical and Mechanical *Apparatus* ENA NENS 03 - 2021;

Work Health and Safety Act 2011;

Work Health and Safety Regulation 2017;

SafeWork NSW Code of Practice: [Work near overhead power lines](#);

SafeWork NSW Code of Practice: [Managing Electrical Risks in the Workplace](#); and

SafeWork NSW Guide '[Work Near Underground Assets](#)' 2007.

[The Blue Book - Energy Safe Victoria](#)

Definitions

Defined terms are identified in the text by *italics*.

Defined terms in the PSSR may contain the definition plus additional supplementary information that is included to condense Rules that follow. To enable identification between the two parts the definition is shown in bold text and the supplementary information is shown in text that is not bold.

<i>Access Authority</i>	<p>Any form of authorisation, which allows access to <i>work on or near, or testing of apparatus</i>, which includes:</p> <ul style="list-style-type: none"> • The identification of the <i>apparatus</i> to be <i>worked on</i>; • The extent of access and <i>description of work</i>; • Reference to the <i>PRI</i> number authorising the issue of the <i>Access Authority</i>; • Provision for declaration of issue, receipt, suspension, transfer, and cancellation; • Each <i>Access Authority</i> shall have a unique number; <p>An appropriately authorised person shall only issue an <i>Access Authority</i>.</p>
<i>Access Authority earth</i>	Approved earthing and short-circuiting equipment applied to <i>electrical apparatus</i>, as a requirement for the issue of an <i>Access Authority</i>, to ensure the <i>electrical apparatus</i> is <i>earthed</i>.
<i>air insulated switchgear (AIS)</i>	Switchgear that uses the insulation properties of ambient air for insulation.
<i>apparatus</i>	<i>Electrical apparatus</i> and <i>mechanical apparatus</i>, including SCADA and associated control schemes.
<i>approved</i>	Having appropriate organisational endorsement in writing for a specific function.
<i>assess/assessment</i>	Formal review of proposed <i>work</i> to determine whether safety of personnel is involved and hence whether an <i>Access Authority</i> will be required, or operating <i>procedures</i> will apply.
<i>authorised person</i>	A person with technical knowledge or sufficient experience who has been assessed as <i>competent</i> and <i>approved</i> to carry out certain functions under these Safety Rules.
<i>authorised person in charge (APIC)</i>	An <i>authorised person</i> to whom an <i>Access Authority</i> has been issued and is the person responsible for compliance with the requirements of the <i>Access Authority</i>.
<i>barrier</i>	A rope, tape, barricade or alternative erected in accordance with <i>approved procedures</i>.
<i>bonding lead</i>	An <i>approved conductor</i> which is used when seeking to create an equipotential area.

<i>bridging lead</i>	An approved conductor which is used to maintain a current path when a conductor is to be broken or disconnected.
<i>cable</i>	An insulated conductor , or two or more conductors , laid together, whether with or without fillings, reinforcements, or protective coverings. (Note: Cable for the purpose of these Rules also means aerial bundled cables)
<i>Cable Access Authority</i>	An Access Authority issued for work on a HV Transmission Cable , covering the entire length from sealing end to sealing end.
<i>cage</i>	A fully fenced or walled area, room, or compartment, with a locked means of access, identified by a notice, containing High Voltage exposed conductors which do not maintain standard safety clearances .
<i>cancelling an Access Authority</i>	Notification in writing by the authorised person in charge that all persons signed on the Access Authority have ceased work and have signed off the Access Authority as recognition that their access to the apparatus has been relinquished.
<i>competent</i>	Having the skills, knowledge, and attributes a person needs to complete a task.
<i>conductor</i>	A wire, cable or form of metal designed for carrying electric current.
<i>Controller</i>	An approved person responsible for operation of all or a designated part of the system .
<i>control authority</i>	An organisation that is responsible for the control of the apparatus concerned.
<i>control measures</i>	Policies, standards, procedures, or actions to eliminate, avoid or minimise risks.
<i>de-energised</i>	Not connected to any source of energy but not necessarily isolated .
<i>description of work</i>	A description of the work to be carried out, sufficient to allow appropriate steps to be identified to make the apparatus safe for work .
<i>designated work area (DWA)</i>	A clearly defined work area associated with a HV Access Authority for work on High Voltage apparatus .
<i>disconnected apparatus</i>	HV Apparatus not electrically connected , made safe for work , and excluded from HV, Field and Cable Access Authority requirements.
<i>disconnecter</i>	A mechanical switching device which provides, in the open position, an isolating distance in accordance with design standards. This term includes isolators, air break switches bypass switches and link switches.

<p><i>Do Not Operate Tag (DNOT)</i></p>	<p>An approved tag, used in accordance with approved procedures, warning of a particular hazard or hazardous condition that is likely to be life threatening. The Tag affixed to a device as an instruction against the operation of the device.</p> <p>Use of Do Not Operate Tags, which may be electronic, <i>shall</i> be as follows:</p> <p>(a) A <i>Do Not Operate Tag</i> shall only be affixed by an <i>authorised person</i></p> <p>(b) A <i>Do Not Operate Tag</i> shall be affixed:</p> <ul style="list-style-type: none"> • Whenever isolation is required to prevent <i>apparatus</i> from being <i>energised</i> unintentionally at <i>High Voltage</i>; and • Whenever isolation of <i>apparatus</i> from <i>Low Voltage</i> and <i>mechanical</i> sources of energy is required and such isolation is not required to be restored during the <i>work</i>. <p>(c) When used in conjunction with a <i>PRI</i>, the location of each <i>Do Not Operate Tag</i> shall be listed on the <i>PRI</i> and the <i>Do Not Operate Tag</i> shall show the number of the <i>PRI</i>.</p> <p>(d) When used in conjunction with a <i>Field or Cable Access Authority</i>, the <i>Do Not Operate Tag</i> shall show the number of the <i>Access Authority</i> and the date affixed.</p> <p>(e) When <i>Do Not Operate Tags</i> are used for <i>work</i> on <i>apparatus</i> in the charge of a <i>Controller</i>, they shall show the <i>PRI</i> number and the date affixed.</p> <p>When <i>Do Not Operate Tags</i> are used for <i>work</i> on <i>apparatus</i> not in the charge of a <i>Controller</i>, they shall show the name of the <i>authorised person</i> who affixed them, the date affixed and a brief description of the <i>work</i>.</p>
<p><i>earthed</i></p>	<p>Connected to the general mass of earth by a conductor to ensure and maintain the effective dissipation of electrical energy.</p>
<p><i>earthing plan</i></p>	<p>An approved plan which describes how over the sequence of <i>work</i> to be completed, the <i>HV electrical apparatus</i> will be effectively earthed.</p>
<p><i>electrical apparatus</i></p>	<p>Any electrical equipment, including overhead lines and underground cables, the conductors of which are live or can be made live.</p>
<p><i>electrical operating work</i></p>	<p>Work involving the operation of switching devices, links, fuses, or other connections intended for ready removal or replacement, proving electrical conductors de-energised, earthing, and short circuiting, locking and/or tagging of electrical apparatus and erection of barriers and/or signs.</p>
<p><i>energised</i></p>	<p>Connected to a source or electrical supply.</p>
<p><i>Excavation Permit</i></p>	<p>A permit that is required before any excavation work commences on Transgrid premises or in the vicinity of an earth grid.</p>
<p><i>exposed conductor</i></p>	<p>An electrical conductor, approach to which is not prevented by a barrier or by insulation which is adequate under a relevant Australian Standard specification for the voltage concerned</p>

<i>Extra-Low Voltage (ELV)</i>	<p>A nominal voltage not exceeding 50 volts alternating current or 120 volts ripple free d.c.</p> <p>Typical: 50VDC Alarm supplies; 110VDC Control supplies.</p>
<i>Field Access Authority</i>	<p>An Access Authority issued for work on overhead lines outside a switchyard or indoor substation. The Field Access Authority ceases at the switchyard fence.</p>
<i>Gas Insulated Switchgear (GIS)</i>	<p>Switchgear which relies on sulphur hexafluoride (SF₆) gas as the insulating medium.</p>
<i>High Voltage (HV)</i>	<p>A nominal voltage exceeding 1,000 volts alternating current or exceeding 1,500 volts direct current.</p>
<i>High Voltage area</i>	<p>An area identified by notice containing HV equipment with no exposed conductors, such as the tunnels, switch floor and basement areas of GIS substations</p>
<i>Human Machine Interface (HMI)</i>	<p>A device used to interface with apparatus, including the SCADA, touch screens, personal computers etc.</p>
<i>HV Access Authority</i>	<p>An Access Authority issued for HV work within the boundary of a switchyard or indoor substation. The boundary ceases at the switchyard fence.</p>
<i>instructed person</i>	<p>A person supervised or advised by an authorised person to enable them to avoid the hazards which may be present.</p>
<i>in the charge of a Controller</i>	<p>Any apparatus that can directly or indirectly affect the operation of the Power System.</p>
<i>insulated</i>	<p>Separated from adjoining conducting material by a non-conducting substance which provides resistance to the passage of current, or to disruptive discharges through or over the surface of the substance at the operating voltage, to mitigate the danger of shock or injurious leakage of current.</p>
<i>isolated</i>	<p>Disconnected from all sources of energy by means which prevent unintentional energisation of the apparatus and which is assessed as a suitable step in the process of making safe for access purposes.</p>
<i>live</i>	<p>Energised or subject to hazardous induced or capacitive voltages.</p>
<i>live work</i>	<p>All work performed on components of electrical apparatus which is not isolated, proved de-energised and earthed.</p>
<i>Low Voltage (LV)</i>	<p>A nominal voltage exceeding Extra Low Voltage but not exceeding 1,000 volts a.c. or 1,500 volts d.c.</p> <p>Typical: 110VAC VT supplies; 230/400VAC Aux supplies; 250VDC Control supplies.</p>
<i>LVMPRI</i>	<p>Low Voltage and Mechanical, Preparation and Restoration Instruction</p> <p>Refer PRI</p>

<i>mechanical (MECH) apparatus</i>	Any equipment that can rotate or is pneumatic or hydraulic in nature or contains stored energy through mechanisms, liquid, thermal or gas contained within the equipment.
<i>mechanical operating work</i>	The operation of devices that control sources of energy, such as, <i>mechanical</i> , hydraulic, pneumatic or fuel energy and the implementation of <i>control measures</i> to prevent the unintentional release of that energy by the locking and tagging of <i>mechanical apparatus</i> and the erection of <i>barriers</i> and/or signs.
<i>mobile plant</i>	Cranes, elevating <i>work</i> platforms, tip trucks or similar plant, any equipment fitted with a jib or boom and any device capable of raising or lowering a load.
<i>near</i>	A situation where there is a reasonable possibility of a person either directly or through any conducting medium, other than that which forms part of installed <i>apparatus</i> , coming within the relevant <i>Safe Approach Distances</i> .
<i>Network Service Provider (NSP)</i>	The owner, <i>Controller</i> or operator of an <i>electricity network</i> .
<i>Nominal Voltage</i>	Means the a.c. (phase to phase r.m.s) or d.c. <i>voltage</i> by which a <i>system</i> of <i>supply</i> is designated.
<i>ordinary person</i>	A person without sufficient training, experience or supervision to enable them to identify/avoid the dangers which <i>electrical apparatus</i> may create.
<i>overhead line</i>	Any aerial <i>conductor</i> or <i>conductors</i> with associated supports, insulators and other <i>apparatus</i> erected, or in the course of erection, for the purpose of the conveyance of electrical energy
<i>Pilot cable</i>	Pilot cables are used for control, protection, signalling, telecommunications and data transmission purposes associated with power transmission systems.
<i>Power System</i>	The transmission and distribution <i>system</i> consisting of <i>electrical apparatus</i> which are used to convey or control the conveyance of electricity between generators' points of connection and customers' points of connector.
<i>Power System apparatus</i>	All <i>High Voltage</i> , <i>Low Voltage</i> , <i>mechanical</i> , protection, metering, SCADA, control, or communication <i>apparatus</i> directly associated with the generation, transmission, and distribution of electricity.
<i>Preparation and Restoration Instruction (PRI)</i>	<p>A written instruction, prepared in accordance with <i>approved procedures</i> setting out the safe sequence of steps required to:</p> <ul style="list-style-type: none"> • Prepare <i>apparatus</i> and make it safe for the <i>work</i> and/or <i>test</i> as described in the Request For Access; and/or • Return the <i>apparatus</i> to service; • Take <i>apparatus</i> out of service for plant security; <p>Each <i>PRI</i> shall have a unique number.</p>

<i>procedure</i>	The documentation of a systematic series of actions (or activities) directed to achieve a desired result.
<i>Request for Access (RFA)</i>	A formal request for permission to work , which may be submitted verbally, in writing or electronically.
<i>Safe Approach Distance</i>	The minimum separation in air from an exposed conductor that shall be maintained by a person, or any object held by or in contact with that person (other than insulated objects designed for contact with live conductors or that which forms part of the installed apparatus).
<i>safety observer</i>	A person competent for the task and specifically assigned the duty of observing and warning against unsafe approach to electrical apparatus .
<i>shall</i>	Is to be interpreted as ‘mandatory.’
<i>should</i>	Is to be interpreted as ‘advisory or discretionary.’
<i>spotter</i>	A person competent for the task and specifically assigned the duty of observing and warning against general hazards.
<i>standard safety clearances</i>	The clearances used in the design of High Voltage installations to provide safe conditions from High Voltage exposed conductors for a person walking at ground level, or a person on any fixed ladder or platform.
<i>substation</i>	A switchyard , terminal station or place at which High Voltage supply is switched, converted or transformed.
<i>Supervision/supervised</i>	The act of overseeing or watching over an instructed person to ensure their safety.
<i>Supply</i>	Supply of electricity
<i>Suspension of an Access Authority</i>	That all persons signed on an Access Authority have ceased work and have signed off the Access Authority as recognition that their work is suspended and shall not recommence until access is granted by the Controller and they have signed on the Access Authority .
<i>Switchyard</i>	An area identified by a notice and surrounded by security fences or walls, inside which there are exposed conductors which (except for conductors in any cage within the switchyard) maintain standard safety clearances .
<i>System</i>	All apparatus associated with the generation, transmission, and distribution of electricity.

<p><i>Test/testing</i></p>	<p>Work where the modification of some or all safety isolations or Access Authority earths is necessary and as a result, additional safety precautions are required to be implemented to ensure the safety of personnel.</p> <p>Testing may include operational checks, the application of test voltages or the application of mechanical energy. Testing does not include the application of extra Low Voltages or voltages produced by an insulation testing device operating at 1,000 volts or below, provided it is not connected to a length of cable or a capacitor with a capacitance greater than 4000 pF.</p>
<p><i>Totally enclosed apparatus</i></p>	<p>Apparatus within which the electrical conductors can only be exposed by unbolting or unlocking covers or shutters which prevent normal access.</p> <p>Cables with insulation adequate under the relevant Australian Standard Specification shall be regarded as totally enclosed apparatus.</p>
<p><i>Transmission Cable</i></p>	<p>A High Voltage cable which leaves the switchyard earth grid, regardless of voltage.</p>
<p><i>Vehicle</i></p>	<p>A truck (non-tipping), car, utility, or other general-purpose conveyance used for the carriage of persons or goods</p>
<p><i>vicinity</i></p>	<p>Surrounding area</p>
<p><i>visible break</i></p>	<p>The point at which conductors are visibly separated by a distance appropriate for the insulating medium and the nominal voltage.</p>
<p><i>Voltage</i></p>	<p>Potential difference between conductors, and between conductors and earth.</p>

<p><i>Warning Tag</i></p>	<p>An <i>approved tag</i>, used in accordance with <i>approved procedures</i> affixed to a device as a warning that this device <i>shall not be operated</i>, except as indicated on the tag.</p> <p>Use of <i>Warning Tags</i>, which may be electronic, <i>shall be as follows</i>:</p> <p>(a) An authorised person shall only affix a Warning Tag;</p> <p>(b) A <i>Warning Tag shall be used for</i>:</p> <ol style="list-style-type: none"> i. Limiting the operation of a device which may be required to be operated in conjunction with <i>work</i> or <i>testing</i>; and ii. Limiting: <ul style="list-style-type: none"> • The removal and replacement of an <i>Access Authority earth</i>, used in conjunction with <i>testing</i> without proving the <i>conductors de-energised</i>; or • Guarding against unauthorised operation of the controls of essential equipment used to maintain a safe <i>working</i> environment. <p>(c) When used in conjunction with a <i>PRI</i>, the location of each <i>Warning Tag shall be listed on the PRI</i> and the <i>Warning Tag shall show the number of the PRI</i> and the date affixed.;</p> <p>(d) When used in conjunction with a <i>Field or Cable Access Authority</i>, the <i>Warning Tag shall show the number of the Access Authority</i> and the date affixed; and</p> <p>When used in association with <i>testing of apparatus not in the charge of a Controller</i>, the <i>Warning Tag shall show the date of affixation</i>, the name of the <i>authorised person</i> who affixed the <i>Warning Tag</i> and a brief description of the <i>work</i>.</p>
<p><i>Work</i></p>	<p>When a person enters a <i>substation</i> for the purpose of effecting some degree of change, then <i>work is being undertaken</i>. If the purpose of entry is to observe only (i.e., to look, measure or photograph without coming into contact with <i>substation</i> equipment), then <i>work</i> is not being undertaken.</p>
<p><i>Working earth</i></p>	<p><i>Approved earthing</i> and short-circuiting equipment applied to <i>electrical apparatus</i>, additional to <i>access authority earths</i>, following the issue of an <i>Access Authority</i>.</p> <p>Working earths are under the control of the APIC. They must be removed prior to the cancellation of the <i>Access Authority</i>.</p>

Amendments from Previous Issue

Revision 5.4

- This is a significant update and concise rewrite of the Power System Safety Rules. Differences to Revision 5.3.1 are not highlighted in this version.
- Hazard controls have generally been removed and can be found within Work Stream handbooks or associated documentation.
- Redundant Section 8 - Radio Frequency Transmitting Apparatus and associated references removed. These competencies are now managed via Transgrid's WSAT system.
- Definitions added for Supervision, Working Earth, Pilot Cable and Earthing System.
- Separation of bundled authorisations has added new authorisations for:
 - 3.4 Supervise Instructed persons
 - 4.4 Produce/Check LVMPRI
 - 5.5 Disconnect Substation HV Apparatus
 - 6.5 Disconnect Transmission Lines
 - 8.1 Safety Observer
 - 8.2 Mobile Plant Assessment
 - 9.1 Operate HV Apparatus Connection Point
 - 9.2 Operate HV Apparatus Advanced
 - 10.1 Bridge Earthing TL Structure
 - 10.2 Bridging Earthing Grids

Safe Approach Distances to Exposed conductors

Safe Approach Distances apply to PSSR authorised persons working on assets owned or operated by Transgrid. Work in the vicinity of another organisation's assets shall be in accordance with relevant Codes of Practice unless arrangements which have been made between Transgrid and the other organisation.

SAFE APPROACH DISTANCES								
Nominal Voltage (V):	ELV <50V AC or <120V DC			LV >ELV and <1000V AC or <1500V DC				
Persons	No contact			0.25 (250mm)				Distance (m)
Persons +	Insulated contact			Insulated contact				
Persons + = Persons authorised 4.1, 4.3 or 9.1								
Nominal Voltage (kV):	11-33	66	132	220	275	330	500	Distance (m)
Persons	0.7	1.0	1.2	1.8	2.3	3.0	3.9	
Vehicles *	0.7	1.0	1.2	1.8	2.3	3.0	3.9	
Vehicles * = Includes mobile plant stowed for transit								
Mobile Plant	3.0	3.0	3.0	6.0	6.0	6.0	8.0	
Mobile Plant +	1.2	1.4	1.8	2.4	3.0	3.7	4.6	
Mobile Plant + = Mobile plant operating with restrictive devices applied or an authorised safety observer appointed								

- Safe Approach Distances for persons means the minimum distance from exposed conductors that shall be maintained by a person and/or their equipment.
- Safe Approach Distances for vehicles means the minimum distance from exposed conductors that shall be maintained based on the transit envelope of the vehicle, including its load and attachments.
- Safe Approach Distances for mobile plant means the minimum distance from exposed conductors that shall be maintained between the mobile plant including its load, controlling ropes and any other accessories.



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