

600V DC Electrical Safety Instructions Tram

Rail Commissioner

PR-EM-EE-1140



DOCUMENT AMENDMENT RECORD

REV	CHANGE DESCRIPTION	DATE	COMMENTS
1	Original issue	Nov - 17	Separated from 25kV Electrical Safety Instructions. This is a new document refer MOC # 1272312
2	Minor Updates	20/05/19	Updates including adding the role of Switching Assistant.
3	Minor Updates	5/09/19	Clarifications to some definitions
Document Review Schedule:		3 yearly	

TABLE OF CONTENTS

1.	Introduction	5
2.	Purpose	5
3.	Scope	5
4.	Supporting Information	5
4.1.	Related Documents	5
4.2.	References	5
4.3.	Acronyms	6
4.4.	Definitions	6
5.	Roles and Responsibilities.....	8
5.1.	Electrical Control Officer (ECO).....	8
5.2.	Switching Crew	8
5.2.1.	Electrical Authorised Person (AP).....	8
5.2.2.	Switching Attendant (SA).....	8
5.2.3.	Electrical Nominated Person (NP)	8
5.3.	Unit Manager Overhead Wiring (UMOHW)	8
5.4.	Unit Manager Electrical Engineering (UMEE)	8
5.5.	Network Access Manager.....	8
5.6.	Person Responsible for Electrical Safety (PRES).....	8
5.7.	Persons Accessing the AMPRN 600v DC Tram Network.	9
6.	Persons Required to go on or Near the AMPRN 600v DC Tram Network.....	9
6.1.	Competence	9
6.2.	Dangers of the System	9
6.2.1.	Overhead Wiring System	9
6.2.2.	Buried Feeder Cables.....	11
6.3.	Reporting Objects and defects to the ECO	11
7.	Personal Safety	12
7.1.	Safe Approach Distance (SAD).....	12
8.	Communicating with the ECO	12
9.	Isolation of the OHW	13
9.1.	Emergency Isolations.....	13
9.2.	Planned Isolation	13
9.2.1.	Applying for an Isolation of the OHW.....	13
9.2.2.	Issuing a Certificate of OHW Isolation- Form C.....	13
9.2.3.	During The Work.....	13
9.2.4.	Changes of Personnel within the Work Group	14
9.2.5.	When the work is suspended or completed.	14
9.2.6.	A PRES performing other duties not associated with the PRES Role:	14

9.3. Local Isolations of Depots.	14
9.4. Access and Isolation of Converter Stations	14
10. Rail Vehicles, Track Machines and Road Rail Vehicles.....	15
10.1. Stabling of Track Machines and Road Rail Vehicles.....	15
10.2. Working on Trams, Track Machines and Road Rail Vehicles	15
10.3. Track Machines and Road Vehicles Operating on the 600v DC Tram Network. ...	15
11. Cranes, Excavators and Elevating Machinery.....	15
12. Other Plant Tools and Equipment.....	15
12.1. Using Long Items.....	15
12.2. Insulated Tools	16
13. Water Use in an Electrified Area	16
14. New OHW Equipment on Non Electrified Lines	16

1. Introduction

The Adelaide Metropolitan Passenger Rail Network (AMPRN) operates a nominal 600v DC Electrified Tram System, which may be higher in instances of regenerative braking, over parts of its network. The Electrified Network consists of Converter Stations, the overhead wiring and a buried Feeder Cable. This document outlines the safety requirements when on or around the Electrified 600V DC Tram System.

2. Purpose

The purpose of this document is to set out how the risks to safety associated with the parts of the AMPRN Tram System electrified at 600v DC are managed. It gives instructions to persons required to access the Electrified Network on how to do so safely. This document addresses the specific safety requirements in the 600v DC electrified network and is supplementary and subordinate to the AMPRN Tram Rules and Procedures.

3. Scope

This document applies to all persons who require to access on or near an AMPRN Tram System equipped with the 600v DC Electrification System.

Note: Local Isolation instructions apply to Glengowrie Tram Depot.

The following tram lines are electrified using the 600v DC system:

- the Glenelg line from Adelaide Railway Tram Stop to Moseley Square at Glenelg, including the South Terrace Siding and Glengowrie Tram Depot and Workshop.
- the Hindmarsh line from Adelaide Railway Station Tram Stop to the Entertainment Centre at Hindmarsh.
- the Festival Plaza line, from the intersection of King William Street and North Terrace to the Festival Plaza Tram Stop in King William Road; and
- the East Terrace line, from the intersection of King William Street and North Terrace to the Botanic Gardens Tram Stop in North Terrace.

4. Supporting Information

4.1. Related Documents

DOCUMENT NAME	DOCUMENT NUMBER
Tram Operating Procedures Manual	MN-TR-GE-535
Adelaide Metropolitan Passenger Rail Network Tram Rules and Procedures – Volume 4 Work on Track Rules and Procedures	KNet # 11282887
Accessing the Adelaide Metropolitan Passenger Rail Network	PR-RC-NA-267
Adelaide Metropolitan Passenger Network Access – Maintenance & Engineering Works	PR-RC-NA-913
Accessing Overhead Platforms, Glengowrie Depot	WI-EM-GW-593
Certificate of OHW Isolation (Form C)	FO-EM-EE-021
Isolation of 600v DC Trolley Wire equipment	WI-EM-EE-1141
Isolation Procedures for Glengowrie Depot Yards and Barn	SWI-EM-GW-852
Isolation of Tram Converter Stations	WI-EM-EE-933
Substation Access Manual	MN-EM-EE-113
Requirements for Road Rail Vehicles Accessing and Operating on the AMPRN	PTS-MS-10-RS-GUD
Requirements for Track Machines Accessing and Operating on the AMPRN	RS4-DOC-000885

4.2. References

- Electricity Act/Regulations 23A (3) & Schedule 6
- AS 3000 Electrical Installations
- AS 4836 Safe working on low-voltage electrical installations

- AS/NZS 4292.4:2006 Railway Safety Management Part 4: Signalling and Telecommunications Equipment
- AS/NZS 2550.1-11 Cranes, hoists and winches – Safe Use
- AS/NZS 4576 Guidelines for Scaffolding
- Work Health and Safety Act/Regulations 2012
- Electricity Act 1996
- Electricity (General) Regulations 2012
- Electricity (Principles of Vegetation Clearance) Regulations 2010
- Energy Networks Association – National Electricity Network Safety Code ENA DOC 001-2008 and ENA NENS 01-2006
- National Rail Safety Law Act/Regulations 2012
- Joint Safety Guideline Working Safely Near Overhead Power lines
- Hazard and Incident Reporting Module

4.3. Acronyms

ACRONYM	FULL NAME
AMPRN	Adelaide Metropolitan Passenger Rail Network
AP	Electrical Authorised Person
DPTI	Department of Planning, Transport and Infrastructure
ECC	Electrical Control Centre
ECO	Electrical Control Officer
Form C	Certificate of Isolation
HV	High Voltage
UMEE	Unit Manager Electrical Engineering
UMOHV	Unit Manager Overhead Wiring
NOS	Network Operations Supervisor
NP	Electrical Nominated Person
OCC	Operation Control Centre
OHW	Overhead Wiring System
PRES	Person Responsible for Electrical Safety
SA	Switching Attendant
SAD	Safe Approach Distance
SCADA	Supervisory Control and Data Acquisition
SWMS	Safe Working Method Statement

4.4. Definitions

TERM	DEFINITION
Bond	A cable or other electrical conductor which electrically connects together items of equipment.
Buried Feeder Cable	A 600v DC cable that runs parallel to the tram network in buried conduits. The feeder cable is regularly connected to the trolley wire at Tap to trolley connections. The cable share the distribution of the electrical current around the tram network and is sometimes known as a Helper Cable.
Buffer Section	A Buffer Section is a length of Permanently Earthed section of OHW that acts as a buffer between existing OHW and OHW being constructed.
Cant Rail	The point on the side of a railcar where the bodyside meets the roof.
Cantilever arm	The boom tube and supporting parafil cables extending from a pole, to which overhead wiring is attached and supported.
Certificate of OHW Isolation	Also known as a "Form C". This is the Certificate issued by a switching Crew to a PRES as confirmation that the OHW equipment is isolated and earthed between the limits stated on the Certificate. The Issue of a Certificate of Isolation does not mean that tram movements are stopped on the lines concerned.
Converter Station	A converter Station takes an 11kV supply from an electricity provider and transforms and rectifies the supply to 600v DC and feeds out to the tramway

	Trolley Wire through circuit breakers.
Contact Wire	The bare solid overhead conductor that the tram pantograph makes contact with. Also known as the Trolley Wire.
De-energised	Disconnected from any live electrical equipment, but not earthed and no caution notice has been applied.
Earth	Directly connected to the ground to maintain the effective dissipation of electrical energy.
Electrified Area	The AMPRN where one or more of the tracks are electrified.
Electrical Control Centre (ECC)	The ECC accommodates the ECOs and equipment required to manage the Traction Power system
Electrical Control Officer (ECO)	The person responsible for managing the Traction Power System.
Emergency De-energisation	A de-energisation of part or the whole of the OHW which is usually performed remotely by the ECO. The ECO will give a verbal confirmation that the power has been turned off to the OHW, but it is not able to vouch that it is safe to approach until it has been earthed.
HV	High Voltage is defined as a voltage above 600V DC or 1000v AC
Isolation (OHW)	Isolation is the action of causing electrical sections or sub-sections to be disconnected from all sources of electrical supply by opening, locking and fixing a caution notice to switch(es).
Jumper Cable	A length of cable with special clamps to be used as a temporary electrical connection across broken rail or pipe.
Limits of Isolation	These are the locations between which electrical power has been turned off on the OHW by the opening, locking and attaching caution notice to switch(es). This term must not be confused with the Term "Working Limits".
Live (energised)	Live refers to electrical infrastructure where potentially dangerous voltages may exist. Unless proved dead, earthed, and a Certificate of Isolation has been issued, all OHW and traction equipment are to be considered live, and mandatory safe approach distances apply.
Operations Control Centre (OCC)	OCC accommodates Tram Controllers who control the movement of trams and any infrastructure maintenance rolling stock and communicate with drivers.
Overhead Wiring (OHW)	An arrangement of wires, suspended over the tram lines, for supplying electricity to trams, together with associated fittings, insulators and other attachments including feeders, switches and jumpers.
Person Responsible for Electrical Safety (PRES)	A trained and qualified person within a work group that receives and holds the Certificate of OHW Isolation (Form C)
Pole	A pole or mast that is used to support a cantilever or overhead wiring
Pole number	The unique identifier number given to each pole
Rail Industry Workers Card	A generic course designed to ensure personnel understand the inherent dangers involved in working in the rail environment. To access the AMPRN the RIW card must have the relevant DPTI Operator Role.
Red Bond	A bond that will carry traction current under normal tram operations. These bonds are identified with red paint and are dangerous if damaged or detached.
Road Rail Vehicle	A vehicle that can travel on the road using rubber tyres and on the rails using specially lowered steel rail wheels
Spotter	A competent Person who is suitably qualified by experience, training or both with the sole duty of observing and warning against unsafe approach of a crane, excavator or elevating machinery or extendable, its lifting attachments or load to OHW equipment.
Safe Approach Distance (SAD)	The minimum (safe) distance, which must normally be maintained for personal safety between an exposed, live conductor and the maximum reach of any part of the body or any object or tool (except equipment specifically designed for testing, operating or working on live conductors).
Track Machine	An infrastructure maintenance machine that is permanently mounted on rail wheels, eg a tamper.

Working Limits	The limits stated on a Certificate of Isolation, within an isolation that has been earthed between which it is safe and permissible to work, provided the appropriate Track Protection is in place. The limits are usually identified by structure numbers. This phrase must not be confused with the phrase "Limits of Isolation".
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5. Roles and Responsibilities

5.1. Electrical Control Officer (ECO)

The ECO is responsible for the managing the Traction Power System. The ECO is:

- The point of contact to report Emergencies involving the 600v DC Electrification System.
- Has the ability to control electrical power to and from Converter Stations remotely.
- The point of contact to who faults and damage to the Electrified Network must be reported.
- Evaluates AMPRN Network Access Applications to determine if an Isolation is required.

5.2. Switching Crew

- The switching crew is a group of trained and authorised people, who carry out lineside switching, under the direction of the ECO for isolations of the OHW.
- The switching crew also test, apply and remove earths on the OHW system.
- The switching crew is comprised of Electrical Authorised Persons (APs) and Switching Attendants (SAs).
- One AP is designated the Nominated Person (NP).
- The NP issues the PRES with a Certificate of Isolation, Form C.

5.2.1. Electrical Authorised Person (AP)

- A person who has been trained in lineside switching and holds current certification at AP Level as detailed in Appendix 1.
- Carries out lineside switching (Switch Operator).
- Tests the OHW.
- Applies / removes local earths as required.

5.2.2. Switching Attendant (SA)

- A person who has been trained and Authorised as a Switching Attendant.
- Carries out Switching Attendant duties (Checker), under the supervision and authorisation of the AP.

5.2.3. Electrical Nominated Person (NP)

- The AP in the Switching Crew who has been nominated to direct other members of the Switching Crew, or multiple switching crews.
- Briefs the PRES on the working limits of an isolation and issue the PRES with a Certificate of Isolation, Form C.

5.3. Unit Manager Overhead Wiring (UMOHW)

The UMOHW is responsible for full content of this document and periodic reviews.

5.4. Unit Manager Electrical Engineering (UMEE)

The UMEE is responsible for providing advice, making decisions and determinations on electrical matters.

5.5. Network Access Manager

The Network Access Manager is responsible for submitting all Network Access Requests to the ECO for evaluation of Isolation Requirements

5.6. Person Responsible for Electrical Safety (PRES)

If a work group requires an isolation of the Overhead Wiring Equipment (OHW), then the Electrical Control Officer (ECO) will arrange with a switching crew for the relevant Electrical section(s) to be Isolated in accordance with WI-EM-EE-1141. The Nominated Person, from the switching crew will issue a Certificate of OHW Isolation (Form C) for the Electrical Section(s) that has been isolated. **The person in the Work Group that holds this certificate is the PRES. The PRES:**

- Receives the Form C.
- Fully understands the working limits on the Form C.
- Briefs the work group on limits on the Form C.
- Monitors the work group to ensure adherence to Form C requirements.
- Ensures all the workgroup, tools, plant and equipment are clear of the OHW and that the workgroup now treat the OHW as live, before relinquishing the Form C.

The following personnel can undertake the Role of a PRES:

- A Person who has successfully completed the PRES course and holds a valid PRES Card issued by Learning and Development.
- An Electrical Authorised Person.

More details can be found in section 9.2 of this document and the PRES Handbook, GI-EM-EE-1143.

At Glengowrie Tram Depot, Local Isolation work instructions apply to persons trained in those instructions. More details are located in section 9.3 of this document.

5.7. Persons Accessing the AMPRN 600v DC Tram Network.

Persons who access the tram network are responsible for ensuring that neither they nor their equipment comes within 3m of the OHW unless the OHW has been Isolated and Earthed and they have signed onto a Certificate of Isolation, Form C or in a depot the OHW equipment has been Isolated under local work instructions and persons are trained in those instructions.

6. Persons Required to go on or Near the AMPRN 600v DC Tram Network

6.1. Competence

You must not go on or near a tram line equipped with the 600v DC OHW system unless you hold a current Rail Industry Worker (RIW) Card with the relevant DPTI Operator Role, or have completed the online Rail Commissioner's Rail Safety Induction.

In special circumstances a person without the above accreditation may be allowed on the electrified network in accordance with the Network Access Manual.

6.2. Dangers of the System

Overhead Wiring, Overhead Wiring Support Equipment, Feeder Cables, Converter Station, Stations and on trams pantographs and roof mounted equipment, are extremely dangerous and are can be fatal if you touch them or go near to them.

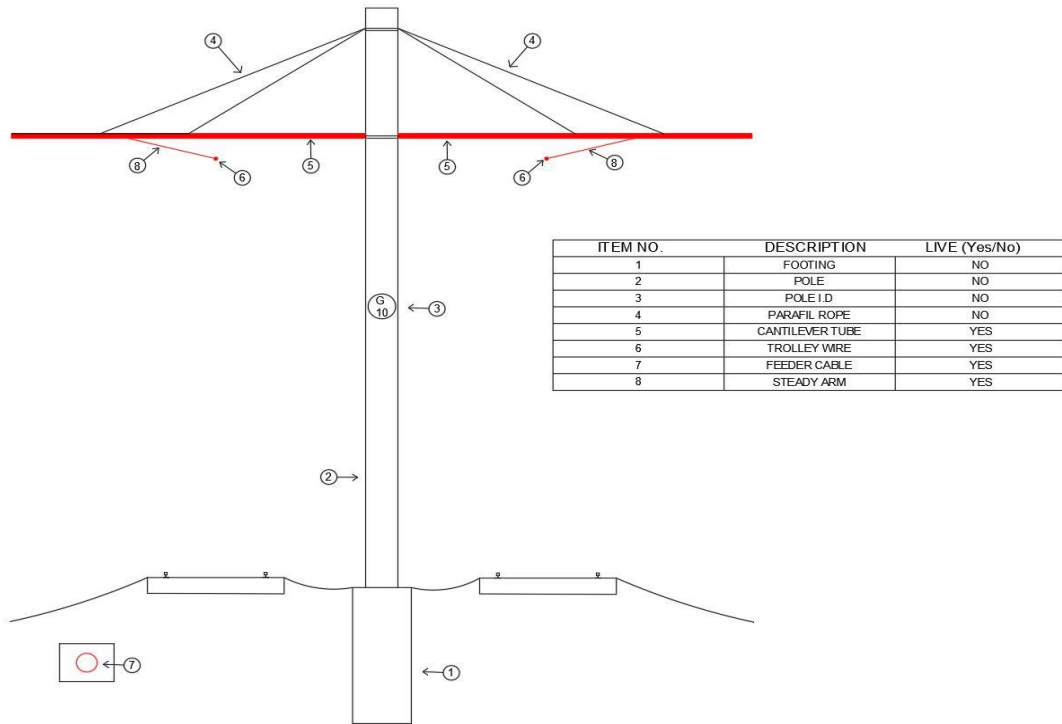
6.2.1. Overhead Wiring System

The following diagrams show the three typical configurations of the Tram OHW. The areas marked red denote live equipment.

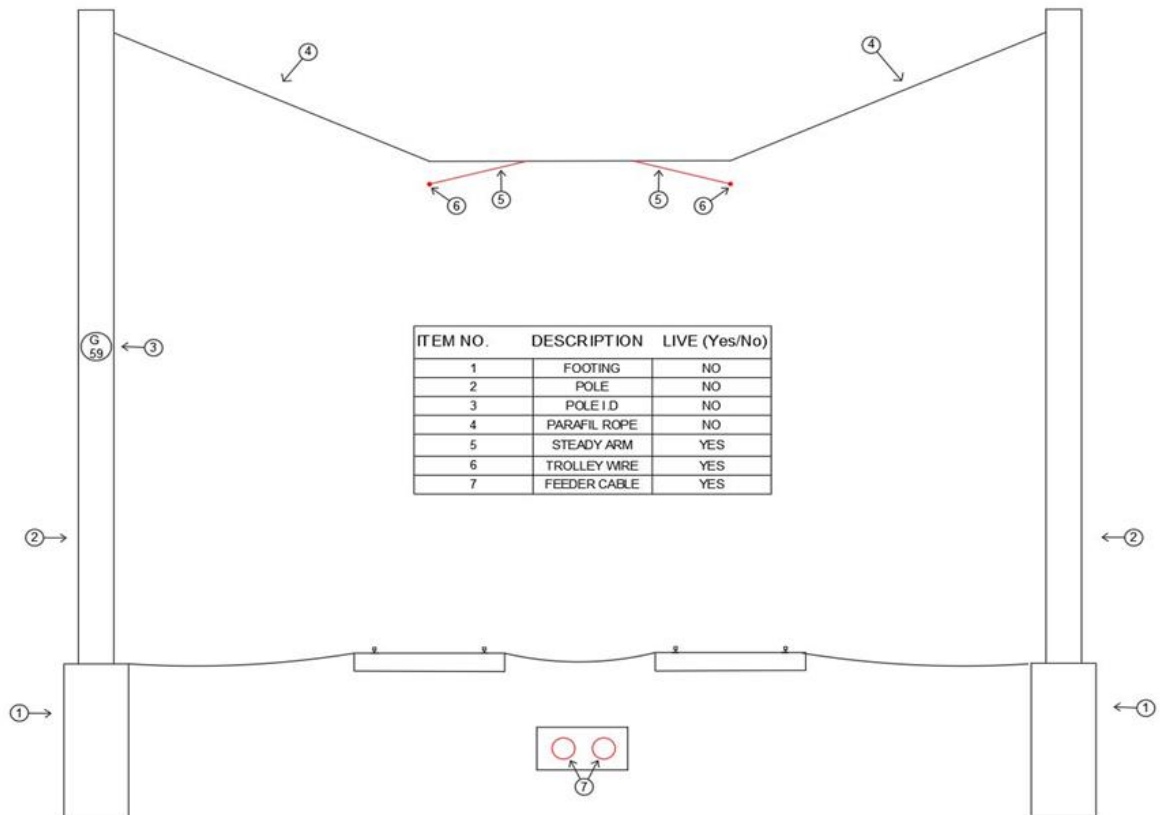
All items marked in red shall be treated as being live at all times unless the overhead line equipment has been isolated and earthed and you have signed onto a Certificate of Isolation, Form C, after receiving a brief from the

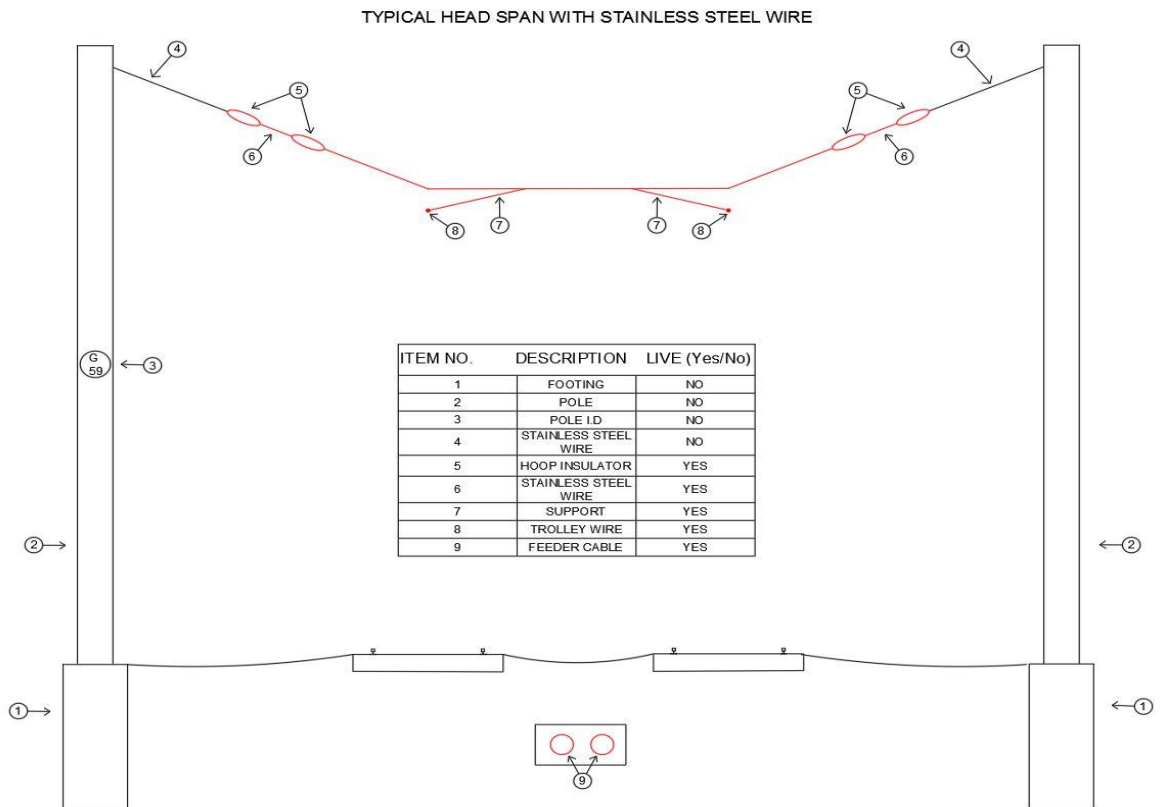
PRES who holds that Form C or in a depot the OHW equipment has been isolated under local work instructions and persons are trained in those instructions.

TYPICAL CENTRE POLE SUPPORT



TYPICAL HEAD SPAN WITH PARAFIL ROPE





6.2.2. Buried Feeder Cables

A 600v DC buried feeder cable runs the length of the tram line and connects to the trolley wire at regular intervals to increase the electrical capacity of the tram system.

The cable may be located under the cess or the 6 foot of the tram system and runs at a variety of depths.

The cable is accessible through a number of man holes along the length of the tram route.

Access into a man hole is not permitted unless the cable is isolated and earthed and any other relevant precautions (confined space) are addressed. The location of the cable must be identified before any digging, driving of spikes or under boring is allowed to commence. If any of these activities are to occur within 1m of the feeder cable the UMEE must be advised. The UMEE will determine if further precautions are required.

6.3. Reporting Objects and defects to the ECO

You must immediately make sure the following are reported to the ECO on 08 7201 5031:

- Objects that have been thrown onto, are hanging from, or are otherwise touching the OHW.
- Damage to the OHW.
- OHW that is smoking, excessively sparking or fusing.
- Broken or displaced along-track conductors.
- Broken or displaced wires connected to the OHW.
- A broken or parted rail.

- A broken or defective bond, in which case you must tell the ECO the colour of the bond.

You must not touch or approach any objects that have been thrown onto, are hanging from, or are otherwise touching the OHW.

You must not touch the rails if they are broken or parted neither must you touch a broken or defective bond if it is marked red, nor any equipment connected to that bond.

If the damage or defect will affect the safe operation of trams, you must first report this to the Tram Controller.

7. Personal Safety

7.1. Safe Approach Distance (SAD)

You must not place yourself or any equipment above or closer than 3m in any other direction of OHW except in the following circumstances:

- The OHW has been isolated and earthed **and** a PRES holds a certificate of Isolation (Form C) for the section of OHW you need to work above or approach within 3m in any other direction **and** the PRES has briefed you the working limits of the Form C **and** you have signed onto the Form C to confirm that you have understood the briefing given by the PRES.
- In limited circumstances work will be permitted between 3m and 1m of the live OHW, but no closer than 1m under any circumstances. In these cases a written Safe Working Method Statement (SWMS) or Job Safety Analysis (JSA) must be provided that has a separate section that details what measures will be in place to ensure the 1m exclusion zone will not be breached and the safety of all personnel. The SWMS must be signed off by the Unit Manager Overhead Wiring Engineering.
- A Depot or part of the Depot has been Isolated in accordance with Local Instructions.

8. Communicating with the ECO

You can contact the ECO on 08 7201 5031 for general communications and on 08 7201 5040 in the case of an emergency.

When contacting the ECO, you must state:

- If you are making an emergency call.
- Your name and job title.
- The tram line you are on.
- The location, for example the nearest bridge, station or signal number.
- The number on the nearest tram pole.
- The telephone number on which you can be contacted.

9. Isolation of the OHW

Note: An Isolation of the OHW does not necessarily mean that rollingstock has stopped running, nor does it allow access on or near the line. The processes described in the AMPRN Tram Rules and Procedures must be followed for accessing the Tram Corridor.

9.1. Emergency Isolations

If an Emergency Isolation is required then you must contact the ECO and request the Emergency Isolation. The ECO will make arrangements for the Emergency Isolation in accordance with document WI-EM-EE-1141, Isolation of 600v DC trolley Wire equipment.

9.2. Planned Isolation

Planned Isolations are to be in accordance with document WI-EM-EE-1141 Isolation of 600v DC trolley wire.

9.2.1. Applying for an Isolation of the OHW.

Except in an Emergency all Isolations must be planned in advance. A Network Access Request (FO-RC-NA-915) must be completed in accordance with PR-RC-NA-913, or PR-PC-NA-267. When the access application is for an electrified Line the Network Access Manager will pass the application onto the ECO for determination if an Isolation is required. It is important that the Applicant includes their SWMS and any other documentation in order that the ECO can evaluate the request.

If the ECO determines an Isolation is required the applicant must appoint a PRES.

9.2.2. Issuing a Certificate of OHW Isolation- Form C

When the Nominated Person has made sure that the OHW has been isolated and earthed he will hand the PRES a Certificate of OHW Isolation – Form C. The Nominated Person must make sure the PRES understands:

- The working limits on the Form C.
- Where live equipment is adjacent to, or crosses over earthed equipment, which equipment is live and which equipment is earthed.
- The date, time and location that the Form C is to be returned by the PRES to the Nominated Person.
- The issue of a Form C does not mean that all rollingstock movements have been stopped.
- The PRES must sign Part 1 of the Form C to show that they understand the conditions.
- The PRES must make sure that everyone in the Work Group understands the conditions shown on the Form C. All members of the Work Group must sign onto Part 4 of the Form C to confirm that they understand these conditions, before work is allowed to start.

9.2.3. During The Work

The PRES must remain with the Work Group and must keep the Form C until:

- Work is completed and the PRES and all members of the work group the PRES is responsible for are clear of the OHW and have signed off on the Form C, or
- The PRES is relieved by another PRES, in which case the Form C must be handed over to the new PRES and both people must sign Part 2.

The new PRES must tell the Nominated Person (either directly or through the ECO) that they have taken over the duties from the previous PRES.

The PRES must immediately tell the Nominated Person (either directly or through the ECO) if the Form C is lost. The Nominated Person will arrange to issue another Form C endorsed "Duplicate". The PRES must ensure that all members of the Work Group sign onto the Duplicate Form C.

9.2.4. Changes of Personnel within the Work Group

The PRES must make sure that each person coming onto the site of work after the Form C has been issued, fully understands the conditions shown below before being allowed to start work:

- The working limits on the Form C.
- Where live equipment is adjacent to, or crosses over earthed equipment, which equipment is live and which is earthed.

Each person must sign onto Part 4 the Form C to confirm they understand the conditions.

9.2.5. When the work is suspended or completed.

When the work is suspended or completed, the PRES must make sure all personnel and materials are removed from, and are no closer than 3 metres from, the OHW.

The PRES must then:

- Instruct each person in the work group to treat the OHW as live and dangerous to life.
- Require each member of the work group to sign Part 4 of the Form C to confirm that they understand the OHW is now to be considered live and dangerous.
- Complete Part 3 of the Form C.
- Return the Form C to the Nominated Person who will countersign Part 3.

If the PRES has lost the Form C, he must tell the Nominated Person. The PRES must carry out a visual inspection with the Nominated Person to make sure all persons and material are clear of the OHW.

9.2.6. A PRES performing other duties not associated with the PRES Role:

A PRES may perform other duties that are not associated with their role as a PRES provided:

- The other duties do not take the PRES away from the Work Group.
- The other duties are not so onerous that the PRES cannot satisfactorily carry out their PRES duties.
- Their PRES duties are not so onerous that the PRES cannot satisfactorily carry out his other duties.

9.3. Local Isolations of Depots.

Local Isolation Instructions apply to Glengowrie Depot. These are contained in work instructions SWI-EM-GW-852, "Isolation Procedures for Glengowrie Depot Yards & Barn and WI-EM-GW-593, "Accessing Overhead Platforms".

9.4. Access and Isolation of Converter Stations

Document MN-EM-EE-113, Substation Access Manual, describes the process and requirements for accessing Converter Stations. Document WI-EM-EE-933 describes the process for Isolating Converter Stations.

10. Rail Vehicles, Track Machines and Road Rail Vehicles

10.1. Stabling of Track Machines and Road Rail Vehicles

Track Machines and Road Rail Vehicles must not be stabled under or adjacent to live Overhead Wiring equipment if the vehicle has open platforms that if accessed could put a person within 3m of the OHW, or if the vehicle is fitted with unguarded ladders that allow access to the roof of the vehicle.

10.2. Working on Trams, Track Machines and Road Rail Vehicles

You must never go above the cant rail or climb above the floor level of the driving cab, or the open upper deck of a vehicle unless one of the following applies

- The vehicle is on a line where there is no OHW above or adjacent to the vehicle; or
- The OHW has been isolated and earthed and a PRES holds a certificate of Isolation (Form C) for the section of OHW you need to work above or approach within 3m in any other direction and the PRES has briefed you the working limits of the Form C and you have signed onto the Form C to confirm that you have understood the briefing given by the PRES; or
- The OHW has been Isolated under local Depot instructions.

10.3. Track Machines and Road Vehicles Operating on the 600v DC Tram Network.

The Overhead Line must be Isolated and Earthed for the area in which the Track Machine or Road Rail Vehicle is to On Track, Travel or Work and must be accompanied by a PRES who holds a Certificate of Isolation for the OHW unless:

- The Road Rail Vehicle complies with Section 19 of document PTS-MS-10-RS-GUD-00000095, "Requirements for Road Rail Vehicles accessing and Operating on the AMPRN" and is displaying a valid label.
- The Track Machine complies with Section 13 of document RS4-DOC-000885, "Requirements for Track Machines Accessing and Operating on the AMPRN".
- **And** SWMS or similar for the Road Rail vehicle or Track Machine details how that Machine will safely Travel and Work under live 600v DCV OHW Equipment.
- **And** the machine is listed on the approved register, held by the Technical Assurance Engineer, of Road Rail Vehicles and Track Machines that are permitted to travel or Operate under live 600v DC OHW Equipment.
- The Network Access Application must state that the intension is for the machine to travel or work under live 600v DC and quote the ID number of the machine so it can be cross referenced to the register.

11. Cranes, Excavators and Elevating Machinery

In accordance with the principles of AS2550 Cranes, Excavators and Elevating Machinery working on the Electrified AMPRN require an Isolation of the OHW equipment and to be accompanied by a PRES who holds a certificate of Isolation unless:

- No part of the crane, excavator or elevating machinery, lifting attachments or load will come above or within 3m in any other direction of the OHW.
- A spotter must be employed if the distance from the OHW is less than 6.4m
- A SWMS /JSA must be completed.
- The SWMS/JSA must take into account any likely movements such as wind effects, mechanical or hydraulic failure, swinging of crane loads, operator error and control measures that have been implemented.

12. Other Plant Tools and Equipment

12.1. Using Long Items

Personnel must take extreme care when using or carrying long items and must make sure they do not come within 3m of live OHW.

Long items must be carried horizontally below shoulder height and, if necessary, get other people to assist.

When using ladders near OHW only ladders that are made of wood, or other non-conducting material may be used.

Ladders that are reinforced with metal attachments running along the sides must not be used.

12.2. Insulated Tools

Only Insulated tools that have been certified and tested for use on 600v DC systems are allowed to be used within 3m of the live OHW. The following must apply:

- The tool has an in date test certificate.
- The operator has been trained in the use of the tool and has evidence that his training is up to date.
- The SWMS must have a section detailing how the insulated tool is to be safely used within 3m of the live OHW. This SWMS must be signed off by the UMOHW.

13. Water Use in an Electrified Area

Nozzles or similar fittings shall not be used where it could be possible to direct water above or within 3m in other directions of live equipment.

All hoses and fittings shall be inspected prior to use to ensure that they are in good condition. A faulty hose including fittings shall not be used in electrified areas.

When hosing special care shall be taken to ensure that the water stream does not come within 3m or above live OHW, or electrical equipment mounted on trams.

14. New OHW Equipment on Non Electrified Lines

If new OHW Equipment is being installed, or an electrified area is being extended, the instructions in this document will not apply until the equipment has been declared live. You will be notified of this by the publication of an Energisation Notice.

The project responsible for the construction or extension of the new OHW equipment is responsible for setting up their own Electrical safety System prior to the OHW being declared live.

Appendix 1**Authorised Persons - Accreditation Category Descriptions**

Category	Switchgear	Description
1	66 kV GIS Substation Switchgear	This category permits switching of the 66 kV GIS Switchgear in the train substations
2	25 kV Substation Switchgear (including SVC 7.5kV equipment)	This category permits switching of the switchgear in the 25 kV train substations, including the SVC 7.5 kV equipment
3	25 kV OHW Track Isolators	This category permits switching of all 25kV OHW Track isolators.
3b	Seaford Meadows Depot Commissioning Shed 25kV Isolators	This category is restricted to switching the 25 kV isolators leading in to the Seaford Meadows Depot Commissioning Facility. This includes isolator 704/5 and 704/6.
3c	Seaford Meadows Depot Graffiti Wash 25 kV isolator	This category is restricted to switching the 25 kV isolator at Seaford Meadows Depot Graffiti Wash. This includes isolator 704/7 only.
4	11 kV Tram Substation Switchgear	This category permits switching in 11 kV plant and equipment and tram substation switchgear.
5	600 V DC Tram Substation Switchgear	This category permits switching of 600VDC tram plant and equipment and tram substation switchgear
6	600VDC Tram OHW Isolators	This category permits switching of all 600VDC lineside tram OHW isolators
6a	600v DC Tram OHW Isolators – Glengowrie Depot	This category permits switching of 600VDC tram OHW isolators in Glengowrie Depot
7	SCADA Switching/Monitoring and supervision in ECC	This category permits the monitoring, switching and supervision of the train and tram traction systems using SCADA in the ECC