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## 1. Purpose and scope

To describe the procedures for the co-ordination and management of the removal and restoration of supply for working on or near RailCorp's High Voltage equipment.

## 2. General

All work on or near exposed high voltage equipment must be carried out in accordance with the guide SMS-06-GD-0268 Working around Electrical Equipment.

No high voltage equipment is to be taken out of service without the prior approval of the Electrical Operating Centre (EOC), except where a life-threatening situation exists.

High voltage equipment must not be returned to service until all necessary tests and phase checks have been satisfactorily carried out, and then only with the agreement of the EOC.

## 3. High Voltage Cables Or Overhead Lines Outside Substations

### 3.1. General

A Working High Voltage Instruction (WHVI) and an Electrical Permit To Work must be issued for all work outside a substation that requires isolation and earthing of a high voltage aerial line or cable except:

- lines under construction may not need a WHVI, see guide SMS-06-GD-0268 Working around Electrical Equipment, Section 12.1;
- a Substation Access Permit may be used to work on or near a pole mounted substation transformer, switchgear and associated substation equipment, including any associated high voltage equipment mounted on the same pole without the issue of a WHVI. (Note that if another high voltage service is mounted on the same pole as the Substation, an Electrical Permit To Work is required to work on or near the other service);
- for work on abandoned HV cables, an Electrical Permit To Work may be used without the issue of a WHVI, see guide SMS-06-GD-0268 Working around Electrical Equipment, Section 13.4;
- for work by another Network Operator, an Operating Agreement may be issued in lieu of an Electrical Permit To Work, see instructions PR D 78500 Electrical Permits and PR D 78504 Operating Agreements.

Where a low voltage aerial line has to be isolated and proved dead for the work, it must be included on the WHVI and the Electrical Permit to Work. A separate Low Voltage Access Permit will not be required.

Where another Network Operator's services have to be isolated and earthed for the work, an Operating Agreement must be received from the Network Operator concerned, for the work near its services, by the authorised person in charge of the WHVI. The Electrical Operating Centre, in consultation with the Electrical Network Manager is responsible for all arrangements for the isolation of another Network Operator's services.

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## 3.2. Removal of Bridges

Where equipment is isolated by the removal of bridges, jumpers or permanent connections and this removal requires both sides to be isolated, proved dead and earthed, each stage must be shown separately on a WHVI. A separate Electrical Permit to Work is required for each of the following stages:

- the work of removing the bridges, jumpers or permanent connections,
- the work for which the bridges, jumpers or permanent connections are being removed, and
- the restoration of bridges, jumpers or permanent connections.

## 3.3. Removal of Supply – Outside Substations

- (a) A WHVI must be issued in accordance with the procedure detailed in instruction SMS-06-EN-0561 Working High Voltage Instruction.
- (b) Prior to work commencing, the Authorised Person (Mains) in charge of the WHVI must contact the Electrical Operating Centre and advise their name, the number of the WHVI held and the staff arrangements for field switching.

The Electrical Operating Centre must give clearance to proceed with the work only to the Authorised Person (Mains) in charge of the WHVI.

- (c) The Electrical Operating Centre must:
  - (i) Arrange for the switching operations listed on the WHVI to be carried out.
  - (ii) Arrange for proving dead and for the safety earthing operations listed on the WHVI to be carried out.
  - (iii) Where another Network Operator's services need to be isolated:
    - request the other Network Operator to remove supply from its services, and
    - obtain confirmation from the Authorised Person (Mains) in Charge of the WHVI that the required Operating Agreement has been received.
  - (iv) On completion of the switching and safety earthing operations, inform the Authorised Person (Mains) in charge of the WHVI that:
    - supply has been removed,
    - safety earths have been applied where applicable in accordance with the WHVI, and
    - clearance is given to proceed with the proving dead, earthing and issuing of Electrical Permits and / or Operating Agreements.

## 3.4. Energising at Line Voltage to Carry out Phase Checking

- (a) The Authorised Person (Mains) in charge of the WHVI must:
  - (i) Ensure that all necessary tests which need to be done before the equipment is energised have been completed satisfactorily.
  - (ii) Arrange for all Electrical Permits To Work and/or Operating Agreements issued on the WHVI to be cancelled and for all working earths to be removed.
  - (iii) Advise the Electrical Operating Centre that:
    - all Electrical Permits To Work and/or Operating Agreements issued on the WHVI have been cancelled and that no further Electrical Permits To Work and/or Operating Agreements will be issued without clearance from the Electrical Operating Centre,
    - all working earths have been removed, and
    - the aerial lines or cables may be energised for phase checking.

- (b) The Electrical Operating Centre must:
- (i) Accept clearance to energise only from the Authorised Person (Mains) in charge of the WHVI.
  - (ii) Arrange for the safety earths to be removed.
  - (iii) Arrange for the relevant DANGER Tags to be removed in accordance with instruction PR D 78105 DANGER Tags for Electrical Equipment and for the necessary switching operations to energise the equipment to be carried out. The WHVI does not need to be cancelled.
  - (iv) If the phasing is found to be correct:
    - advise the Authorised Person (Mains) in charge of the WHVI and request that the remaining steps described below in Section 3.5 be carried out in order to cancel the WHVI and restore supply.
  - (v) If the phasing is found to be incorrect:
    - advise the Authorised Person (Mains) in charge of the WHVI, and
    - remove supply in accordance with Section 3.3 to allow alterations to be made.

## 3.5. Restoration of Supply – Outside Substations

After successful completion of the activities detailed in section 3.4:

- (a) The Authorised Person (Mains) in charge of the WHVI must:
- (i) Cancel the WHVI in accordance with instruction SMS-06-EN-0561 Working High Voltage Instruction.
  - (ii) Sign off all other Network Operators' Operating Agreements if received.
- (b) The Electrical Operating Centre must:
- (i) Accept clearance to restore supply only from the Authorised Person (Mains) in charge of the WHVI.
  - (ii) Arrange for the safety earths to be removed.
  - (iii) Arrange for the relevant DANGER Tags to be removed in accordance with instruction PR D 78105 DANGER Tags for Electrical Equipment and for the necessary switching operations to restore supply to be carried out.
  - (iv) Advise other Network Operators that their Operating Agreements have been signed off and that their supply may be restored as far as RailCorp is concerned.
  - (v) On restoration of RailCorp's supply, advise the Authorised Person (Mains) in charge of the WHVI that supply has been restored so far as that WHVI is concerned.



### **Warning**

*The equipment must not be returned to service until all necessary tests and phase checks have been carried out.*

## 4. High Voltage Equipment Within Substations

### 4.1. General

When supply is to be removed for work on or near high voltage equipment within substations, the following shall be completed before any work commences;

- (i) the equipment must be isolated, proved dead, short circuited and earthed,
- (ii) the Electrically Safe Work Area shall be defined and demarcation tape and temporary warning signs applied where required (refer to instruction PR D 78502 Substation Access Permit section 8 'Responsibility of the Person Issuing the Permit'),
- (iii) where required, access to the work site shall be defined by appropriate access markers, and
- (iv) a Substation Access Permit (PR D 78502 FM 01) shall be issued.

Where 1500 volt and / or low voltage equipment in the Substation also has to be isolated and proved dead for the work, it must be included on the Substation Access Permit.

The neutrals of transformers when disconnected from the earthing system must be considered as high voltage equipment.

### 4.2. Removal of Supply – Within Substations

The Authorised Person (Substations) issuing the Substation Access Permit must arrange for the removal of supply with the Electrical Operating Centre.

The Electrical Operating Centre must request other Network Operators for the removal of supply from their services where required.

### 4.3. Restoration of Supply – Within Substations

DANGER Tags and earths must not be removed and supply to high voltage equipment within substations must not be restored until all associated Substation Access Permits have been cancelled as per PR D 78502 Substation Access Permit, section 10 'Responsibility of the Person Cancelling the Permit'.

The Authorised Person (Substations) cancelling the Substation Access Permit must arrange for the restoration of supply with the Electrical Operating Centre.

The Electrical Operating Centre must advise other Network Operators that their supply may be restored.



#### **Warning**

*The equipment must not be returned to service until all necessary tests and phase checks have been carried out.*

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## 5. References

SMS-06-EN-0561 Working High Voltage Instruction  
PR D 78500 Electrical Permits  
PR D 78502 Substation Access Permit  
PR D 78504 Operating Agreements  
PR D 78105 DANGER Tags for Electrical Equipment  
PR D 78502 FM 01 Substation Access Permit  
SMS-06-GD-0268 Working around Electrical Equipment,

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