Metro Trains Sydney

Electrical Authorisations

Electrical Authorisations for Instructed and Authorised Persons

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1 Introduction

1.1 Purpose

This document defines the electrical safety competencies of workers who undertake work on the MTS Electrical Network; it documents how worker competencies are developed, certified, and maintained.

1.2 Scope

This document applies to all workers (including contractors) engaged to perform or who are supervising work on the MTS Electrical Network.

NOTE: The MTS Electrical Network includes the low voltage distribution network, high voltage distribution network, and the traction power systems including equipment being installed as part of the City & Southwest expansion project.

NOTE: Work on Low Voltage Installations shall be in accordance with the requirements set by the Department of Fair-Trading NSW.

Persons who hold either a Qualified Supervisors License or Qualified Electrical Contractors Licence may work to the AC Low voltage Safe Approach Distances as specified in the Electrical Safety Rules (ESR's).

NOTE: In accordance with Rail Safety National Law (NSW) (sections 4, 8 and 52) workers performing the work functions associated with the certifications in this document are performing 'rail safety work' and as such are regarded as a 'rail safety worker' and shall be competent to perform such work.

NOTE: In accordance with AS5577-2013, section 4.4.5: The Network Operator shall ensure that all persons involved with the design, construction, commissioning, operation, maintenance, and decommissioning of the network are suitably competent and adequately trained to carry out their duties.

Application of AS5577 is mandated under Electricity Supply (Safety and Network Management) Regulation 2014, section 7: A network operator must have a safety management system in place that: is in accordance with AS 5577.

1.3 Background

Electrical Authorisations are a subset of the total set of MTS Personnel Certifications. MTS identifies two groups within Electrical Authorisations, being Instructed Persons and Authorised Persons.

Therefore, a reference to being Instructed or Authorised for an electrical function is a reference to being certified for that function as stipulated under the respective parts of Electrical Authorisations of this Procedure.

This Procedure sets out the Electrical Authorisations that persons shall hold to carry out a function, and identifies the requirements for initial certification, the requirements for recertification and, where applicable, the maximum allowable intervals for recertification.

Where a specific function is listed under a certification in this Procedure, that function shall only be carried out by an appropriately Instructed or Authorised Person.

Electrical Authorisations are independent of a person's employment. A person may hold several Authorisations at the same time provided the person continues to be re-certified in each. Where a person transfers employment, they should ensure that each certification required for their authorisation is maintained as a record on their RIW card under the new employer. If a person identifies that a certification is not recorded on their RIW card, they should re-submit their completion certificates to their employers RIW administrator.

Note: Not addressed in this Procedure are other competencies, qualifications, or safe working requirements, including but not limited to the:

- High-Risk Work Licences requirements
- Requisite requirements for trade, para-professional and professional qualifications
- Work within the Rail Corridor

1.4 Electrical Authorisations Model

MTS applies the following model to electrical authorisations. Workers are recognised as Instructed or Authorised persons as defined by their 'job role' and training.

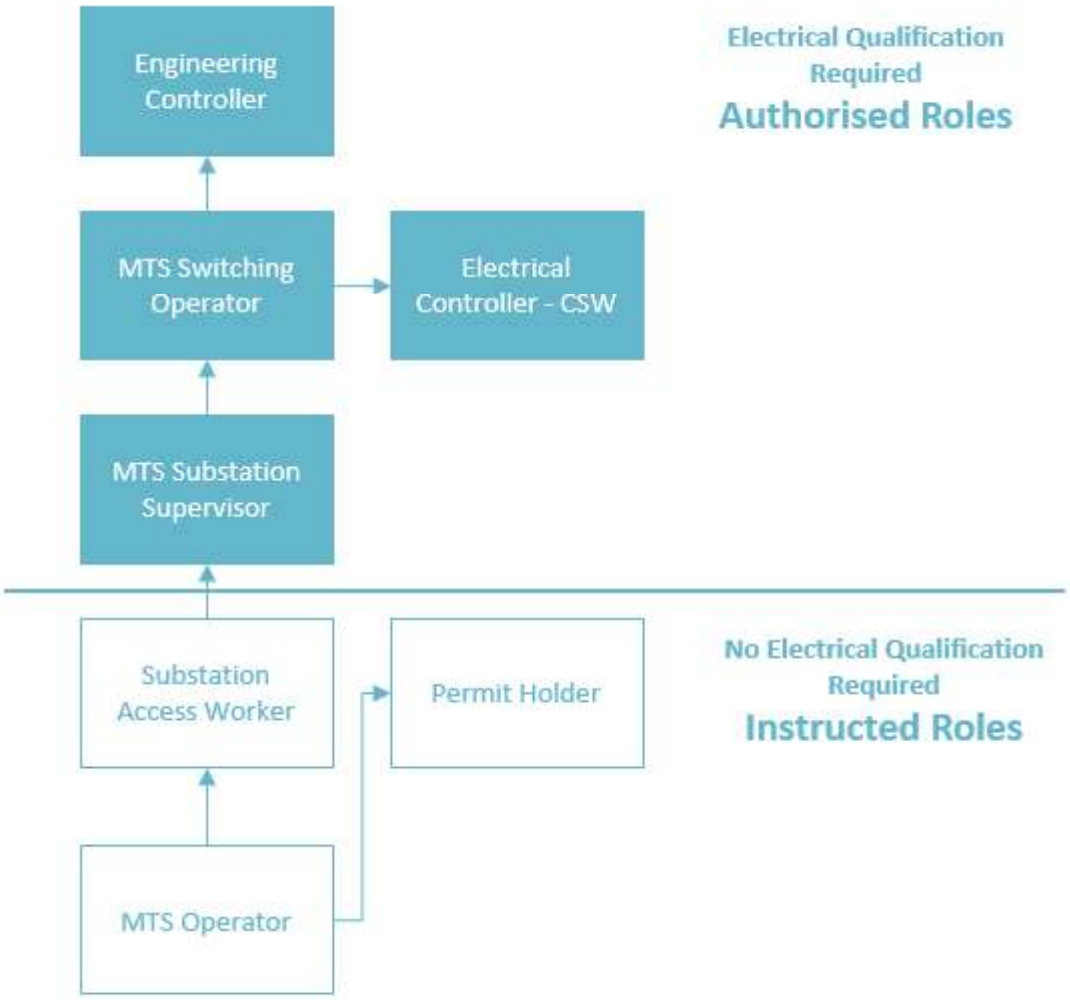

Figure 1 Electrical Authorisations model

1.5 Authorisations Held under Previous Versions of this Document

All Electrical Authorisations held under previous versions of this Document will be recognised until the next expiry, at which time the new roll will be required.

The alignment of new and old roles and training requirements are shown in Table 1 below.

Where the current role requires additional training (i.e. First Aid/LVR/CPR) this training shall be undertaken within the 3-month transition period.

Old Role	New Role	Training Requirements
MTS Electrical Safety Awareness / Metro Introduction to Rail Safety	MTS Operator	Direct transfer
Permit Holder (Restricted)	Permit Holder	Direct transfer
Authorised Electrical (Network) Worker inc. Restricted	Substation Access	Direct transfer
Substation Supervisor	Substation Supervisor	Direct transfer
Electrical Permit Holder (Permit Holder within Substations)	Substation Supervisor + Permit Holder	Substation Supervisor course will be run in conjunction with Permit Holder course during re-authorisation training

Table 1 Old/New Role Alignment

2 Terms and Acronyms

Term/Acronym	Technical Term
Competency	The assessment of knowledge and skills to the standard of performance required in the workplace.
Electrical Safety Rules or ESR	Means the document NWRLOTS-NRT-SWD-FRW-726001 Electrical Safety Rules and supporting documents as referenced in that document.
Electrical Controller – CSW	The Systems Connect Line Wide Works employee or delegate competently trained and assessed in the operation of the MTS Electrical Network utilising the Integra Power Control System.
Engineering Controller	The MTS employee or delegate that is competently trained in controlling the MTS Electrical Network and MTS Control Systems (ie. CCS, PCS, TVCS, BMCS, ATS)
Instructed Person	A person who has received training approved by MTS on the safe systems of work around the MTS Electrical Network.
Job Role	The role applied to a person's RIW card to define the work activities the person is permitted to undertake on the MTS network. Job roles are used to determine a worker's currency for activities including instructed and authorised roles as set out in this document.

Term/Acronym	Technical Term
Low Voltage	A nominal voltage exceeding extra low voltage but not normally exceeding 1000 volts alternating or 1500 volts direct current. **Note:** 1500-volt DC is generally treated as High Voltage in the MTS Electrical Safety Rules.
Overhead Wiring or 1500 Volt Equipment or 1500 Volt Overhead Wiring or OHW	All 1500-volt direct current (DC) overhead wires and associated equipment that normally conducts, isolates, or may be energised with a voltage of 1500 volts dc including the secondary circuit of rectifier transformers. **Note:** Under Safe Approach Distances, negative equipment which is normally at rail potential (connected to rail) is not considered to be 1500-volt equipment.
Primary Equipment (Primary electrical network equipment)	Electrical network equipment that is intended to carry electrical energy, including earthing and bonding equipment.
Recertification	The process of re-assessing competence. Recertification may occur at specified intervals, or as deemed necessary, for example, following an incident.
Supporting Infrastructure	Infrastructure that is intended to support the operation of electrical network equipment.
Worker / person	Has the same meaning as defined in the Work Health and Safety Act and as such includes all employees, contractors, subcontractors or an employee of a contractor or subcontractor.

Table 2 Terms and Acronyms

3 Electrical Authorisations (General)

3.1 Responsibilities

Persons whose functions include electrical work requiring certification are responsible for:

- Undertaking only those tasks for which they have been trained and hold a current valid certification.
- Informing their immediate Supervisor, two months prior to a certification lapsing, if they have not been notified of any recertification planned for them in that competency.

3.2 Certification of Competency

Workers must present a suitable certification to the satisfaction of the Electrical Network Manager prior to undertaking work on the MTS Electrical Network. Where required, the Electrical Network Manager will assess the submitted certificates before determining if the person is qualified to undertake work on the MTS Electrical Network and for authorised roles, will provide a supporting letter to the worker.

Once certified, workers are to ensure that their certification is recorded on their Rail Industry Worker Card.

All Instructed and Authorised Persons are to maintain a current Rail Industry Worker Card showing the specific job roles, certifications and authorisations that they hold for the MTS electrical network.

When carrying out functions for which certification is required, persons must be able to produce their valid Rail Industry Worker Card.

3.3 Record Keeping

3.3.1 MTS Internal Staff

On completion of the training and authorisation process MTS staff are to forward completion certificates to the MTS Learning and Development team.

The MTS Learning and Development team will then update the relevant documents to RIW and ensure the required Job Roles are indicating 'Valid'.

Upon confirmation of the documents being uploaded, the MTS staff member must log into their RIW account to ensure they hold the required 'Job Roles' and all are showing as 'Valid'.

3.3.2 External Staff

On completion of the training and authorisation process External Staff are to forward completion certificates to their respective RIW Coordinator for upload to the RIW Platform.

Upon confirmation of the documents being uploaded, the external staff member must log into their RIW account to ensure they hold the required 'Job Roles' and all are showing as 'Valid'.

3.3.3 Auditing

Electrical Network Manager will regularly audit the RIW platform to ensure all Electrical Authorisations are 'Valid' for internal and external staff working on the Electrical Network.

Audits will be captured using a suitable method to allow for storage and review as required, MTS will be utilising Intelex for this purpose.

Any Switching Operator and MTS Staff Member providing access, supervising works or issues permits, shall confirm the recipient holds the required RIW Job Roles for the work being performed via the RIW Spot Check App.

3.4 Persons Undergoing Training

3.4.1 General

Unless otherwise stipulated for a specific certification, a person undergoing training to become an Authorised Person may perform work otherwise restricted to an Authorised Person, subject to the following conditions:

- The work is carried out under the direct/constant supervision of another person who is certified to carry out the function concerned.
- The Authorised Person supervising the work is responsible for the safety of the person undergoing training and shall implement appropriate controls.
- The supervising Authorised Person, when deciding on appropriate controls to be implemented, shall consider the level of competence and experience of the person undergoing training, the nature and complexity of the work to be carried out, and the risks pertaining to the work to be undertaken. Such controls may include, for example, increasing the minimum electrical Safe Approach Distances that will be applicable for the person undergoing training.

The person undergoing training may fill out but shall not approve, check, issue, or be "in charge" of any ESR documents unless currently certified to do so.

The person undergoing training shall be identified by their Supervisor as undergoing training to become Authorised. The person shall be undertaking the work to achieve the competence required to become an Authorised Person.

3.4.2 Restricted Authorisation

Where a demonstrated business requirement exists, a person undergoing Switching Operator or Engineering Controller training may be provided a restricted authorisation allowing them to undertake a discrete component of the tasks assigned to the role. Where a restricted authorisation is to be granted, the person receiving the restricted authorisation must have fully completed the training requirements from the relevant training program that would normally apply to the component of the role for which the restricted authorisation is being granted.

3.5 Delegation of Authority to Certify

The MTS General Manager Engineering & Maintenance Delivery may delegate a person to the role of Electrical Network Manager to certify persons as defined in this document.

Delegation of authority granted by the MTS General Manager Engineering & Maintenance Delivery to certify persons is to be reviewed at 2-year intervals.

3.6 Restriction, Suspension and Cancellation of Certification

This section provides information on the application of Suspension as identified in section 4.1 of the MTS Electrical Safety Rules (ESR's).

Restriction is used in this section as a term to identify that a worker is "restricted (stopped) from performing the normal duties of their authorisation".

3.6.1 Restriction

Following an electrical safety incident, and where indicated, a worker's authorisation shall be restricted whilst an initial incident assessment is undertaken. The following roles may restrict a worker's authorisation:

- The Worker's Line Manager
- Engineering Controller
- Electrical Network Manager

A person restricting the authorisation of a worker shall notify:

- the Worker,
- duty Engineering Controller (who is to notify the Electrical Network Manager), and
- the restricted worker's line manager.

This notification shall include the 'initial' assessment details of the restriction.

While under restriction, a worker is prohibited from performing the activities of the role associated with the incident and all other roles which are dependent on that authorisation.

If the initial investigation reveals no (or a minor procedural) breach of ESR documents, the person's authorisation may be restored by the person who restricted it or by the Electrical Network Manager. All minor breaches must be recorded in the MTS Incident Reporting System and the incident investigated. Where appropriate the MTS Learning & Development Team will be advised of imposed restrictions.

All breaches not classed as procedural/other must be assessed by the Electrical Network Manager (or their nominated delegate) prior to lifting of Restriction.

3.6.2 Suspension

If an initial incident assessment identifies a breach of Electrical Safety Rules and/or Procedures (not classed as minor administrative), dangerous incident, or serious electrical works accident, the worker's Line Manager or the Electrical Network Manager shall suspend the workers authorisation until remedial actions are completed.

Once suspended, a worker's authorisation may only be reinstated with the approval of the Electrical Network Manager.

3.6.3 Cancellation

If, following Suspension, a worker is unwilling or unable to demonstrate that they can safely undertake the authorised role, that worker's authorisation shall be cancelled by the Electrical Network Manager.

Where a worker's authorisation is to be cancelled, notification is to be provided to:

- the worker
- the worker's Line Manager or Employer, and
- MTS Learning & Development Team (who will apply a block to the persons RIW card).

3.6.4 Guidance on Applying Restrictions

This subsection provides guidance on the application of restriction and suspension for electrical authorisations. Those applying a restriction or suspension should apply the most relevant scenario to ensure the safety of workers and the electrical network.

Sample incident	Initial incident investigation outcome	Category
A worker is involved in an incident that results in, a fatality, permanent disability, permanent life changing injuries, or life-threatening injuries.	IPART Category 1 - Major incident	Major Incident
A worker is involved in an incident that results in significant property damage (>$500,000 estimated)	IPART Category 1 - Major incident	Major Incident
A worker is involved in a Serious Electricity Works Accident – injury that does not meet the criteria for a Category 1 – major incident, but leads to a person/s: - being hospitalised (where hospitalised means 'is admitted as an in-patient'), or receiving treatment from a health care professional and is unable to attend work for a full shift or more (this does not include the shift during which the incident occurred).	IPART Category 2 - incident	Incident
A worker is involved in an incident that results in property damage (>$100,000 estimated)	IPART Category 2 - incident	Incident
Switching operator undertakes switching operations out of sequence without the approval of the duty Engineering Controller (**not self-reported and/or results in incident**)	ESR breach	Incident
Worker holding an electrical certification continues to undertake activities subject to a restriction.	ESR breach	Incident
A worker is involved in an SEWA (Serious Electrical Works Accident) incident that does not meet the criteria for IPART Category 1 or 2 incident.	Other SEWA	Other SEWA
Failure to record issue of a permit against a switching program (permit register), not resolved by issuing officer or not self-reported. No risk event realised (electric shock, injury, fatality)	ESR breach	Significant near miss

Sample incident	Initial incident investigation outcome	Category
A worker is involved in a significant near miss including events such as: - Electric shock or electrical burns originating from network assets where there has been no medical treatment, or only diagnostic monitoring has been carried out eg, ECG. - Unintended exposure to any arc flash where there has been no medical treatment. - Reverse polarity that has resulted from work carried out by a network operator's employee or contractor. - Defective neutral connection that has resulted from work carried out, within the last 12 months, by network operator's employee or contractor. - High voltage into low voltage (high voltage injection or high low intermix), except where the incident is related to a major event on a declared major event day. - Unintended contact with energised network asset by network operator's employee or contractor. - Breach of safe approach distance by network operator's employee or contractor. Inadvertent energisation of network assets resulting from switching and operating errors, equipment failure, operation of assets by an unauthorised person, connection to an alternate source of supply (customer generator) etc.	Significant near miss	Significant near miss
Failure of switching operator to: - Apply a DANGER tag, or - Complete a DANGER tag with switching program number, or - Secure a DANGER tag with a padlock (where the facility exits), and - Where the incident does not result in the exposure of workers to live equipment, and - Where the switching operator **fails to self-report.**	ESR breach	Near miss
Switching operator undertakes switching operations out of sequence without the approval of the duty Engineering Controller (**self-reported and no incident**)	ESR breach	Near miss
Failure to record issue of a permit against a switching program (permit register), immediately resolved by issuing officer and self-reported	ESR breach	Procedural error
Inadvertent operation of switchgear via Power Control System, with no uncontained discharge of energy or impact on customer service (self-reported)	Inadvertent operation	Procedural error
Inadvertent operation of switchgear via Power Control System, with no uncontained discharge of energy or impact on customer service (reported by others)	Inadvertent operation	Procedural error

Sample incident	Initial incident investigation outcome	Category
Failure of switching operator to: - Apply a DANGER tag, or - Complete a DANGER tag with switching program number, or - Secure a DANGER tag with a padlock (where the facility exits), and - Where the incident does not result in the exposure of workers to live equipment, and Where the switching operator **self-reports.**	ESR breach	Procedural error
Perceived breach of electrical safety rule or procedure	No breach found	Other Electrical Network Incident

Table 3 Electrical Incident Guidance

3.6.5 Restriction and Suspension of Engineering Controllers

By the nature of their role, duty Engineering Controllers will have some level of involvement in almost all incidents that occur on the electrical network. As such, restriction or suspension of duty Engineering Controllers should only occur where:

- It is immediately evident by the nature of the incident that the duty Engineering Controller directly contributed to the incident, or
- An initial incident investigation identifies that the duty Engineering Controller directly contributed to the incident, and
- A restriction or suspension is appropriate as set out in Figure 2 Restriction and suspension decision tree.

A worker who is authorised as an Engineering Controller but working in another role at the time of an incident is not considered as a duty Engineering Controller when applying this subsection.

3.7 Recertification

Where a recertification period of 24 months or greater is nominated for a competency, the authorisation expires unless recertification is undertaken before the expiry date shown in RIW.

4 Electrical Authorisations (roles)

Details for the following authorisations are provided in this section:

- Substation Access
- MTS Permit Holder
- MTS Substation Supervisor
- MTS Switching Operator
- Electrical Controller - CSW
- Engineering Controller

4.1 Generic Requirements

All persons seeking issue of MTS authorisations are required to fulfil the generic requirements set out below. These requirements ensure that all persons meet the minimum requirements to work safely on and around the MTS electrical network.

The generic requirements form the job role MTS Operator – All staff working on the MTS Electrical Network are required to hold MTS Operator.

Requirement	Evidence Required	Recertification Period
Current Rail Industry Worker card (including TfNSW Operator) – incorporates rail safety worker medical.	RIW card	As per RIW requirements
TLIF2080 Safely access the rail corridor (or recognised equivalent)	Statement of attainment / certificate	2 Years
MTS Network Induction	Statement of attainment / certificate	2 Years
Metro Introduction to Rail Safety	Statement of attainment / certificate	2 Years
MTS Electrical Safety Awareness	Statement of attainment / certificate	2 Years
Minimum Cat 3 – Rail industry medical assessment	Statement from Medical Practitioner	As per medical assessment

Table 4 Generic Requirements

4.2 Units of Competency

Where a specific certificate or unit of competency is quoted in the subsequent tables of this Section for a specific certification, the certificate or unit referred to is the current version at the time of publishing. A preceding or succeeding version of that certificate or unit may be accepted.

4.3 Approved Electrical Qualifications

Due to the complex nature of electrical work and the associated safety risks of unqualified work on the electrical network, candidates for electrical roles are required to hold a UET Certificate III or higher UET Qualification or the equivalent issued in an Australian state or territory or hold an Electrician or Electrical Fitter licence, or the equivalent issued in an Australian state or territory.

If a candidate holds a qualification that is not listed as an approved electrical qualification, they may apply to the Electrical Network Manager to have their qualification assessed for inclusion as an approved electrical qualification.

4.4 Instructed Roles

This subsection identifies the Instructed roles applicable to the MTS electrical network as per the electrical authorisations model.

Instructed roles include:

- Substation Access Worker
- Permit Holder
- MTS Operator (excluding supervision of Ordinary Persons)

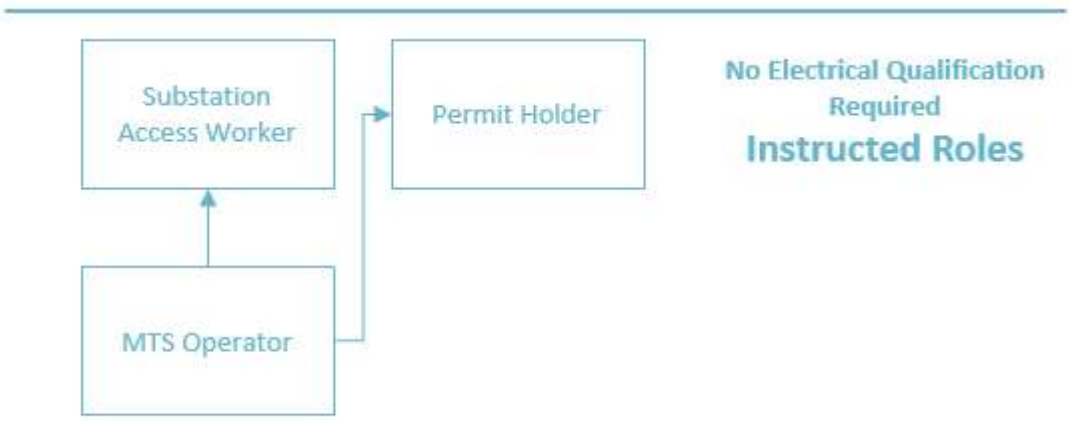

Figure 2 Instructed Roles

4.4.1 Substation Access Worker

A person undertaking work within the MTS electrical network facilities, must be authorised by MTS. This ensures that workers are suitably trained and qualified for the role that they are undertaking.

Any person working un-supervised shall have demonstratable experience working within Electrical Network Facilities and the hazards encountered.

Work on the Electrical Network

Work on the Electrical Network means the work of installing, repairing, altering, removing, or adding to the MTS electrical network.

Examples of work on the Electrical Network includes work on:

- High voltage or traction power equipment,
- Control and protection systems,
- 48v/120v/125v DC equipment supplying HV or traction power equipment,
- Earthing, bonding and negative return systems,
- Overhead wiring work,
- Cable installation and jointing or termination,
- Equipment testing, and
- Switchgear operation, isolation, and earthing/rail connecting.

Work on Supporting Infrastructure

Work on supporting infrastructure or equipment is not considered work on the MTS Electrical Network.

Examples of work on supporting infrastructure includes work on:

- Building or facility structures,
- Overhead wiring structures (not including overhead wiring fittings and fixtures),
- Construction and maintenance of pits, supporting trays, and ducts,
- Rail,
- Track bonds,
- Fire systems,
- Heating Ventilation and Cooling systems,
- Building facilities, and
- General communication systems

Work on supporting infrastructure or equipment does not require the worker to hold an Authorised Role, beyond Substation Access Worker, for the MTS electrical network, however other statutory requirements may apply, such as a trade licence.

Requirement	Evidence Required	Recertification Period
White Card (general construction induction card)	White Card	n/a
MTS Substation Access	Provide relevant documentation	2 Years
MTS Electrical Safety Rules	Certificate	2 Years
Provide Cardiopulmonary Resuscitation	Certificate	1 Year
Perform rescue from a live LV panel	Certificate	1 Year
Provide first aid in an ESI environment	Certificate	1 Year

Table 5 Substation Access requirements

4.4.2 MTS Permit Holder

A person seeking certification by MTS to hold an Electrical Permit to Work is required to meet the requirements set out below.

Requirement	Evidence Required	Recertification Period
White Card (general construction induction card)	White Card	n/a
MTS Permit Holder	Provide relevant documentation	2 Years

Table 6 Permit Holder requirements

4.5 Authorised Roles

This subsection identifies the Authorised roles applicable to the MTS electrical network as per the electrical authorisations model.

Authorised roles include:

- Substation Supervisor
- Switching Operator
- Electrical Controller – CSW
- Engineering Controller

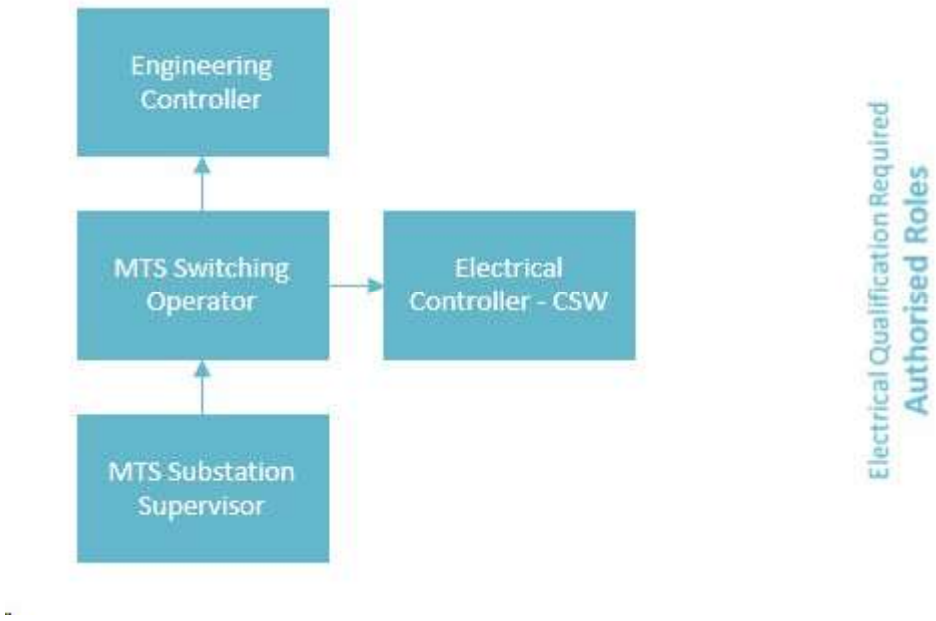

Figure 3 Authorised Roles

4.5.1 MTS Substation Supervisor

A person undertaking supervision of workers in a substation, shall hold certification in Substation Supervisor.

A person seeking certification in Substation Supervisor is required to meet the requirements set out below.

Requirement	Evidence Required	Recertification Period
Substation Access requirements	As per Table 5	As per Table 5
Substation Supervisor	Certificate	2 Years
▪ hold a UET Certificate III or higher UET Qualification or the equivalent issued in an Australian state or territory, or ▪ hold an Electrician or Electrical Fitter licence or the equivalent issued in an Australian state or territory.	Certificate or Licence	N/A

Table 7 Substation Supervisor requirements

4.5.2 Switching Operator

To be eligible for certification as a Switching Operator, a person shall hold an approved electrical qualification as listed in or as accepted by the Electrical Network Manager and meet the requirements in the table below.

Requirement	Evidence Required	Recertification Period
White Card (general construction induction card)	White Card	n/a
National High Voltage Switching Competencies UETDRIS017 - Perform high voltage field switching operation to a given schedule, UETDRIS023 - Develop and validate high voltage distribution switching programs, UETDRSB001 - Perform substation switching operations to a given schedule.	Certificate	None
MTS Substation Supervisor	As per Table 7	As per Table 7
Permit Holder requirements	As per Table 6	As per Table 6
MTS High Voltage Switching Operator Assessment	Certificate	2 Years

Table 8 Switching Operator requirements

4.5.4 MTS Electrical Controller – CSW

A person seeking authorisation as an MTS Electrical Controller - CSW under the ESR's is required to demonstrate the requisite electricity network knowledge for a construction and operational environment. Candidates must demonstrate the ability to safely manager electrical network operations.

Minimum Cat 2 – Rail industry medical assessment	Statement from Medical Practitioner	As per medical assessment
Minimum Cat 1 – Rail industry medical assessment	Statement from Medical Practitioner	As per medical assessment
White Card (general construction induction card)	White Card	n/a
MTS Substation Access	As per Table 5	As per Table 5
Permit Holder requirements	As per Table 6	As per Table 6
Switching Operator requirements	As per Table 8	As per Table 8
Successful completion of engineering controller – competency development pathway (MTS-AEL-PL-78104) Including Training specific to the Integra Power Control System	Provide relevant documentation	None
MTS Electrical Controller – CSW authorisation	Authorisation Letter from MTS Electrical Network Manager	2 Years

Table 9 Electrical Controller requirements

4.5.5 MTS Engineering Controller

A person seeking authorisation as an Engineering Controller under the ESR's is required to demonstrate the requisite electricity network knowledge for an operational environment. Candidates must demonstrate the ability to safely manage electrical network operations.

Requirement	Evidence Required	Recertification Period
White Card (general construction induction card)	White Card	n/a
Switching Operator requirements	As per Table 8	As per Table 8
Engineering controller – competency development pathway (MTS-AEL-PL-78103)	Provide relevant documentation	None
MTS Engineering Controller Assessment	Certificate	2 Years

Table 10 Engineering Controller requirements

6 Authorisation Procedure

On completion of the training and authorisation workers are to forward completion certificates to their respective RIW Coordinator for upload to the RIW Platform.

Upon confirmation of the documents being uploaded, the worker must log into their RIW account to ensure they hold the required 'Job Roles' and all are showing as 'Valid', prior to carrying out any work requiring the certification.

7 Related documents

#	Document title	Document Number
1	MTS Electrical Safety Rules	NWRLOTS-NRT-SWD-SF-FRW-726001

Table 11 Related Documents

NWRLOTS-NRT-SWD-HV-SPC-720350 Electrical Authorisations rev 5

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