

Engineering Instruction

Engineering Instruction Electrical Distribution Unit	EI D 17-23 V2.0
Approved by: Paul Poynton, A/Professional Head Electrical Engineering, Sydney Trains	Date in Force: 1 August 2018 Date Expires: 30 November 2018
Authorised by: Jonathon McKinnon, Engineering Technical Publications Manager, Sydney Trains	
This Engineering Instruction includes urgent engineering information. Adherence to the information in this Instruction is MANDATORY .	
WHVI Numbering Prefix	
Audience: <ul style="list-style-type: none">• Network Maintenance Division• Major Works Division• Engineering System Integrity Division• Electrical System Operators ICON• Authorised Persons• Operational readiness TfNSW	Main Points: <ul style="list-style-type: none">• Informing of change of WHVI prefix to 'T' and Emergency WHVI prefix to 'ET'
Primary Affected Documents: SMS-06-EN-0561 Working High Voltage Instruction PR D 78103 Electrical Operational Communication and Records	

Scope

To advise changes to the prefix designations for both standard and Emergency WHVI numbering as 'T' only and 'ET' only respectively.

Background

With the introduction of Electrical Isolation Management System (EIMS), only a single prefix may be used for all WHVIs. A 'W' prefix was originally selected to replace the non-Emergency WHVIs developed through EIMS. It has been realised that selection of a 'W' prefix has introduced a few difficulties in the ability to effectively communicate the prefix 'W' between field personnel and Electrical System Operators.

The WHVI numbering has traditionally been prefixed by a:

- 'T' – Transmission Ariel
- 'U' – Underground Cable
- 'C' – Concentric Cable
- 'E' – Emergency

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Prepared using: TP ESI 004 V1.3

These prefixes were originally used to identify a WHVI as being related to a particular type of asset. The asset type has evolved from being of the same type for a HV feeder into a blend of defined types on the same feeder identity.

In addition, it has been discovered that under the current numbering system for both Authority and WHVI that it is possible to have both an Emergency WHVI and Emergency Authority with the same number being enforced at the same time. This could lead to confusion and error when communicating which document is being discussed.

A review by Human Factors and workshops were conducted to determine the most appropriate selection for a sole WHVI prefix to address the communication issues experienced by field personnel and Electrical System Operators and to also address the concern of having both an Emergency WHVI and Emergency Authority with the same number at the same time. A final workshop was conducted to review the preferred options for prefixes and discuss which would be the best choice. The group determined that the 'T' prefix was the strongest candidate for its least likeliness to be miscommunicated verbally or when written, misinterpreted as something other than the letter T.

Action required

All standard WHVIs are to be numbered using 'T' as the prefix, for example: T306/14 for the 306th WHVI of the year 2014. It is to be understood that there is no meaning associated with the 'T' as a prefix other than as being used as a unique identifier for a WHVI.

All Emergency WHVIs are to be numbered using a 'ET' for a prefix, for example: ET62/15 for the 62nd emergency WHVI of the year 2015

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Engineering Instruction Electrical Distribution Unit	EI D 16-12 V2.0
Approved by: Paul Poynton, A/Professional Head Electrical Engineering, Sydney Trains	Date in Force: 1 August 2018 Date Expires: 30 November 2018
Authorised by: Jonathon McKinnon, Engineering Technical Publications Manager, Sydney Trains	
This Engineering Instruction includes urgent engineering information. Adherence to the information in this Instruction is MANDATORY .	
WHVI and 1500 Volt Authority Token System	
Audience: <ul style="list-style-type: none">• Network Maintenance Division• Major Works Division• Electrical System Operators ICON• Authorised Persons• Operational readiness TfNSW	Main points: <ul style="list-style-type: none">• APM to forward a copy of the WHVI/1500V Authority to ICON to verify the verbal clearance when cancelling the WHVI/Authority• ICON to confirm all permits cancelled prior to energisation
Primary affected documents: SMS-06-EN-0561 Working High Voltage Instruction SMS-06-EN-0567 1500V Authority PR D 78103 Electrical Operational Communication and Records	
This Engineering Instruction supersedes EI D 15/20 with immediate changes to the WHVI and 1500V Authority Process	
This Engineering Instruction shall be read in conjunction with SMS-06-EN-0561 Working High Voltage Instruction, SMS-06-EN-0567 1500V Authority and PR D 78103 Electrical Operational Communication and Records	

Scope

To strengthen the restoration process between the Authorised Person Mains (APM) and the Electrical System Operator (ESO) for Working High Voltage Instructions (WHVI) and 1500 Volt Authority's

Background

An incident occurred when a high voltage feeder was energised while an electrical permit to work was in force. This caused the circuit breaker to trip. No injuries were reported as a result of this incident. An investigation was completed with corrective actions progressing.

This incident exposed a potential for error in the power restoration process of the verbal clearance between the Authorised Person Mains (APM) holding the WHVI-1500 Volt Authority and the Electrical System Operator (ESO) at ICON.

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Action required

1. Electrical Operational Communication and Records

- Each ESO desk at ICON shall be issued a hardbound notebook. This shall be utilised for all notes relating to the electrical network that are not immediately recorded onto ESO Log Sheets. On shift changes, the relieving ESO shall note their name, the date and time on the next available line in the notebook. The notebook shall be retained in accordance with Sydney Trains records management policy.
- ESOs shall have the ICON copy of the WHVI/1500V Authority in their possession when undertaking operational communication related to that WHVI/1500V Authority.
- APM's and AO's undertaking Operating Work in relation with a planned WHVI/1500V Authority shall have an approved field copy of the WHVI/1500V Authority for verification of switching operations. The APM's and AO's undertaking Operating Work must confirm with the ESO that the instructions match the written instructions that they have. For undocumented switching the APM's or AO's must record the instructions in writing and repeat back to the ESO for confirmation.

2. Clearance to restore WHVI/1500V Authority

- (a) The APM shall forward a copy of the back of the field WHVI/1500V Authority listing the cancelled permits to the ESO on EOCOperator@transport.nsw.gov.au and then contact the ESO to confirm that all permits have been cancelled and Working Earths/Rail Connections removed

NOTE: All APM and all Authorised Operators involved in planned isolations shall possess devices capable to wirelessly create, send, and receive an electronic image and have access RailSafe website.

The type of files that can be utilised are either:

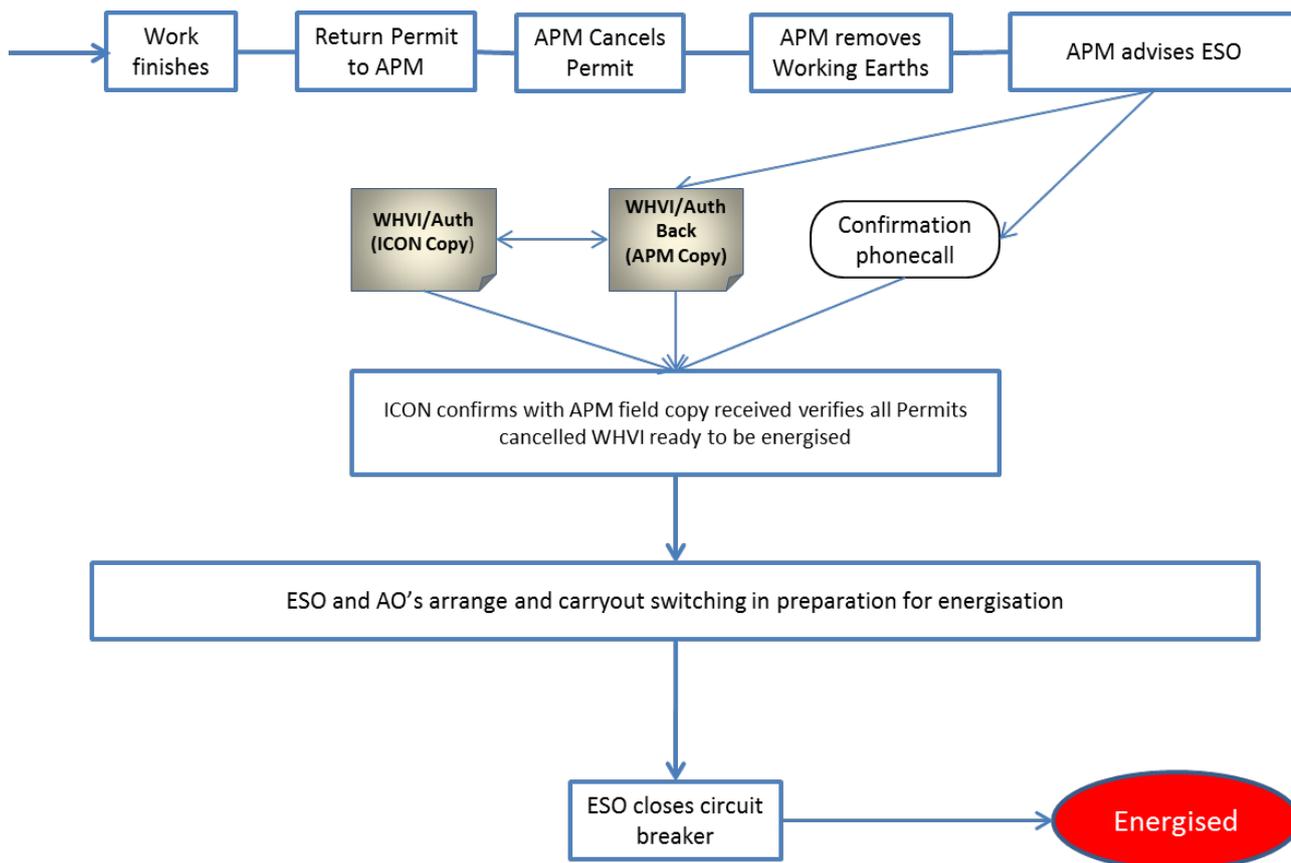
- a photograph with sufficient resolution to allow clear reading of the information detailed on document or,
- a PDF scan with a minimum resolution of 200dpi.

- (b) **If the APM cannot forward a copy of the back of the field WHVI/1500V Authority listing the cancelled permits to ICON.**

- The APM in charge of the WHVI/1500V Authority shall contact the ESO and advise of the,
 - WHVI/1500V Authority number
 - the individual permit and operating agreements
 - number
 - cancelled by
 - time and date
- Should the WHVI/1500V Authority be cancelled the cancellation details are also to be advised.
- The ESO shall record all of the details onto the rear of ICON copy of the WHVI/1500V Authority form with a note as too advised by whom and repeat the information back to the APM for confirmation.

3. When advised of clearance to restore supply the ESOs shall:

- Verify the name of the person giving clearance, against the recorded person in charge of the WHVI/1500V Authority.
- Highlight and initial adjacent the WHVI and feeder number or 1500V Authority number, on both the ICON and the emailed back of the field copy of the WHVI/1500V Authority. If verbally advised highlight and initial the back of the ICON copy of the WHVI 1500V Authority with the details of the cancelled permits.
- Verify the advice received by the APM that all Permits have been cancelled.
- Attach the printed copy of the emailed field WHVI/1500V Authority back page to the ICON copy.
- Follow ENSR requirements for arranging the restoration supply to the equipment.



Contact

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1. Purpose and scope

To describe the procedures required for the issuing and cancellation of a Working High Voltage Instruction (WHVI) form ([SMS-06-FM-0603 Working High Voltage Instruction](#)) for working on or near RailCorp's High Voltage (HV) ac aerial lines and cables outside substations.

2. General

A WHVI must specify:

- (a) The HV aerial lines or cables and low voltage (LV) aerial lines where required, that need to be isolated and earthed.
- (b) The date and time of isolation.
- (c) Any necessary Special Instructions. These must include:
 - (i) details of any nearby 1500 volt equipment for which a Permit must be received to allow work to be carried out at a specific location.
 - (ii) details of other Electrical Network Operators' services for which an Operating Agreement must be received to allow work to be carried out.
 - (iii) for HV aerial lines:
 - all feeders carried on the poles concerned, distinguishing between those which are to be isolated and earthed and those which are to be treated as live,
 - any exposed electrical equipment that is located under the isolated line within the work area, such as LV aerial lines,
 - any HV equipment that crosses over the isolated line within the work area and which may present a hazard, and
 - (iv) for HV cables:
 - all cables in the trench, troughing or on a cable tunnel shelf at the worksite, distinguishing between those which are to be isolated and earthed and those which are to be treated as live.
 - (v) reference to any other WHVI which may be affected by, or is associated with this WHVI.
- (d) All switching operations required to isolate the high and low voltage aerial lines or cables and to earth them where applicable, and the location of safety earths.
- (e) The area in which Permits and/or Operating Agreements may be issued.
- (f) All special tests which need to be done before the equipment is returned to service.
- (g) The work team that is to carry out the work.

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3. Issue of WHVI's Under Normal Conditions

3.1. Planning the Issue of a WHVI

- (a) The person responsible for organising each job must establish whether a Permit is required in accordance with the [SMS-06-GD-0268 – Working around Electrical Equipment](#). If uncertainty exists about the identification of any equipment, advice must be obtained from an Authorised Person (Mains) prior to nominating the equipment from which removal of supply is requested.

For work which requires an Electrical Permit to Work and / or an Operating Agreement to be issued, a Request for Electrical Permit to Work form (SMS-06-FM-0484) nominating the electrical equipment to be isolated, must be forwarded to the nominated District Authorised Officer (Mains) responsible for approving the WHVI. This request form must be submitted to the district nominated Authorised Officer (Mains) at least 6 weeks prior to the planned isolation.

- (b) The Authorised Officer (Mains) prepares and submits an 'Isolation Order' or 'Order' to the Electrical Operating Centre. This Order must include the following details:
- dates and times of work,
 - the location and extent of the work, eg. pole number to pole number,
 - a description of the work including plant,
 - the aerial line or cable from which supply is requested to be removed.
 - other Electrical Network Operators' services from which supply is requested to be removed and confirmation that removing that supply will not result in interruption to supply to any RailCorp installation.

Where supply is required to be removed from 1500 volt overhead wiring for work to be carried out, the procedure detailed in instruction [SMS-06-EN-0567 '1500 Volt Authority'](#) must be complied with.

- (c) Confirmation must be obtained from the System Control Engineer's nominee that the high and low voltage aerial lines or cables, including other Electrical Network Operators' services where required, may be taken out of service on the date and for the time proposed for the work.
- (d) Using the information from:
- the Order for the isolation,
 - reference to controlled copies of Operating Diagrams, and
 - field inspection if necessary,

the Authorised Officer (Mains) must forward, to the Issuing Officer, the Order for the WHVI which includes the details set out in Section 2 (a), (b), (c), and (f).

Note: *Under normal conditions a WHVI must be issued by an Officer authorised to do so by the Electrical Engineering Manager (NMD), referred to in this section as the "Issuing Officer".*

If the requirements for several jobs are compatible, the details may be combined on a single Order for a single WHVI.

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The Order must be submitted:

- a minimum of 5 working days prior to the planned work where an Operating Agreement is not required, or
- where another Electrical Network Operator is involved,
 - in the case of Bulk Supply Points, a minimum of 15 working days (3 weeks) prior to the planned work (as other Electrical Network Operators require 14 working days notice), or
 - in other cases, i.e. not a Bulk Supply Point, a minimum of 10 working days (2 weeks) prior to the planned work.

For emergencies and some urgent works the above minimum working days notice period can be disregarded, and an alternate period can be proposed subject to agreement from Electrical Operating Centre.

The Issuing Officer should issue the WHVI to the Authorised Officer (Mains), at a minimum of 1 working day prior to the work.

3.2. Checking and Approval of a WHVI

- (a) An Authorised Officer (Mains) must check the field copy of the WHVI against the details submitted under Section 3.1 (a) and (d), the controlled copy of the relevant Operating Diagram, and approve the WHVI.

This checking must include that:

- (i) The area in which Permits and/or Operating Agreements may be issued is correct and complete.
- (ii) The high and low voltage aerial lines or cables (including other Electrical Network Operators' services where required), from which supply is to be removed, fully cover the area in which Permits and/or Operating Agreements may be issued.
- (iii) Any special instructions are correct and complete, including details of Operating Agreements required from other Electrical Network Operators for work near their services.

NOTE: *When any other WHVI's are cross referenced in the Special Instructions, the details on those WHVI's must also be examined. This is to ensure that any switching operations will not compromise the electrically safe work area for another WHVI.*

- (iv) The switching operations required to isolate the high and low voltage aerial lines or cables and to earth them where applicable, are correct and complete.
- (v) The locations of safety earths are correct.
- (vi) The dates and times are correct.

After approval, the Authorised Officer (Mains) must forward the WHVI to the Authorised Person (Mains) in charge of the WHVI together with details of the work to be carried out on each Permit and or Operating Agreement.

- (b) The Electrical System Operator must check:
- Items (i), (ii) and (iii) of Section 3.2 (a) as far as can be determined from the Operating Diagrams or other electrical safety documents available at the Electrical Operating Centre, and
 - Items (iv) and (v) of Section 3.2 (a)
- and sign the Electrical System Operator's copy.

NOTE: *When any other WHVI's are cross referenced in the Special Instructions, the details on those WHVI's must also be examined. This is to ensure that any switching operations will not compromise the Electrically Safe Work Area for another WHVI.*

3.3. Alterations to WHVI's

- (a) If it becomes necessary to make minor alterations to a WHVI after it has been issued, the person making the alteration must ensure that all copies have been amended. The WHVI must then be re-checked by both an Authorised Officer (Mains) and an Electrical System Operator. Each amendment must be initialled and dated by the person checking.

Once a WHVI is in force, no alterations may be made to it in relation to the switching required for the isolation except as in (b) and (c) below.

- (b) The Electrical System Operator may amend the switching required to maintain supply to allow for changes to the system arrangements.
- (c) If it is necessary to overhaul a line air break switch which is a point of isolation for the WHVI, an Authorised Person (Substations) is permitted, with the concurrence of the Electrical System Operator, to extend the high voltage isolation within the Substation to allow the line air break switch to be overhauled. In this case, the Substation Access Permit must be endorsed with the words "Line Air Break Switch No. _____ is to be checked open and Danger Tagged in accordance with current WHVI No. _____ prior to the cancellation of this Permit."

The Electrical System Operator must authorise the removal of the Danger Tag which was attached for the WHVI. The Authorised Person (Substations) holding the Permit must replace this Danger Tag before cancelling the Permit and advise the Electrical System Operator that the Danger Tag applied for the WHVI has been replaced.

The safety earths, on the line or cable for the WHVI, must not be removed in connection with the work carried out in accordance with Section 3.3 (c).

- (d) If it is necessary to alter a WHVI which will cause the Electrically Safe Work Area on an associated Permit and/or Operating Agreement to be altered, and:
- a Permit has not been issued, the person issuing the proposed Permit and/or the prospective Permit Holder must be informed of the change; or
 - if a Permit and/or Operating Agreement has been issued, the Permit and/or Operating Agreement shall be cancelled and re-issued in consideration of the alteration.

4. Issue of WHVI's Under Emergency Conditions

A WHVI for emergency work will be issued by an officer authorised to issue emergency WHVI's by the Electrical Engineering Manager (NMD). This officer is referred to as the "Issuing Officer" throughout Section 4. (The "Issuing Officer" will typically be the Electrical System Operator).

- (a) An Authorised Officer (Mains) on site must communicate verbally with the Issuing Officer regarding the high and low voltage aerial lines or cables, including other Electrical Network Operators' services, that need to be isolated and earthed for the work to be carried out safely.
- (b) The Issuing Officer must issue the WHVI verbally to the Authorised Officer (Mains) on site, who must record the details on a WHVI form and approve the WHVI. Alternatively, the WHVI may be issued by fax, an electronic un-editable means such as an email containing a locked PDF document or may be hand delivered. Work must not proceed until any discrepancy has been resolved.
- (c) The field and Electrical System Operator's copies of the emergency WHVI must be checked and approved in the same way as for a WHVI for planned work. Minor alterations to an emergency WHVI after it has been issued must be dealt with in the same way as for a WHVI for planned work.

- (d) In the absence of an Authorised Officer (Mains), an Authorised Traction Operator, with knowledge of the high voltage aerial line and cable systems in the area, may carry out the procedures in (a) and (b) above when approved by the System Control Engineer or the Electrical Engineer having authority over the area concerned.

NOTE: *This approval will only be granted on a case by case basis, and is only current for the particular Emergency WHVI.*

5. Responsibility of the Person in Charge of the WHVI

5.1. Responsibilities Relating to Removal of Supply

When given clearance by the Electrical System Operator to proceed with proving dead, earthing and issuing of Electrical Permits or Operating Agreements, the Authorised Person (Mains) in charge of the WHVI must:

- (a) Print their name and sign on the back of the WHVI as the Authorised Person (Mains) in charge of the WHVI and enter the date and time.
- (b) Where required, ensure that an Operating Agreement is received from other Electrical Network Operators. Check that the equipment listed on the Operating Agreement corresponds with that listed on the WHVI, and list the details of the Operating Agreement on the back of the WHVI. The Operating Agreement must be kept with the WHVI until the Operating Agreement is cancelled.
- (c) For HV aerial lines and cables, arrange for proving dead to be carried out in accordance with the procedure detailed in instruction [SMS-06-EN-0562 – High Voltage Operating Procedures](#).
- (d) For HV aerial lines and cables, arrange for earths to be applied in accordance with the procedure detailed in instruction [SMS-06-EN-0562 – High Voltage Operating Procedures](#).

Note: Portable earths are to be recorded on the form “SMS-06-FM-0600 Portable Rail Connection / Earthing Schedule”, the completed form being attached to the completed WHVI.

- (e) For LV aerial lines and cables, arrange for the isolation and proving dead to be carried out in accordance with the instruction [SMS-06-EN-0574 – Isolation and Energisation of Low Voltage Equipment](#).

5.2. Responsibilities Relating to Issue of Permits and/or Operating Agreements

Upon completion of all the necessary isolation, proving dead and earthing procedures, refer section 5.1 above, the person in charge of the WHVI must:

- (a) Ensure that each Authorised Person (Mains) who will be issuing a Permit and/or an Operating Agreement has a copy of the approved WHVI and the completed “SMS-06-FM-0600 Portable Rail Connection / Earthing Schedule”.
- (b) Arrange for an Electrical Permit to Work and/or an Operating Agreement to be issued for each separate work party to carry out work on or near the specified aerial lines or cables. Refer to instructions [SMS-06-EN-0598 – Electrical Permit to Work](#) and [SMS-06-EN-0585 – Operating Agreements](#).
- (c) On the back of the WHVI form, list the details of all Electrical Permits to Work and/or Operating Agreements issued on the WHVI. Print the name of the person to whom the Permit/Operating Agreement was issued and print the name of the Authorised Person who issued this Permit/Operating Agreement.

Each Electrical Permit to Work and/or Operating Agreement issued on the WHVI must be numbered as a sub-number of the WHVI. For example, the first Electrical Permit to Work and/or Operating Agreement issued under WHVI number 1234 must be numbered 1234/1, the second 1234/2 and so on, consecutively.

- (d) Contact the Electrical System Operator immediately after the issue of one or more Permits and/or Operating Agreements and advise the identifying numbers of the Permits and/or Operating Agreements issued. This requirement also applies to Operating Agreements, if received.

The Authorised Person (Mains) in charge of the WHVI is not required to remain in the vicinity of the work unless holding an Electrical Permit to Work.

NOTE: *Where the Authorised Person (Mains) in charge of the WHVI is also the Person in charge of a work party, that person shall be the Permit Holder.*

If the Authorised Person (Mains) in charge of the WHVI becomes aware that work will not be completed in time for supply to be restored by the time stated on the WHVI, the Electrical System Operator is to be immediately informed. The WHVI remains in force until all issued Permits and/or Operating Agreements have been cancelled.

5.3. Transfer of Responsibility

- (a) The Authorised Person (Mains) must advise the Electrical System Operator:

- before ceasing to be in charge of the WHVI, and
- where the WHVI and any Operating Agreements, if received, will be left for the next shift.

When ceasing duty, the Authorised Person (Mains) in charge of the WHVI relinquishes responsibility for holding the WHVI and the Operating Agreements if received.

- (b) The Authorised Person (Mains) taking over the WHVI must:

- advise the Electrical System Operator, and
- take responsibility for the WHVI and the Operating Agreement if received, by printing their name and signing the WHVI in the space provided and entering the date and time.

6. Backup Record of Permits and/or Operating Agreements

The Electrical System Operator must record on the reverse side of the Electrical System Operator's copy of the WHVI, the identifying number of the Permits and/or Operating Agreements issued on the WHVI, and Operating Agreements if received, as advised by the Authorised Person (Mains) in charge of the WHVI.

7. Procedure in Case of the WHVI Being Lost

In the event that the original copy of the WHVI is lost, the Authorised Person (Mains) in charge of the WHVI must contact the Electrical System Operator immediately and arrange for a replacement WHVI.

The replacement may be transmitted verbally and transcribed onto the appropriate form, or may be transmitted by fax or by an electronic un-editable means such as an email containing a locked PDF document. Both sides of the form must be replaced.

The replacement WHVI must be endorsed "REPLACEMENT - Original Lost". The date, time and initials of the Authorised Person (Mains) in charge of the WHVI must be included with this endorsement.

When completing the reverse side of the replacement form, the identifying numbers of all Permits and Operating Agreements issued on the lost WHVI, and Operating Agreements if received, as recorded on the Electrical System Operator's copy, must be used to ensure that all Permits and Operating Agreements that were issued, and Operating Agreements if received, are included on the replacement WHVI.

The book copies of Permits and Operating Agreements should then be used to establish to whom the individual Permits and Operating Agreements were issued.

8. Cancellation of WHVI's

Before supply is restored, the Authorised Person (Mains) in charge of the WHVI must:

- (a) Ensure that any special tests which need to be done before the equipment is energised have been completed satisfactorily.
- (b) Arrange for all Electrical Permits to Work and Operating Agreements issued on the WHVI to be cancelled and for all working earths to be removed; refer to the completed "SMS-06-FM-0600 Portable Rail Connection / Earthing Schedule".
- (c) Enter the time each Permit or Operating Agreement is cancelled in the space provided on the WHVI.
- (d) Sign off all other Electrical Network Operators' Operating Agreements if received.
- (e) Cancel the WHVI and arrange with the Electrical System Operator for supply to be restored.
- (f) Print their name, sign and enter the date and time of cancellation on the back of the WHVI, and
- (g) Forward the cancelled WHVI to the appropriate Electrical Engineer's Office.

9. References

SMS-06-EN-0585	Operating Agreements
SMS-06-EN-0598	Electrical Permit to Work
SMS-06-EN-0562	High Voltage Operating Procedures
SMS-06-EN-0567	1500 Volt Authority
SMS-06-EN-0574	Isolation and Energisation of Low Voltage Equipment
SMS-06-FM-0600	Portable Rail Connection / Earthing Schedule
SMS-06-FM-0603	Working High Voltage Instruction)
SMS-06-GD-0268	Working around Electrical Equipment

10. Appendices

- Appendix A Sample "Isolation Order"
- Appendix B Sample "Working High Voltage Instruction" Form – Front side
- Appendix C Sample "Working High Voltage Instruction" Form – Reverse side
- Appendix D Completed "SMS-06-FM-0600 Portable Rail Connection / Earthing Schedule" Form for the Sample "Working High Voltage Instruction" Form
- Appendix E Electrical Operating Diagram used for Sample WHVI

Appendix A Sample "Isolation Order"



HIGH VOLTAGE FEEDERS ISOLATION ORDER

CURRENT OUTAGE REQUIRED

RailCorp HV Feeder(s): 734 33kV feeder
Date(s) & Time(s): 0400 hrs Saturday 17th continuous to 2000hrs Sunday 18th September 2011
Between: 734 33kV feeder Pleasure Point Substation and Revesby Substation
Other Authorities Feeder(s): Nil

ELECTRICAL SAFE WORKING

Special Instructions To Be Included On WHV:

ALL WORK TO BE CARRIED OUT CLEAR OF THE FOLLOWING;

- 1. Live 1500 Volt OHW, HV & LV Crossings Within Electrical Safe Working Area:**
 - Ausgrid HV over crossing between poles 29 ~ 30
 - 1500V crossing between poles 8 ~ 9
 - Ausgrid LV crossing between poles 9 ~ 10, 22 ~ 23, 32 ~33, 34 ~ 35, 35 ~ 36 & 37 ~38.
- 2. Feeders In Joint Use Within Electrical Safe Working Area:**
 - Nil
- 3. Adjacent RailCorp HV cables Within Electrical Safe Working Area:**
 - Nil
- 4. 1500 Volt Equipment For Which A Permit To Work Is Required:**
 - Nil

Safety Earths To Be Erected At The Following Locations:

- Pleasure Point Substation and Revesby Substation

Area In Which Permits May Be Issued:

- 734 33kV feeder between Pleasure Point SS and Revesby SS

Special Tests Required:

- Nil

Location And Extent Of The Work, Including Plant To Be Used:

- RailCorp staff to carry out pole top overhauls on poles 9 to 18 supporting 734 33kV feeder between Pleasure Point SS and Revesby SS.
- EWP will be used.

SAMPLE

Michael Cox
Engineer Electrical, Illawarra

FILENAME: Isolation Order 2011-09-17 Feeder 734 33kV.doc

Appendix B Sample "Working High Voltage Instruction" Form – Front side



Transport Working High Voltage Instruction (WHVI)

RailCorp

WHVI No. T 788/2011

EQUIPMENT TO BE ISOLATED: (Including other Electrical Network Operator's services) (Week 12)

No. 734 33kV Aerial Line

between Pleasure Point Substation & Revesby Substation

DATE AND TIME: 0400 hrs Saturday 17th continuous to 2000 hrs Sunday 18th September 2011

SPECIAL INSTRUCTIONS: CHECK SIGNALS

Unless the relevant Permit is issued all work SHALL be carried out clear of the following:

- Ausgrid HV Crossing between poles 29 to 30
- 1500V Crossing between poles 8 to 9
- Ausgrid LV Crossing between poles: 9 to 10, 22 to 23, 32 to 33, 34 to 35, 35 to 36 and 37 to 38.

THE ELECTRICAL SYSTEM OPERATOR SHALL ARRANGE FOR THE FOLLOWING SWITCHING AND SAFETY EARTHING OPERATIONS:

CIRCUIT BREAKER / SWITCH / LINK	LOCATION	ACTION
No. 735 33kV OCB	Cabramatta Substation	Close
No. 734 33kV ACCB	Revesby Substation	Isolate & DT
No. 734 33kV Line ABSw	Pleasure Point Substation	Isolate & DT
No. 734 33kV Aerial Line	Revesby Substation & Pleasure Point Substation	Prove Dead & Earth

PERMITS AND OPERATING AGREEMENTS MAY BE ISSUED IN THE FOLLOWING AREAS SUBJECT TO THE RELEVANT RESTRICTIONS IN THE SPECIAL INSTRUCTIONS ABOVE:

Between Revesby Substation and Pleasure Point Substation on 734 33kV Feeder.

BY: Illawarra (M.C.) HELD BY:

STAFF ARRANGEMENTS:

Telephone/Facsimile to: Electrical System Control Sydney Newcastle	Name of Officer	Date/Time

ISSUED BY: *Peter Phillips*
Signed 08/09/2011
For System Control Engineer

Date:

APPROVED BY: *Michael Cox*
Authorised Officer (MAB's)

Date: 12 / 09 / 2011

CHECKED BY: *David Woolley*
Electrical System Operator

Date: 12 / 09 / 2011

Custodian: Chief Engineer Electrical
Approved by: GM Chief Engineers
Number: SMS-06-FM-0603

Issue date: 19/05/11
Review date: 16/05/14

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Version: 1.1
1 of 2

Appendix C Sample "Working High Voltage Instruction" Form – Reverse side



Working High Voltage Instruction (WHVI)

AUTHORISED PERSON IN CHARGE OF THIS WHVI Print: Michael Cox Signed: *Michael Cox* Date: 17 / 09 / 2011 Time: 0430 hrs

Note: The completed form "SMS-06-FM-0600 – Portable Rail Connection / Earthing Schedule" is to be attached to the field copy of the WHVI at all times whilst the WHVI is in force.

RELIEVING AUTHORISED PERSON IN CHARGE OF THIS WHVI

Print	Signed	Date	Time

OTHER ELECTRICAL NETWORK OPERATOR'S OPERATING AGREEMENTS RECEIVED FOR THIS WHVI:

The Operating Agreement No must be advised to the Electrical System Operator if received

Network Operator	Operating Agreement No.	Service	Cancelled by	Time

THE FOLLOWING ELECTRICAL PERMITS TO WORK AND/OR OPERATING AGREEMENTS HAVE BEEN ISSUED ON THIS WHVI:

The Permit and/or Operating Agreement Numbers must be advised to the Electrical System Operator after the Permit and / or Operating Agreement issues have been completed.

Permit / Operating Agreement No.	Issued to	Issued by	Cancelled by	Time
T 788 / 2011 / 1	U Could	Michael Cox	Michael Cox	1630 hrs
T 788 / 2011 / 2 (OPERATING AGREEMENT)	G Thanks (Ausgrid)	Michael Cox --	Michael Cox --	1300 hrs --
T 788 / 2011 / 3	I Wood	Michael Cox	Michael Cox	1600 hrs

SAMPLE

WHEN ALL ELECTRICAL PERMITS TO WORK AND/OR OPERATING AGREEMENTS ISSUED ON THIS WHVI HAVE BEEN CANCELLED AND ALL WORKING EARTHS HAVE BEEN REMOVED, THIS WHVI MAY BE CANCELLED.

WHVI CANCELLED BY: Print: Michael Cox Signed: *Michael Cox* Date: 18 / 09 / 2011 Time: 1930 hrs
Authorised Person (Mains)

THE ELECTRICAL SYSTEM OPERATOR WHEN ADVISED THAT THIS WHVI HAS BEEN CANCELLED SHALL ARRANGE FOR SUPPLY TO BE RESTORED.

THE CANCELLED WHVI AND THE COMPLETED FORM "SMS-06-FM-0600 Portable Rail Connection / Earthing Schedule" IS TO BE FORWARDED TO THE APPROPRIATE ELECTRICAL ENGINEER'S OFFICE.

Note: Guidance in the use of this WHVI is contained within the procedure "[SMS-06-EN-0561 Working High Voltage Instruction](#)".

