

Access for Work on High Voltage Transmission Cables

Summary:

This document supports the Power System Safety Rules and its requirements assembled under High Voltage Transmission Cables - Category 7.

It applies to the issue, suspension and cancellation of cable access authorities for work on high voltage transmission cables.

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When referring to TransGrid's policies, frameworks, procedures or work instructions, please use the latest version published on the intranet.

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1. Overview

1.1. Purpose

This document supports the Power System Safety Rules and its requirements assembled under High Voltage Transmission Cables - Category 7 and apply to the issue, suspension and cancellation of cable access authorities.

1.2. Policy Base

Document No.	Document
GD SR G1 100	Power System Safety Rules

1.3. Reference Documents

Document No.	Document
GD SR G2 150	Operating Process for Access to High Voltage Apparatus
GD SR G2 151	Access for Work on High Voltage Substation Apparatus
GD SR G3 172	Safe Work Practices on High Voltage Cables
GD SR G2 010	Use of HVPRI

1.4. Scope

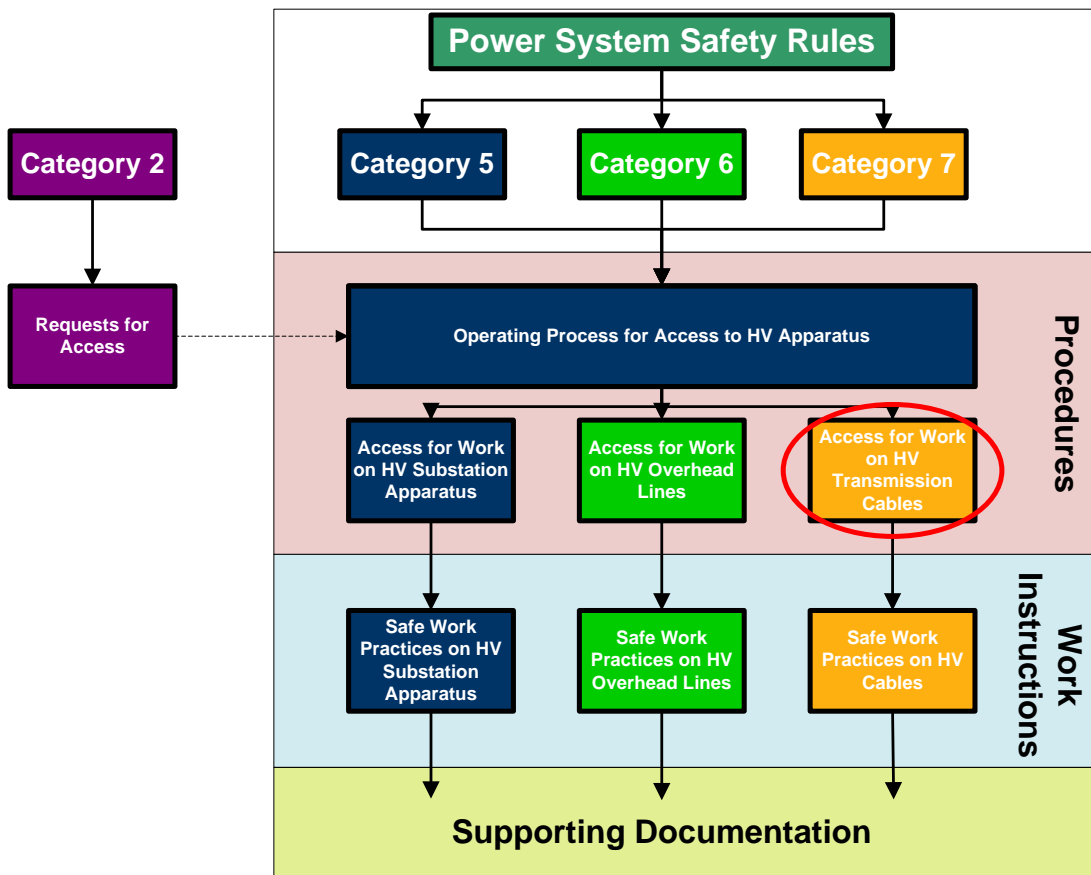
This standard applies to Access Authorities for work on high voltage transmission cables.

1.5. Accountability

Responsible person	Responsibility
Manager/Health, Safety and Environment	Maintenance and ownership of this procedure
Mgr – Training	Implementation of training programs associated with of this standard
Authorised persons	Comply with this standard

1.6. Document Location

(Block diagram showing location of document in relation to others).



2. Introduction

The issue of a Cable Access Authority is required before work is commenced on High Voltage Transmission Cables. The Cable shall be made safe for work and the Cable Access Authority shall be issued in accordance with section 7 of the Power System Safety Rules.

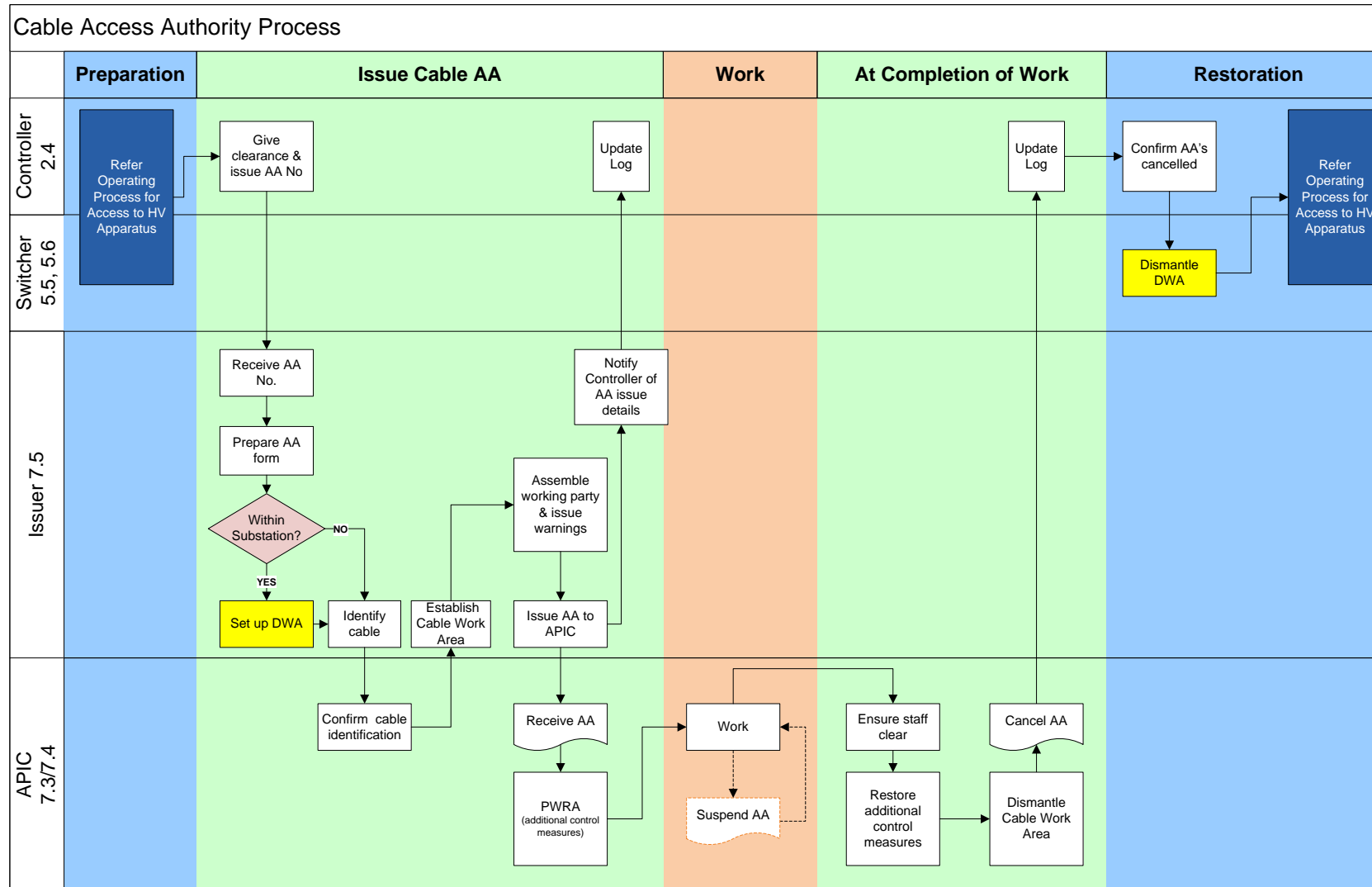
A Cable Access Authority issued for work on a HV Transmission Cable covers the entire length from sealing end to sealing end, including the section inside the substation fence.

This document covers the sequence required to safely issue a Cable Access Authority and the sequence required after completion of work for cancellation of the Cable Access Authority.

This document should be read in conjunction with the 'Operating Process for Access to High Voltage Apparatus' GD SR G2 150, which covers the generic sequence for preparation and restoration of high voltage apparatus.

Additional requirements for access to HV Gas Insulated Switchgear (GIS) are covered by Section 5.6 of the Power System Safety Rules and site specific documents relating to each GIS site.

3. Cable Access Authority Process (High Voltage Transmission Cables)



3.1. Preparation

Step	Safety Rules Authorisation	Task	Comment	Reference Document
1	5.5	Carry out the HVPRI up to the point of issue of the Cable Access Authority	Operating Process for Access to High Voltage Apparatus	GD SR G2 150

3.2. Issue Cable Access Authority

Step	Safety Rules Authorisation	Task	Comment	Reference Document
1.	7.5	Request AA No. from controller		Use of HVPRI
2.	7.5	Prepare Cable Access Authority form	Confirm the location, description of apparatus, description of work and nominated access required for work set out on the Cable Access Authority are identical to those stated in the relevant parts on the RFA	GD SR G1 100 Sect 7.5
3.	7.5	Establish Designated Work Area (DWA) if work extends inside substation fence		GD SR G2 151 Sect 5.3
4.	7.5, 7.3	The issuer and receiver of the Cable Access Authority identify Cable and identify the cable work area	Insulated working conditions shall be used for cable identification	GD SR G3 172
5.	7.5	Assemble working party. Issue warning to all staff involved in work	Section 5	GD SR G1 100 Sect 7.5
6.	7.5	Issue Cable Access Authority to Authorised Person In Charge (APIC)	Section 6	GD SR G1 100 Sect 7.5
7.	7.3	Receive Cable Access Authority	Operational control is now with the APIC.	GD SR G1 100 Sect 7.3
8.	7.5	Notify Controller of AA issue details		Use of HVPRI
9.	7.3	Carry out Pre-Work Risk Assessment (PWRA)	All staff must be involved. Implement any additional control measures.	WARA Safe Work Practices on HV Cables

3.3. Work

Step	Safety Rules Authorisation	Task	Comments	Reference Document
1	7.3	Work		Relevant Service Instruction or Procedure
2	7.3	Suspend Cable Access Authority (serviceable/unserviceable)	Notify Controller	

3.4. At Completion of Work

Step	Safety Rules Authorisation	Task	Comments	Reference Document
1	7.3	At completion of work, remove any additional control measures implemented in the PWRA	All bonding/bridging/tools removed	
2	7.3	Dismantle Cable Work Area/s as required. Account for all work parties	Link sheets from work parties shall be collected and confirmation received of: <ol style="list-style-type: none"> 1. Link restorations: and 2. Earth short removal 	
3	7.3	Cancel Cable Access Authority. Serviceable/unserviceable as far as the work is concerned.		
4	7.3	Notify controller that the Cable Access Authority has been cancelled	Operational control reverts to Controller	

3.5. Restoration

Step	Safety Rules Authorisation	Task	Comments	Reference Document
1	5.5	Dismantle Designated Work Area (DWA) if work extended inside substation fence		

2	5.5	Notify controller		
3	5.5	Carry out restoration stage of HVPRI	Operating Process for Access to HV Apparatus	GD SR G2 150

4. Preparation of a Cable Access Authority

Blank Access Authorities are supplied in book form. The Cable Access Authority shall be prepared for issue by filling in details as follows:

Access Authority Section	Required action
Section 1 - Details of Work	<p>The numbers of the HVPRI, the RFA and the Cable Access Authority (issued by the Controller) shall be entered in the spaces provided.</p> <p>The other details to be entered in this section shall be identical to the relevant details on the associated Request(s) for Access.</p>
Section 2 - Status of Apparatus at Start of Work	<p>In parts a) and b) - the issuer of the Cable Access Authority shall delete all of the listed options that are NOT applicable at the time of issue of the Cable Access Authority, for the work involved.</p> <p>In part c) details shall be obtained from the controller and shall list any system low voltage isolations (Links/fuses withdrawn) carried out for system security or to safeguard other work parties</p>
Section 3 - Issue of Cable Access Authority	<p>The numbers of the Warning and Hazard Assessment Form - Cable and all other relevant forms associated with the Cable Access Authority, shall be recorded in the spaces provided.</p> <p>Note: All such forms shall be cross-referenced to the Cable Access Authority by being endorsed with the Cable Access Authority number and shall be attached to and will become part of the Cable Access Authority when it is issued.</p>

4.1. Work Areas

When work includes working within the boundary of a substation, a DWA shall be set up around the sealing end and/ or cable work site in accordance with 'Access for Work on High Voltage Substation Apparatus' GD SR G2 151.

For work outside the boundary of a substation, a Cable Work Area shall be set up around the cable work site as required by the risk assessment performed onsite. Administrative controls, such as maps, plans and link sheets, may be used to control the work.

4.2. Warnings

The person issuing the Cable Access Authority shall give relevant warnings and record these on the Warning and Hazard Assessment Form – Cable and shall sign the form with the understanding that all staff are aware of the hazards.

5. Issuing a Cable Access Authority

The Cable Access Authority shall be issued in accordance with the general requirements of the Power System Safety Rules, section 7.5.

The Cable Access Authority number will be provided by the Controller and should be entered into the relevant box on the front cover and on all signature sheets.

Once the entire work party has been given the warnings and demonstrations required by the Safety Rules, the Cable Access Authority will be issued to the APIC, who then has operational control of the apparatus listed on the Cable Access Authority and is responsible for the safety of persons working under the Cable Access Authority.

The work party will then sign on to the Cable Access Authority. Once all of the work party has signed on, the APIC shall rule a line across the signature section, confirming that everyone above the line has received the appropriate safety briefing.

If within a substation, the Cable Access Authority shall be displayed at the entrance to the Designated Work Area, otherwise the Cable Access Authority shall be held and retained on site by the APIC.

Additional persons may become part of a work party after the Cable Access Authority has been issued, provided they are given the necessary warnings and demonstrations by the APIC. No person may enter a Cable Work Area without signing on to the Cable Access Authority.

5.1. Responsibilities of the Person Receiving a Cable Access Authority

5.1.1. Pre-Work Risk Assessment

Prior to commencement of work under a Cable Access Authority, the Cable Access Authority recipient shall, in conjunction with all other members of the work party, identify any hazards associated with the work and take appropriate additional control measures, as required by the relevant Work Activity Risk Assessment and Pre-Work Risk Assessment forms.

5.1.2. Additional Control Measures

The person receiving the Cable Access Authority shall apply additional control measures as follows:

(a) Co-ordination with other Work Parties

When there are multiple work parties, each Cable Access Authority recipient shall ensure that their work is coordinated with that of the other parties. Coordination arrangements shall be endorsed on the Warning and Hazard Assessment form for each Cable Access Authority. Where sheath earths are required to provide separation between work sites, they must be attached in co-ordination with both parties, DNO tags from both parties shall be applied. DNO tags shall be removed as part of the cancellation procedure. The party to remove the final DNO tag is required to restore to normal prior to AA cancellation.

(b) Restoration of additional control measures

On completion of the work, the authorised person holding the Cable Access Authority shall ensure the apparatus is left in a condition that allows the restoration steps of the PRI to be carried out without alteration, provided it is safe to do so. If this is not possible, it shall be noted on the Cable Access Authority whether the apparatus is, or is not serviceable and the controller shall be notified.

When the apparatus is to remain out of service pending the issue of a new Cable Access Authority for further work then, provided all PRI requirements remain unaltered, the work area and associated warning signs may be left in place in readiness for the issue of a further Cable Access Authority.

Further information regarding additional control measures are referred to in Safe Work Practices on HV Cables.

5.2. Issuing of a Cable Testing Access Authority

A testing Access Authority shall be issued in accordance with the requirements of the Power System Safety Rules 7.5.3.

A Cable testing Access Authority permits:

- The removal and replacement of earths specifically identified with Warning Tags; and
- The energising and de-energising of high voltage conductors from a test source that produces a dangerous voltage.

The Authorised Person issuing a Cable testing Access Authority shall:

- (a) Confirm with the Controller that all current Access Authorities, for work on or near the conductors to be tested, are suspended; and
- (b) On the Cable testing Access Authority, record:
 - i. Particulars of testing and details of conductors that may have test voltages applied, which shall be identical to the relevant details on the associated RFA; and
 - ii. Any earths for which responsibility of removal and replacement has been delegated to the recipient of the Cable testing Access Authority for the currency of the Cable testing Access Authority.

If there is insufficient space for the details of earths and earthing switches, the list may be extended to the Warning and Hazard Assessment – Cable form, which will be attached to the Cable testing Access Authority.

- (c) Associated with the steps in the HVPRI for issue of the testing Access Authority, apply Warning Tags instead of Do Not Operate Tags to the portable earths and earthing switches that may be removed and replaced under the Cable testing Access Authority and leave the earthing switches unlocked. The limitations regarding removal and replacement shall be stipulated on the tags; and
- (d) Ensure that the recipient of the Cable testing Access Authority is authorised category 7.4 to receive an Access Authority for cable testing;
- (e) Set up 'Danger HV Testing in Progress' notices.

It is the responsibility of the person in receipt of a Cable testing Access Authority to ensure that all earths removed or applied and substation earthing switches operated by them under the Cable testing Access Authority are restored prior to cancellation of the Cable testing Access Authority.

5.2.1. Removal of sheath links within a substation switchyard

High Voltage Testing of an insulated metallic cable sheath that terminates within a high voltage switchyard may require removal of the sheath links at the Cable's termination within the switchyard. The following procedures shall be applied:

- a) **Cable Testing Access Authority issued:** No further Access Authority is required for the purpose of removing sheath links at the cable's termination within the switchyard, provided that:
 - No other staff will be working on or near the cable's termination within the switchyard.
- b) **Cable meets the requirements of Rule 7.5.5 for Making Disconnected HV Cables Safe for Work.** Controls for sheath testing and removal of links are the responsibility of the person in charge of the test in accordance with Rule 7.4.1.

6. Suspension and Resumption of a Cable Access Authority

When work under a Cable Access Authority ceases, and it is intended to resume work under the same Cable Access Authority, then the Cable Access Authority shall be suspended.

All staff shall sign off the Cable Access Authority and the APIC shall indicate whether or not the apparatus is serviceable as far as their work is concerned and inform the controller of the details of the suspended Cable Access Authority.

When working within a substation, the entrance to the Designated Work Area shall be closed off by crossing the tapes and removing the Cable Access Authority. The suspended Cable Access Authority, together with all attachments, shall be left on the operations desk so that it will be accessible if emergency Cancellation is required.

Before resuming work under a Cable Access Authority that has been suspended, the APIC shall obtain clearance from the Controller and all members of the work party shall sign on the Cable Access Authority, which shall again be displayed at the entrance to the work area, if within a switchyard, or defined; else held by the AIPC.

Note that if the APIC is not the same person who held the original Cable Access Authority, then the process for transferring a Cable Access Authority shall be followed (see Safety Rules sect 7.3.1).

7. Cancellation of a Cable Access Authority

On completion of work, the Cable Access Authority shall be cancelled by the APIC.

All staff shall sign off the Cable Access Authority. The APIC shall:

- a) ensure all additional control measure have been removed or restored;
- b) indicate whether or not the apparatus is serviceable as far as their work is concerned; and
- c) inform the controller of the details of the cancelled Cable Access Authority.

In addition, where a testing Cable Access Authority was issued the APIC shall ensure that:

- d) any additional sheath earths are removed;
- e) any sheath isolations and any opened sheath earthing links are restored;
- f) all "Danger HV Testing in Progress" notices are removed; and
- g) advise the Controller that all persons have signed off the testing Cable Access Authority and are clear of the Cable.

8. Definitions

Cable Work Area

A clearly defined *work* area associated with a *Cable Access Authority* for work on a *HV Transmission Cable*

9. Change history

Revision no	Approved by	Amendment
0	Lionel Smyth, EGM/Network Services & Operations	<ul style="list-style-type: none"> Replaces in part document GD SR G2 011 Revision 1
1	Lionel Smyth, EGM/Network Services & Operations	<ul style="list-style-type: none"> Deleted Attachment 'A' Added hyperlink to Warning and Hazard Assessment Form – Transmission Cables
2	N. Smith, GM/System Operations	<ul style="list-style-type: none"> Revised Cable AA issue process References updated Deleted section 'Local safety precautions'
3	Ken McCall, Manager/Health, Safety and Environment	<ul style="list-style-type: none"> Position titles updated Procedure has been reviewed and is still current.

10. Implementation

This procedure is to be implemented in conjunction with the implementation of TransGrid's Power System Safety Rules. It will be available as a resource, published on the Wire.

11. Monitoring and Review

The Manager/Health, Safety and Environment is responsible for the ongoing monitoring and review of the documents associated with the Power System Safety Rules. This can include but is not limited to:

- (a) Requesting regular feedback on the effectiveness of procedures and work instructions. Appropriate feedback tools include focus groups and online assessments;
- (b) Where a change has occurred in our processes; and
- (c) Recommendations arising from incidents.

12. Attachments

Nil.