

# Engineering System Integrity Electrical Network Safety Rules

## Engineering Procedure Electrical Distribution Unit

Working Near or On/Within

## PR D 78501 Electrical Permit to Work

Version 1.4

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## Document control

Version	Date	Author/ Prin. Eng.	Summary of change
1.0	11 November 2015	Chris Leung	First issue as a Sydney Trains document, rebranded from previous RailCorp SMS-06-EN-0598 V1.3
1.1	20 February 2019	Nick Loveday	Update roles and position names to reflect the current organisation
1.2	17 September 2021	Deepak Sinha	Request for Electrical Permit split to separate forms for 1500 Volt and HV.
1.3	1 February 2022	ENSR Project Team	Reviewed as part of the ENSR Project. Incorporated EI D 20-04 Electrical Permit to Work – Special Instructions.
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## Table of Contents

<b>1</b>	<b>Purpose and Scope</b>	<b>5</b>
<b>2</b>	<b>Definitions</b>	<b>5</b>
<b>3</b>	<b>Responsibility</b>	<b>5</b>
<b>4</b>	<b>Overview of the Electrical Permit System</b>	<b>6</b>
4.1	Requesting an Electrical Permit	6
4.1.1	Request for 1500 Volt DC Permit	7
4.1.2	Request for HV Permit	7
4.2	Electrical Permit to Work Booklet	8
<b>5</b>	<b>General Requirements</b>	<b>9</b>
5.1	Working High Voltage Instruction (WHVI) or Authority	9
5.2	Inclusion of Low Voltage Aerial Lines	9
5.3	Work Extending into a Substation	9
5.4	Construction of above ground aerial lines including HV/LV and 1500 Volt OHW	9
5.5	Additional Work	9
5.6	Deletions or Alterations	9
5.7	Multiple Permits	10
5.8	Personnel Registers	10
5.9	Multiple Shifts	10
5.10	Worksite Traffic Management	11
5.11	Relief of Permit Holder	11
<b>6</b>	<b>Details Specified on the Electrical Permit</b>	<b>12</b>
<b>7</b>	<b>Writing, Checking, Instructing, Issuing and Cancelling Permits</b>	<b>13</b>
<b>8</b>	<b>Permit Holders</b>	<b>14</b>
8.1	Eligible Persons	14
8.2	Instruction of Permit Holders	14
<b>9</b>	<b>Responsibility of the Person Instructing Prospective Permit Holders</b>	<b>15</b>
9.1	Preparation	15
9.2	Instruction of Permit Holders – General	15
9.3	Instruction of Permit Holder at a Meeting Prior to the Work	17
<b>10</b>	<b>Responsibility of the Person Issuing the Permit</b>	<b>18</b>
10.1	Preliminary Checks	18
10.2	Issuing of Electrical Permit	19
<b>11</b>	<b>Return of the Permit</b>	<b>19</b>
<b>12</b>	<b>Responsibility of the Person Cancelling the Permit</b>	<b>20</b>
12.1	Preliminary Checks When Retrieving the Permit	20
12.2	Cancellation of the Electrical Permit	20
12.3	Removal of Working Earths and/or Portable Rail Connections	21
<b>13</b>	<b>Test Electrical Permit to Work</b>	<b>22</b>
13.1	Application	22
13.2	Special Requirements	22

13.3	Form .....	22
13.4	Electrical Safe Approach Distances .....	23
13.5	Buffer Sections .....	23
13.6	Person Holding a WHVI and/or Authority for a Test Electrical Permit to Work.....	23
13.7	Person Carrying Out the Test .....	23
13.8	Testing a Cable or Overhead Line From Within a Substation .....	24
<b>14</b>	<b>Use of Work Area Markers .....</b>	<b>24</b>
<b>15</b>	<b>Loss of an Electrical Permit to Work Booklet .....</b>	<b>25</b>
15.1	Loss of Permit with Work still in Progress.....	25
15.2	Work Already Completed and Replacement Permit not Issued.....	25
<b>16</b>	<b>Associating Electrical Permits with Several WHVI's and/or Authorities.....</b>	<b>26</b>
16.1	Relevant Situations .....	26
16.2	Numbering of Permits .....	26
<b>17</b>	<b>Electrical Permit Issued for the Purpose of Issuing a Substation Access Permit.....</b>	<b>27</b>
17.1	Details Shown on the Permit.....	27
17.2	Instruction of the Permit Holder (Person Issuing the Substation Access Permit).....	27
17.3	Test Electrical Permit to Work.....	27
<b>18</b>	<b>Reference documents.....</b>	<b>28</b>

## 1 Purpose and Scope

This procedure describes the procedures required to obtain, issue, hold, work with and cancel an Electrical Permit to Work. An Electrical Permit to Work is the primary safety document for work near or on/within the following electrical equipment:

- High Voltage (HV) aerial lines or cables
- 1500 V DC overhead wiring or cables
- Low Voltage (LV) aerial lines or cables.

Refer to *PR D 78700 Working around Electrical Equipment* situations where you must obtain and work with an Electrical Permit. For further information on the applicability of an Electrical Permit to Work, refer to *PR D 78500 Electrical Permits*.

This procedure identifies the responsibilities of a person holding a Sydney Trains Electrical Permit (Permit Holder) to ensure that all members of the work party, including the Permit Holder, are protected when working near or on/within electrical equipment. Where Sydney Trains personnel work under a Permit issued by another Electrical Network Operator for work near their electrical asset, Sydney Trains personnel shall comply with the conditions of that Electrical Network Operator's permit. In such a circumstance, the remainder of this instruction does not apply.

Throughout this document and for simplicity:

- the term 'Electrical Permit to Work' is, where appropriate, abridged as 'Electrical Permit' or just 'Permit'
- the term 'Accredited Electrical Permit Holder' is, where appropriate, abridged as 'Permit Holder'.

## 2 Definitions

Refer to the **Electrical Safety Definitions** page available on the **RailSafe** site.

## 3 Responsibility

This document sets out specific responsibilities for persons undertaking the following tasks:

- a. requesting Permits
- b. writing and checking Permits
- c. instructing Permit Holders
- d. issuing and cancelling Permits
- e. holding WHVI's and Authorities for Test Permits
- f. carrying out electrical tests - Persons undertaking the tests are responsible for ensuring that the testing is carried out safely.

Any person may Request a Permit.

Persons performing (b) to (f) above must have the appropriate Authorisations (refer to Section 7 Writing, Checking, Instructing, Issuing and Cancelling Permits).

Nominated Authorised Officer Mains in each area are responsible for reviewing Electrical Permits returned to them after completion of the work covered by the Permits.

## 4 Overview of the Electrical Permit System

An Electrical Permit to Work or 'Permit' is issued by an Authorised Person (refer to Section 7) to a Permit Holder as a confirmation that it is safe to work near or on/within the specified electrical equipment within the defined Electrically Safe Work Area, which has been:

- a. isolated
- b. proved dead
- c. earthed or rail-connected.

The above conditions will remain until the Permit is returned and cancelled.

Only one person can be a Permit Holder for each specific work party at any one time. However, the Permit Holder may be relieved by a relieving Permit Holder. Refer to Section 5.11 for more details on relief of Permit Holders.

If only one person in the work party is required to work near or on/within the subject equipment, the Permit may be issued to that person who is the Permit Holder.

The Permit Holder and all members of the work party shall sign onto the Personnel Register contained in the Permit booklet prior to commencing work, and shall sign off the Personnel Register on completion of a shift or prior to cancellation of the Permit. The responsibilities of the Permit Holder and of the work party members are set out in *PR D 78502 FM01 Substation Access Permit with two Personnel Registers* and *PR D 78502 FM03 Substation Access Permit with six Personnel Registers*.

An Electrical Permit to Work may also be issued to an Authorised Person (Substations), prior to that person issuing a Substation Access Permit, where required by PR D 78500. The special responsibilities and requirements that apply are set out in Section 17 of this document.

### 4.1 Requesting an Electrical Permit

The person in charge of the work party must determine if Electrical Permits are required, seeking advice from the electrical discipline if required.

The person in charge of the work party must complete and submit a Request for Electrical Permit to Work form if supply is to be removed. The responsibilities of the Permit Holder and of the work party members are set out in *PR D 78502 FM01 Substation Access Permit with two Personnel Registers* and *PR D 78502 FM03 Substation Access Permit with six Personnel Registers*. The equipment made safe and for an Electrical Permit to Work to be issued, for work to be carried out near or on/within any of the following:

- 1500 Volt DC overhead wiring or cables: use form *PR D 78501 FM11 Request for Electrical Permit to Work (1500 Volt)*
- High Voltage (HV) aerial lines or cables: use form *PR D 78501 FM12 Request for Electrical Permit to Work (HV)*
- Low Voltage (LV): refer to *PR D 78503 Low Voltage Access Permits*.

In relation to other 1500 Volt DC, HV or LV equipment, such as equipment in or associated with a Sydney Trains substation, the person in charge of the work party should seek advice from the electrical discipline representative who will organise the appropriate Electrical Permit.

#### **4.1.1 Request for 1500 Volt DC Permit**

The person preparing a Request for 1500 Volt DC Permit must complete Sections 1 to 6 of PR D 78501 FM11. Section 7 will be completed by the person issuing the Permit prior to the isolation.

At Section 3, if the work entails the disconnection of traction bonds, traction return cables, or sections of track will be cut or welded the checkbox should be ticked.

At Section 4, the required extent of the safe work area must be defined by reference to OHW structure or termination numbers and the track name, as per 1500 Volt DC Operating Diagrams. Words such as 'All tracks' will not be accepted. If an early handback is required (e.g. to allow train preparation, Return To Service) prior to the end of a possession this should be stated.

Section 6 must be completed by an Authorised Officer (Mains), indicating that:

- an onsite walkthrough has been conducted with an Authorised Person prior to the request, and/or
- an onsite walkthrough with an Authorised Person is required prior to the issue of a Permit,
- where the work or access to the site will be within 300m of the limits of the safe work area, the instruction of the persons who will hold the permit must be conducted onsite.

#### **4.1.2 Request for HV Permit**

The person preparing a Request for HV Permit must complete Sections 1 to 5 of PR D 78501 FM12. Section 7 will be completed by the person issuing the Permit prior to the isolation.

At Section 4, the required extent of the safe work area must be defined by reference to the Feeder Numbers start and end location. 'Sub to sub' will not be accepted.

Section 6 on-site walkthrough with an Authorised Person (Mains) is mandatory.

Section 8 Area allocated for a diagram or map of the work area.

## 4.2 Electrical Permit to Work Booklet

An Electrical Permit to Work Booklet is used for work near or on/within mains covered by a Working High Voltage Instruction (WHVI) or 1500 Volt Authority.

Each Permit booklet contains the following items:

- a. Cover Sheet: 1 size A5 cover page, white in colour – this cover sheet provides useful information for both Permit Issuer and Permit Holder(s), including the need to know all members of the work party for every shift covered by the Permit.
- b. Original: 1 pink copy of the self-duplicating Permit itself, which shall not be removed.
- c. Copy: 1 Permit issuer's copy, white in colour, which shall be removed by the Permit Issuer.
- d. A number of Personnel Registers bound with the Permit.

Permit booklets are available for up to 6 and 26 Personnel Registers. They are printed and assembled, by the Transport for NSW (TfNSW) approved supplier, in accordance with *PR D 78703 Printing and Supply of Electrical Permit to Work Booklets*. The booklet used for a particular job should be the one with the least number of Personnel Registers, with one Register for each shift to be worked.

## 5 General Requirements

### 5.1 Working High Voltage Instruction (WHVI) or Authority

An Electrical Permit shall be issued in accordance with one or more relevant WHVI's or Authorities, except as provided for in *SP D 79052 Cables – Work near or on/within* in relation to construction of new overhead lines under specified circumstances.

### 5.2 Inclusion of Low Voltage Aerial Lines

Where a LV aerial line has to be isolated and proved dead for the work, it shall be included on the Electrical Permit to Work. A separate Low Voltage Access Permit is not required.

### 5.3 Work Extending into a Substation

Where work extends into a substation, a Substation Access Permit shall be issued for the portion of the work in the substation in accordance with the procedure detailed in *PR D 78502 Substation Access Permits*.

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#### NOTE

Refer to the Electrical Safety Definitions page available on the RailSafe site for the definition of a 'substation'.

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### 5.4 Construction of above ground aerial lines including HV/LV and 1500 Volt OHW

- All above ground aerial lines under construction is to be treated as live, unless an Electrical Permit has been issued.
- The Electrical Permit is to be marked with the words "WIRING UNDER CONSTRUCTION" and the issued Permits shall be consecutively numbered.
- A register of Permits issued for construction work is kept by the Project Engineer in charge of the work.
- When cancelled, the Permit Booklet shall be returned to the Project Engineer in charge of the work.

### 5.5 Additional Work

No work is to be carried out near or on/within the isolated equipment other than that specified in the Permit.

### 5.6 Deletions or Alterations

No deletions or alterations can be made to the work or operating details on the Permit once it has been issued, or the prospective Permit Holder has signed as an "Approved Prospective Permit Holders". Should it be necessary to vary the work specified after the Permit has been issued, the Permit shall be cancelled and a new Permit issued for the revised work.

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**NOTE**

**Under no circumstances may Permits be photocopied prior to being cancelled.**

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## **5.7      Multiple Permits**

Where a single person in charge can adequately and safely control the work to be undertaken, the person may hold a number of Permits. A separate Permit shall be issued for each:

- a. work location, or
- b. group of work locations.

In assessing if it is practicable for a single person to effectively supervise the work, the Permit Holder shall consider the:

- extent of the Electrically Safe Work Area
- proximity of the electrical hazards
- number of persons working under the Permit
- physical separation of work locations
- mobility of the work process.

## **5.8      Personnel Registers**

These are bound to the Permit booklet for all members of the work party, including the Permit Holder, to sign on and off, with one Personnel Register to be used per shift. Each Personnel Register forms part of the Permit.

## **5.9      Multiple Shifts**

For work extending over several shifts, several prospective Permit Holders may be instructed and the Permit issued to one Permit Holder at the beginning of the first shift. The first shift Permit Holder is required to sign on both the original Permit (“Received by Permit Holder”) and the first Personnel Register. Permit Holders of subsequent shifts are required to sign onto the respective Personnel Registers only. The Permit may then be transferred to other prospective Permit Holders for the subsequent shifts. This process can only be deployed if all the conditions below are confirmed prior to the commencement of each shift:

- The scope of work, including the location, extent and type of work remains unchanged.
- The Electrically Safe Work Area remains unchanged.
- Only **one** Permit Holder is in charge of the Permit at any time.
- A separate Personnel Register is used for each shift.
- All members comprising the work party have been advised as required.
- No additional electrical hazards have been introduced to the work area.
- A procedure for the management of the Permit in between shifts is nominated by the Electrical Engineer/Manager for the project.

If any of the above conditions cannot be met, the Permit shall be cancelled and then a new Electrical Permit to Work shall be issued for each shift.

At the beginning of each shift, the shift Permit Holder shall check and ensure that the previous shift Permit Holder has signed off the related Personnel Register.

The Permit Holder for the final shift, shall, in addition to signing off the Personnel Register, also sign off as "Returned by Permit Holder" of the original Permit, declaring that the work has been totally completed and that the Permit is no longer required. This will enable the Permit to be cancelled and supply restored after all necessary checks and/or tests have been undertaken.

## **5.10 Worksite Traffic Management**

Drivers of trucks delivering or removing material from site shall comply with the requirements of *SMS-06-SP-3026 WHS Risk Management*, in addition to the need for a Permit if required in accordance to PR D 78700.

## **5.11 Relief of Permit Holder**

Relief of Permit Holders caters for unforeseen circumstances only, rather than normal change of shift.

- a. If the Permit Holder is to be replaced prior to the completion of a shift, the Permit Holder shall wait for the arrival of the relieving Permit Holder prior to signing off at the shaded area to the right of the sign-on area on the Personnel Register for the shift. The relieving Permit Holder signs on the shaded area below the original Permit Holder's sign-on area. All members of the work party shall be advised of the change of Permit Holder.
- b. If the Permit Holder shall leave the work location prior to the arrival of the relieving Permit Holder, all work shall stop and the Personnel Register for the shift shall be signed off by all work party members, including the leaving Permit Holder, and a new Personnel Register is to be used for the relieving Permit Holder.

The relieving Permit Holder shall have been instructed by an Authorised Person prior to taking over the holding of the Permit.

## 6 Details Specified on the Electrical Permit

The Electrical Permit specifies the:

- a. Permit number
- b. planned dates and times for the work – *form question (1)*
- c. location, extent and type of the work for which the Permit is required – *form question (2)*
- d. the person/company/work team responsible for the work to be carried out – *form question (3)*
- e. details of electrically safe work areas – *form question (4)*.

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### NOTE

**All other exposed electrical equipment shall be considered alive and appropriate clearances maintained to this equipment unless another Permit has been issued for this equipment.**

- f. Special instructions and/or warnings specified on the WHVI or Authority – *form question (5)*. The warnings on the Electrical Permit shall include warnings about any live equipment in the vicinity, such as live overhead wiring on adjacent tracks, live AC aerial lines, or live joint use circuits.
- g. Locations where all rail connections or earths are applied that are required for the Permit – *form question (6)*. All permanent and portable rail connections/earths shall be listed prior to the issue of the Permit. The tick boxes at the right are to be completed by the Permit issuer after ensuring that **all** required rail connections and/or earths have been applied. The form *PR D 78501 FM02 Portable Rail Connection/Earthing Schedule*, is to be used for recording details of all applied portable rail connections/earths.

When creating the permit by hand, due to the limited space, when it is not practical to list the limits of the electrical safe work area and/or special instructions and warnings, it is acceptable to mark in *form question (4)* and/or (5) “see attached Electrical Safe Work Area and/or Special Instructions and Warnings”.

The attached sheet must be identified with the Permit number and document the electrical safe work area and/or special instructions and warnings and be bound to the original permit (pink), a copy of which must be bound to the issuers copy (white).

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### NOTE 1

**PR D 78501 FM02 is used to only record the portable rail connections/portable earths applied.**

### NOTE 2

**All rail connections and portable rail connections applied by the operation of rail connection links or switches shall be recorded on the Permit.**

### NOTE 3

**All earths and portable earths applied by the operation of earthing switches shall be recorded on the Permit.**

- h. Checking before issue – *form question (8)*. The person writing *form questions (1)* to (6) of the Permit to be issued shall sign on the space provided. These items shall be checked and signed by an Authorised Person (Mains) who did not write the Permit.

- i. Prospective Permit Holders – *form question (7)*. Spaces are provided to record the names and signatures of all prospective Permit Holders who have been instructed by an Authorised Person, together with the name and signature of the Authorised Person who instructed each prospective Permit Holder.
- j. Permit Issuer – *form question (8)*. This serves to record the name and signature of the Permit Issuer.
- k. Permit Holder – *form question (8)*. This serves to record the name and sign-on details of the Permit Holder for the first shift only. The Permit Holder is also required to sign on the first Personnel Register as well.
- l. Permit Cancellation – *form question (8)* is used only after the work has been completed, or completion of the **final shift**, as signed off by the final shift Permit Holder. The signing off of all work party members and the Permit Holder, is provided on the Personnel Register for each shift, including the final shift.

## 7 Writing, Checking, Instructing, Issuing and Cancelling Permits

At least 2 Authorised Persons, i.e. an Authorised Traction Operator or Authorised Officer (Mains), shall be involved in the checking, instructing and issuing of a Permit.

The Electrical Permit to Work or Test Electrical Permit to Work may be written by either an Authorised or unauthorised person (e.g. an apprentice).

Only an Authorised Traction Operator or Authorised Officer (Mains) may:

- check the written Permit and this person shall not be the person who wrote the Permit
- instruct Prospective Permit Holders

### NOTE

**It is not necessary that the person who instructs the Permit Holder be the same person who will issue the Permit.**

- issue a Permit, or
- cancel a Permit.

### NOTE

**The person checking the written Permit or instructing prospective Permit Holders shall ensure that all relevant information including any special instructions and warnings on the WHVI and/or Authority is entered on the Permit. All information entered on the Permit in items 1 to 6, when implemented, would provide an Electrically Safe Work Area, as required for the work detailed on the Request for Electrical Permit to Work form.**

**Refer to PR D 78701 Personnel Certifications – Electrical and SP D 79055 Electrical Competency Specific Certifications for authorisation details.**

## 8 Permit Holders

### 8.1 Eligible Persons

Permit Holders shall be persons who:

- a. Are Accredited Electrical Permit Holders – refer to PR D 78701 for more details.
- b. Have been instructed by an Authorised Person in accordance with Section 9 of this document.

### 8.2 Instruction of Permit Holders

Permit Holders may be instructed either at the worksite or at a pre-possession meeting (e.g. for planned weekend possessions or closedown which involves various work groups) prior to a Permit being issued.

The Permits are to be pre-numbered in accordance with:

- *PR D 78202 Working High Voltage Instruction* if issued under a WHVI, or
- *PR D 78302 1500 Volt Authority* if issued under an Authority.

An on-site inspection is not required if written approval is obtained from the nominated Electrical Representative as indicated on *PR D 78501 FM01 Request for Electrical Permit to Work*. This nominated Electrical Representative making this decision shall be the relevant/appropriate Authorised Officer (Mains). The on-site inspection or instruction shall **not** be waived **unless** the following conditions are complied with:

1. There is no live electrical equipment in the vicinity, as specified under 'Special Instructions and Warnings' of the Permit, and where appropriate.
2. Arrangements have been made specifically to ensure that **all** live exposed 1500 Volt equipment that is within **300m** (including track, structures, transmission lines, exposed equipment, etc.) of the Permit is isolated and rail connected for the duration of the Permit.

Nominated Authorised Officers (Mains) are reminded that it is not adequate to assume Condition (2) above is satisfied when, for example, all 1500 Volt sections over an extended length of track are to be isolated and rail connected, such as during a closedown.

If the nominated Authorised Officer (Mains) decides to waive the on-site inspection by Permit Holders, then this shall be done by them after ensuring that adequate risk control measures are in place to control the risk of Condition (2) not being complied with. These measures shall include the listing on the Permit, for which on-site inspection has been waived, of the rail connections applied that ensures compliance with Condition (2).

If required, additional Permit Holders may be instructed in accordance with Section 9 of this document after work has commenced.

## 9 Responsibility of the Person Instructing Prospective Permit Holders

### 9.1 Preparation

The person instructing a prospective Permit Holder shall be authorised to issue a Permit and shall:

- a. Have an approved copy of the relevant WHVI and/or Authority, the Portable Rail Connection/Earthing Schedule and up-to-date Operating/Sectioning Diagrams, and
- b. Have the approval, by the relevant Authorised Officer (Mains), if the instruction is not to be 'on-site', and
- c. Ensure that all relevant information including any special instructions and warnings on the WHVI and/or Authority is entered on the Permit. All information entered on the Permit in items (1) to (6), when implemented, would provide an electrically safe work area as required for the work detailed on the Request for Electrical Permit to Work form, and
- d. Ensure that the person to be instructed is an Accredited Electrical Permit Holder.

It is not necessary that the Authorised Person who instructed the Permit Holder be the same Authorised Person who will issue the Permit.

### 9.2 Instruction of Permit Holders – General

The Authorised Person (refer to Section 7) instructing the prospective Permit Holders shall ensure that they understand:

- i. the planned date and time of work covered by the Permit
- ii. the person in charge of the work, depot or company, and the contact phone number
- iii. which electrical equipment is covered by the Electrical Permit and is safe to work near or on/within
- iv. which electrical equipment shall be treated as live
- v. any special instructions and warnings on the Electrical Permit
- vi. the obligation of the Permit Holder for the electrical safety of staff working under their control
- vii. the responsibilities set out on the reverse side of the Permit.

In addition, the instructing person should ask the following:

- if the Permit Holder is familiar with all members of the work party covered by the Permit
- the type of work to be carried out
- what machinery (such as loaders, cranes, excavators, etc.) will be utilised for the work
- where such machinery will gain access, to be set up or operate
- where will the spoil site be
- how many people will be working per shift

- how will the site be controlled (people and plant)
- if the prospective Permit Holders understand the electrically safe work area, and where earths and/or rail connections will be installed
- where they will keep the Permits between shifts
- what they would do if the Permit is lost, and if the Permit Holder needs to leave the site during the course of work.

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**NOTE**

**For ready reference, the above requirements are listed under the 'Guidance Notes for On-Site Walk Through/Instructing Permit Holders' form on the reverse side of the front cover of each Permit booklet.**

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In the case of a Permit issued for 1500 Volt OHW, there may be live HV over crossings above the electrically safe work area. Refer to PR D 78302 Appendix F Vertical Extent of Electrically Safe Work Area.

The instructing person shall obtain an acknowledgment from the prospective Permit Holder that the work can be carried out:

- i. safely within the Electrically Safe Work Area shown on the Permit, and
- ii. in accordance with the special instructions and warnings shown on the Permit.

The instructing person shall provide the prospective Permit Holder with any advice or assistance required in order for the prospective Permit Holder to make an informed assessment prior to giving the required acknowledgment.

The instructing person shall:

- a. Read items (1) through (6) of the Permit to the prospective Permit Holder, and, as each item is completed, require the prospective Permit Holder to give verbal confirmation that:
  - i. they have understood that item of the Permit, and
  - ii. the information in that item of the Permit matches the work that they are undertaking.
- b. Ensure that the prospective Permit Holder is aware of the time restrictions of the Permit.
- c. Ensure that the prospective Permit Holder prints their name and signs the Permit in the space(s) provided in item (7) of the Permit as an acknowledgment that items (1) to (6) of the Permit to be issued are understood.
- d. Then print their name and sign in the adjacent space(s) provided in acknowledgment of having instructed that Permit Holder.

### 9.3 Instruction of Permit Holder at a Meeting Prior to the Work

If the Permit Holder is being instructed at a meeting prior to the work, the instructing person shall ensure that:

- a. items (1), (2), (3), (4), (5), (6) (except for the tick boxes at the right) of the Permit and (8 – Checked (Items 1 to 6) by) are completed before instructing commences
- b. item (7) shall be completed at the meeting
- c. items (6) (only the tick boxes), (8 – Issued by), (8 – Received by Permit Holder), (8 – Returned by Permit Holder) and (8 – Permit Cancelled by Authorised Person (Mains)) of the Electrical Permit are not completed at the meeting
- d. the Permit is numbered prior to the issue of the Permit, and
- e. the Permit booklet is retained and arrangements are made for it to be forwarded to the Authorised Person (Mains) for issue.

## 10 Responsibility of the Person Issuing the Permit

### 10.1 Preliminary Checks

The Authorised Person (refer to Section 7) issuing the Permit shall ensure that:

- a. All relevant information including any special instructions and warnings on the WHVI and/or Authority is entered on the Permit, and check that the information is clearly legible on the Permit issuer's copy (self-duplicating).
- b. The person in charge of the WHVI and/or Authority has:
  - i. Confirmed that the specified high and low voltage overhead lines or cables have been isolated and safety earths applied as required.
  - ii. Confirmed that the specified sections/subsections of the 1500 Volt OHW system have been isolated and has advised the locations of the associated rail connections.
  - iii. Confirmed that other Electrical Network Operator's services where involved have been isolated and earthed as required and an Operating Agreement has been received.
  - iv. Advised the Permit number.
- c. The Permit is correctly numbered.
- d. The **working earths** for the specified HV overhead lines or cables are in place at each side of the work site. The person issuing the Permit shall visually check at least one set.
- e. All 1500 Volt equipment covered by the Permit is rail connected. This shall be done:
  - i. by visually tracing to at least one set of rail connections for each section / subsection, or
  - ii. by personally using a LR tester, or
  - iii. by personally using a Hivotech OHW Tester to test dead, or
  - iv. in circumstances as approved in writing by the Authorised Officer (Mains) in the area concerned, by reference to a signed PR D 78501 FM02, stating the locations of the rail connections applied for a closedown of extended length and/or duration and unchanging power out configuration with the exception of the electrical sections/subsections adjacent to the live sections at the extremities of the closedown where LR testing or visual tracing to a set of rail connections is mandatory.
- f. The Prospective Permit Holders listed on the Permit concerned are all Accredited Electrical Permit Holders.
- g. The locations of the relevant earths and/or rail connections as listed on the Permit has been checked applied and ticked off in the boxes provided at the right.

## 10.2 Issuing of Electrical Permit

The Authorised Person issuing the Permit shall then:

- a. Make the Permit 'in force' by writing their name, signing in the space provided and entering the time and date 'in force' and issue the Permit.
- b. Ensure that the Permit Holder understands all details entered into items (1) to (6) of the Permit prior to writing their name and signing on the Permit in acknowledgment and acceptance of the associated responsibilities.
- c. Confirm the details of the Permit with the Authorised Person (Mains) in charge of the WHVI or Authority.

It is not necessary that the person issuing the Permit be the same person who instructed the Permit Holder.

The person issuing the Permit shall advise the person holding the Authority or WHVI so that they can record the issue of any Permit on the back of the Authority and/or WHVI. If the Permit is issued against multiple Authority's and/or WHVI's, the record of issue shall be indicated on all associated Authority's and/or WHVI's.

The person issuing the Permit is not required to remain in the vicinity of the work unless holding the Permit.

The responsibilities of the Permit Holder and the persons in the work party are set out as per the Permit.

## 11 Return of the Permit

The Permit Holder is required to return the Permit to an Authorised Person retrieving and cancelling the Permit or, in the case of 1500 Volt construction work where an Authority has not been issued, to the Electrical Project Engineer. The Authorised Person shall check and ensure that the Permit Holder and all members of the work party have signed off before allowing the Permit Holder to leave the work site.

### NOTE

The agreed procedure is for the Permit Holder to return the Permit personally to the Authorised Person (Mains) retrieving the Permit so that the 'Preliminary Checks' can be completed with the Permit Holder present.

## 12 Responsibility of the Person Cancelling the Permit

### 12.1 Preliminary Checks When Retrieving the Permit

Prior to cancelling the Permit, the Authorised Person retrieving the Permit shall:

- a. Check that the Permit Holder has certified that the Permit may be cancelled.
- b. Check that all persons signed on to the Permit or Personnel Registers have signed off.
- c. If it appears that any work party member may not have signed off, confirm that the Permit Holder:
  - Has made reasonable attempts to check that any person failing to sign off has left the work site and it is impracticable to get them back for signing off.
  - Accepts responsibility for that person, and an appropriate notation shall be made on the Personnel Register.

The Permit Holder is required to undertake a joint site inspection with the Person retrieving the Permit or nominated Authorised Person (Mains) to ensure that all persons, tools and machinery are outside the minimum Safe Approach Distance for safe energisation of supply.

- d. If the Permit Holder has not signed off and/or already left the work site and is not reasonably practicable for them to return to sign off the Permit, then the Person retrieving the Permit or nominated Authorised Person has to undertake a site inspection to ensure that all persons, tools and machinery are outside the minimum Safe Approach Distance for safe energisation of supply.
- e. In the case of incident (c) or (d) above, report the incident to Sydney Trains Safety Incident and Injury Hotline 1800 772 779, the person in charge of the WHVI/Authority and ICON Electrical. ICON Electrical will temporarily suspend and withdraw the authorisation in accordance with PR D 78701 and inform the Electrical Distribution Unit (EDU).
- f. Ensure that the electrical equipment for which the Permit was issued has been inspected, tested if required, and is safe to be energised.

### 12.2 Cancellation of the Electrical Permit

Once the preliminary checks have been satisfactorily completed, the Authorised Person cancelling the Permit shall:

- a. Ensure that the Permit Holder of the final shift has, in addition to signing off the final shift Personnel Register, also signed off item (8) of the Permit and certified that the work has been completed and the Permit is no longer required.
- b. Cancel the original copy of the Permit by signing in the space provided and entering the time and date.
- c. Ensure that the person in charge of the WHVI and/or Authority is advised that the Permit has been cancelled.
- d. Forward the cancelled Permit to the nominated Authorised Person or electrical representative in the area concerned.

It is not necessary for the white copy of the Permit to be placed back in the Permit booklet.

## 12.3 Removal of Working Earths and/or Portable Rail Connections

Working earths and/or portable rail connections shall not be removed:

- a. Without first checking with the person in charge of the WHVI and/or Authority, and
- b. If the said working earths and/or portable rail connections are protecting work being carried out on other Permits or Operating Agreements.

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### NOTE

Where overlapping Authorities exist, as indicated on the completed PR D 78501 FM02, the portable rail connections applied in the overlapping areas shall not be removed without the approval of the Authority Holders for each of the overlapping Authorities concerned.

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## 13 Test Electrical Permit to Work

### 13.1 Application

When it is necessary to remove earths or rail connections to enable test equipment to be used, a Test Electrical Permit shall be issued.

The following work may be carried out on the Test Electrical Permit to Work:

- a. connection and disconnection of the test equipment, and
- b. adjustment of the test equipment.

This work shall be carried out with the electrical equipment earthed or rail connected unless it is carried out in a manner that does not require persons to come within the Safe Approach Distance of the electrical equipment.

### 13.2 Special Requirements

The electrical equipment to be tested shall be isolated and earthed or rail connected in accordance with the relevant WHVI and/or Authority prior to the issue of the Test Electrical Permit to Work.

**WARNING**

**Equipment capacitance can result in a dangerous voltage remaining on the equipment after the test equipment has been turned off.**

**The equipment shall be discharged to earth at the conclusion of the test, prior to persons coming within the electrical Safe Approach Distances.**

Whilst the Test Electrical Permit to Work is current:

- a. The earths or rail connections shall only be removed for the duration of the test.
- b. The equipment shall remain isolated.
- c. All other Permits associated with the WHVI or Authority shall be cancelled prior to the Test Electrical Permit to Work being issued.
- d. The WHVI or Authority does not need to be cancelled.

All conditions applicable to an Electrical Permit to Work, other than the removal of earths or rail connections, apply to the Test Electrical Permit to Work.

### 13.3 Form

The Electrical Permit to Work form, refer to *PR D 78501 FM05 Electrical Permit to Work with six Personnel Registers* or *PR D 78501 FM06 Electrical Permit to Work with 26 Personnel Registers*, shall be used with the word "TEST" written in front of the title.

## 13.4 Electrical Safe Approach Distances

During the period for which earths or rail connections are removed, all persons shall remain outside of the required Safe Approach Distance from the electrical equipment. The required distance is the greater of:

- a. the nominal equipment operating voltage, and
- b. the test voltage.

## 13.5 Buffer Sections

A ‘buffer section’ of rail connected 1500 Volt Overhead Wires (OHW), between the live OHW and the section of OHW being tested, shall be used to protect against:

- a. Leakage across section insulators and insulated knuckles, and
- b. Danger from pantographs bridging live to dead sections.

If practicable, in the case of HV equipment, a ‘buffer section’ of earthed equipment should be used for additional safety.

## 13.6 Person Holding a WHVI and/or Authority for a Test Electrical Permit to Work

The person holding a WHVI and/or Authority for a Test Electrical Permit to Work shall be:

- an Authorised Officer (Mains) specifically authorised to do so, and an
- Electrical Engineer or Authorised Officer (Substations).

The person in charge of the WHVI and/or Authority shall:

- a. Be in charge of all current WHVI's and Authority's covering the electrical equipment which is being tested.
- b. Prior to the issuing of the Test Electrical Permit to Work, check with the person carrying out the tests:
  - i. the details of tests to be carried out
  - ii. the isolation and earthing or rail connecting arrangements.
- c. Ensure that no other Electrical Permit is in force for the electrical equipment being tested during the currency of the Test Electrical Permit to Work, except as provided for testing from within a Substation per Section 13.8.
- d. Be present during the tests to ensure that the agreed arrangements are followed.
- e. Authorise the removal and replacement of working and safety earths or rail connections when required, in co-ordination with the ESO.

## 13.7 Person Carrying Out the Test

The person carrying out the tests shall have sufficient knowledge of the test procedures and is responsible for ensuring that the testing is carried out safely.

## 13.8 Testing a Cable or Overhead Line From Within a Substation

Where the testing is carried out on a HV overhead line or cable and the test is conducted from within a substation, a Test Substation Access Permit shall be issued in accordance with PR D 78502 in lieu of a Test Electrical Permit to Work.

If a WHVI is current for the HV overhead line or cable under test, a Test Electrical Permit to Work shall be issued in accordance with Section 17 to the person issuing the Test Substation Access Permit.

A Test Electrical Permit shall be issued in accordance with Section 17, to the person issuing the Test Substation Access Permit to Work, when the testing is carried out on 1500 Volt equipment that:

- a. cannot be isolated from the 1500 Volt overhead wiring, and
- b. the test is conducted from within a substation.

## 14 Use of Work Area Markers

Markers are not the responsibility of the person issuing the Permit to define the limits of the electrical safe working area. This does not preclude the use of markers by the Permit Holder to assist in the control of the work process.

## 15 Loss of an Electrical Permit to Work Booklet

If the Permit booklet is lost, the Permit Holder shall immediately ensure that all work is stopped and report the loss to one of the following:

- a. the person who issued the Permit, or
- b. the person who will cancel the Permit, or
- c. ICON Electrical.

The last Permit Holder for the works is required to undertake a joint site inspection with the Person retrieving the Permit or nominated Authorised Person (Mains) to ensure that all persons, tools and machinery are outside the minimum Safe Approach Distance for safe energisation of supply.

### 15.1 Loss of Permit with Work still in Progress

An Authorised Person (refer to Section 7) shall issue a duplicate Permit with the same number. The duplicate Permit shall be endorsed "Replacement for Lost Permit". The Authorised Person (refer to Section 7) shall instruct the Permit Holder to ensure that all persons still engaged in the work sign onto the Personnel Register of the duplicate Permit booklet. The Authorised Person (refer to Section 7) shall also ensure that the loss and replacement action is recorded on the back of the WHVI and/or Authority.

### 15.2 Work Already Completed and Replacement Permit not Issued

The Authorised Person (refer to Section 7) who would have cancelled the Permit shall obtain written notification from the Permit Holder that:

- a. all persons and material are clear of all electrical equipment for which the Permit was issued, and
- b. all persons who signed on to the original Permit have been instructed to treat the equipment as live.

If the Permit issuer's white copy of the Permit is available, written notification may be provided by making a notation on the white copy stating that:

- a. the original Permit booklet has been lost, and
- b. as far as practicable, all persons signed on to the original Permit have been contacted and told that it is no longer safe to work at the locations covered by the Permit.

## 16 **Associating Electrical Permits with Several WHVI's and/or Authorities**

### 16.1 **Relevant Situations**

If the work requires several HV overhead lines or cables to be isolated, and to facilitate staging they are isolated on a number of separate WHVI's, then a single Permit may be issued. This Permit shall be linked to all WHVI's involved, and shall not be issued until the relevant equipment has been isolated and earthed in accordance with all the WHVI's involved.

If the work requires several sections/subsections of the 1500 Volt OHW to be isolated, and to facilitate staging they are isolated on a number of separate Authorities, then a single Permit may be issued. This Permit shall be linked to all Authorities involved and shall not be issued until the relevant equipment has been isolated and rail connected in accordance with all the Authorities involved.

If the work requires isolation of both HV overhead lines or cables, and sections/subsections of the 1500 Volt OHW, then a single Permit may be issued. This Permit shall be linked to all WHVI's and Authorities involved, and shall not be issued until the relevant equipment has been isolated and earthed or rail connected in accordance with all the WHVI's and Authorities involved.

### 16.2 **Numbering of Permits**

In order to link the Permit to a number of WHVI's and/or Authority's, the Permit shall be given a composite number. The person in charge of each WHVI or Authority shall allocate a Permit number for each WHVI or Authority. The person issuing the Permit shall then number the Permit using all of these numbers, each linked together using the '&' symbol.

An example of such a number is '123/1 & T456/96/1'.

The details of the Permit shall then be entered on the reverse side of each WHVI or Authority using the composite Permit number.

## 17 Electrical Permit Issued for the Purpose of Issuing a Substation Access Permit

In accordance with PR D 78500, an Electrical Permit to Work may be issued to an Authorised Person (Substations) for the purpose of issuing a Substation Access Permit. No work may be carried out on an Electrical Permit to Work issued in this way; it can only be used as a permission to issue a Substation Access Permit for the work. All the normal conditions of the Substation Access Permit apply.

The following special requirements and responsibilities apply to the issue of the Electrical Permit.

### 17.1 Details Shown on the Permit

When completing the Electrical Permit:

- a. at item (4) "Details of the Electrically Safe Work Area", write: "See Substation Access Permit", and
- b. at item (5) "Special Instructions and Warnings", write: "For issue of Substation Access Permit at (name of substation) only" (modifies item 5).

### 17.2 Instruction of the Permit Holder (Person Issuing the Substation Access Permit)

Contrary to Section 8.2 of this document, the Permit Holder (Authorised Person (Substations) issuing the Substation Access Permit) does not need to be instructed on site and no written approval from the Nominated Authorised Officer is required for this.

Contrary to Section 9, the Authorised Person (refer to Section 7) instructing the Prospective Permit Holder does not need to obtain acknowledgment that:

- a. the work can be carried out safely within the shown on the Permit, and
- b. in accordance with the special instructions and warnings shown on the Electrical Permit.

### 17.3 Test Electrical Permit to Work

The requirements of Section 17 also apply for situations that require the issue of a Test Electrical Permit to Work to the person issuing a Test Substation Access Permit (refer to Section 13.8).

## 18 Reference documents

- PR D 78202 Working High Voltage Instruction
- PR D 78302 1500 Volt Authority
- PR D 78500 Electrical Permits
- PR D 78501 FM01 Request for Electrical Permit to Work
- PR D 78501 FM02 Portable Rail Connection/Earthing Schedule
- PR D 78501 FM05 Electrical Permit to Work with six Personnel Registers
- PR D 78501 FM06 Electrical Permit to Work with 26 Personnel Registers
- PR D 78501 FM11 Request for Electrical Permit to Work (1500 Volt)
- PR D 78501 FM12 Request for Electrical Permit to Work (HV)
- PR D 78502 Substation Access Permits
- PR D 78502 FM01 Substation Access Permit with two Personnel Registers
- PR D 78502 FM03 Substation Access Permit with six Personnel Registers
- PR D 78503 Low Voltage Access Permits
- PR D 78700 Working around Electrical Equipment
- PR D 78701 Personnel Certifications – Electrical
- PR D 78703 Printing and Supply of Electrical Permit to Work Booklets
- SMS-06-SP-3026 WHS Risk Management
- SP D 79052 Cables – Work near or on/within