

**Engineering System Integrity  
Electrical Network Safety Rules**

**Engineering Procedure  
Electrical Distribution Unit**

**Personnel Competency**

**PR D 78701**

**Personnel Certifications –  
Electrical**

Version 3.4

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## Document control

Version	Date	Author/Prin.Eng.	Summary of change
1.0	5 September 2014	David Wood	First release of this Sydney Trains Engineering Publication. Released as an Engineering Procedure and thus is mandatory. This document is based upon the RailCorp document "SMS-11-GD-0244 Personnel Certifications- Electrical Authorisations" version 2.2. The differences between the RailCorp document and this document are identified below.
2.0	11 November 2015	Chris Leung	Updated approval and authority responsibilities to meet Sydney Trains and TfNSW requirements. Removal of commissioning activities. Removal of Qualified Electrician (LEL02 or LEL03), and moved requirements accordingly into AES19 Authorised Persons Low Voltage. Inclusion of AES22 Authorised Electrical System Operator.
2.1		Brian Lidbetter	Updated approval, authority and training requirements to meet Sydney Trains and TfNSW
2.2		Brian Lidbetter	Clarification as to qualification requirements to supervise works in Substations
3.0	21 November 2018	Brian Lidbetter	Definitions Workplace Assessor and EDU Manager Inclusion of Accredited Safety Assistant for Switching Operations AES23 Changes to Note 2 Authorised Operator Tertiary requirements for AES06 Minor changes throughout document

Version	Date	Author/Prin.Eng.	Summary of change
3.1	26 February 2019	Chris Leung	Update references, roles and position names to reflect the current organisation
3.2	22 July 2019	N Loveday	Update to clarify AES08 can hold a substation access permit Includes new accreditation for Substation Permit Holder
3.3	1 July 2021	R Bahl	Issued following Trial
3.4	1 February 2022	ENSR Project Team	Reviewed as part of the ENSR Project.

## Summary of changes from previous version

Summary of change	Section
Removed Section 11 Specific certifications. Placed in new document SP D 79060 Electrical Competency Specific Certifications.	-
Minor grammatical updates	All
Updated reference documents	All

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## 1 Purpose

The purpose of this document is to define the minimum electrical safety competencies of workers who undertake work on the electrical distribution network and 1500 Volt Rail Traction system. It documents the business management of Electrical Competency within Sydney Trains including issue, suspension and withdrawal.

This document must be read and understood before applying for certification under the competencies detailed in *SP D 79055 Electrical Competency Specific Certifications*.

## 2 Definitions

The table below refers to definitions of terms specific to Personnel Certifications:

Term	Definition
<b>Associate Director Electrical Distribution Unit</b>	Refers to the Associate Director Electrical Distribution Unit, in Engineering and System Integrity, a business unit within Sydney Trains Engineering and Maintenance Branch.
<b>Authorised/ Authorisation</b>	Has the permission of the appropriate certifying or recertification authority in writing for the duty concerned as detailed in this Procedure.
<b>Authorised Person</b>	A person who is specifically authorised to perform electrical work near or on/within equipment that forms part of the NSW Rail Assets.
<b>Authorised Person (Mains)</b>	An Authorised Overhead Traction Worker, Authorised Traction Operator, or an Authorised Officer (Mains) who is authorised for the relevant duties.
<b>Authorised Person (Substations)</b>	An Authorised Attendant, or an Authorised Operator, or an Authorised Officer (Substations), who is authorised for the relevant duties.
<b>Certification</b>	The process of assessing competence.
<b>Competency</b>	The consistent application of knowledge and skills to the standard of performance required in the workplace.
<b>Electrical Equipment</b>	<p>Electrical equipment which includes any generator, transformer, switchgear, reactor, capacitor, control gear, conductor, cable, rectifier or other electrical equipment, parts of which may normally be energised at a high voltage, low voltage or 1500 Volt DC.</p> <hr/> <p><b>NOTE</b></p> <p><b>Electric rolling stock and electrical equipment within rolling stock are not regarded as electrical equipment.</b></p> <hr/>
<b>Electrical Network Safety Rules (ENSR)</b>	Means the document <i>RL D 79800 Electrical Network Safety Rules</i> and supporting documents as referenced in that document.

Term	Definition
<b>Electrical Permit</b>	<p>An Electrical Permit to Work, a Substation Access Permit or a Low Voltage Access Permit or variant as appropriate.</p> <hr/> <p><b>NOTE</b></p> <p><b>In some cases, this is abbreviated to Permit where it is clear from the context that it is referring to an Electrical Permit.</b></p> <hr/>
<b>Electrical System</b>	<p>The:</p> <ul style="list-style-type: none"> <li>• low voltage, high voltage electrical distribution system</li> <li>• 1500 Volt DC overhead wiring system</li> <li>• the associated protection and monitoring systems of NSW Rail Assets.</li> </ul>
<b>Electrical Work</b>	<p>The actual physical work of:</p> <ul style="list-style-type: none"> <li>• constructing, installing, maintaining, repairing, altering, removing, inspecting, testing, replacing or adding to</li> <li>• removing or restoring supply to</li> </ul> <p>electrical equipment of the electrical system or the supervising of that work.</p> <hr/> <p><b>NOTE</b></p> <p><b>The erection, modification and dismantling of 1500 Volt OHW support structures is not considered to be electrical work.</b></p> <hr/> <p>Exemptions to "electrical work" are listed in the Work Health and Safety Regulation section 146.</p>
<b>High Voltage</b>	<p>A nominal voltage exceeding low voltage.                      1500 Volt DC is treated as a separate case in the Electrical Network Safety Rules.</p>
<b>ICON Electrical</b>	<p>Part of the Sydney Trains Control and Coordination Unit of Network Maintenance Division and embedded within the Infrastructure Control Centre (ICON).</p>
<b>Low Voltage</b>	<p>A nominal voltage exceeding extra low voltage but not normally exceeding 1000 Volt alternating or 1500 Volt DC.                      1500 Volt DC is treated as a separate case in the Electrical Network Safety Rules.</p>
<b>NSW Rail Assets</b>	<p>Has the same meaning as defined in The Charter of the Asset Management Branch of Transport for NSW (TfNSW).</p>
<b>Overhead Wiring or 1500 Volt Equipment or 1500 Volt Overhead Wiring or OHW</b>	<p>All 1500 Volt DC overhead wires and associated equipment that normally conducts, isolates or may be energised with a voltage of 1500 Volt DC including the secondary circuit of rectifier transformers. For the purpose of Safe Approach Distances, negative equipment which is normally at rail potential (connected to rail) is not considered to be 1500 Volt equipment.</p>
<b>PCBU</b>	<p>Means a "person conducting a business or undertaking" and has the same meaning as defined in the Work Health and Safety Act.</p>

Term	Definition
<b>Recertification</b>	The process of re-assessing competence. Recertification may occur at specified intervals, or as deemed necessary; for example, following an incident.
<b>Technically Assured Organisation (TAO)</b>	Means a legal entity (which may include a Rail Transport Agency as applicable) to whom the Asset Management Branch (AMB) has issued an AMB Authorisation. Sydney Trains is a TAO.
<b>TfNSW Employee</b>	Means a "person employed as permanent full time" within TfNSW, Sydney Trains, NSW Trains or AMB.
<b>Transport Senior Services Manager or above</b>	The TfNSW employee directly associated with the work, and holds a TSS Manager, that has currency of knowledge about the project, people, process, tasks, hazards and work site conditions.
<b>Worker/person</b>	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.
<b>Workplace Assessor</b>	Holds qualification – TAESS00015 Skill set, or an equivalent qualification.

For further definitions refer to the **Electrical Safety Definitions** page available on the **RailSafe** site.

### 3 Scope

This document applies to all "workers" engaged to perform or who are supervising "electrical work" on NSW Rail Assets.

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 Supervisor's License or Qualified Electrical Contractor's Licence may work to the AC Low Voltage safe approach distance (SAD) specified for "Authorised Persons" in *SP D 79049 Safe Approach Distances (SADs)* Table 1 Minimum SADs to exposed electrical equipment for persons and tools they hold.

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#### 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 must be competent to perform such work.**

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## 4 Background

This procedure sets out the Electrical Authorisations that persons must hold in order to carry out particular functions. This procedure nominates the requirements for initial certification, the requirements for recertification and, where applicable, the maximum allowable intervals for recertification.

The specific details provided in this Procedure relating to the certification of Electrical Authorisations are to be read in conjunction with, and in addition to *SMS-11-SP-3014 Training and Competence*.

Electrical Authorisations are a subset of the total set of personnel Certifications. Therefore, a reference to being Authorised for an electrical function is a reference to being certified for that function as stipulated under the respective parts of Section 11 Specific certifications of this procedure and SP D 79055.

Where a specific function is listed under an Authorisation in this Procedure, that function must only be carried out by an appropriately Authorised Person. Such functions are referred to as "functions for which Authorisation is required".

Electrical Authorisations are independent of a person's grading or classification, and are valid for the duration of the person's employment with the organisation to whom they're certified with. A person may hold several Authorisations at the same time provided the person continues to be re-certified in each.

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### NOTE

**Not addressed in this document are other Sydney Trains/Transport for NSW (TfNSW) competencies, qualifications or safe working requirements, including but not limited to:**

- **Health Assessment Categories for Rail Safety Workers**
  - **Rail Industry Worker (RIW) card course for people working within the rail corridor**
  - **WorkCover NSW White Card (General Construction Industry Card) and High Risk Work Licences requirements.**
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## 5 Responsibility

**Authorised Persons** whose functions include electrical work requiring Authorisation are responsible for:

- a. undertaking only those tasks for which they have been trained and hold a current valid certification
- b. 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.

**Certifying Authorities** are responsible for ensuring the written confirmation of all functions competently performed and required by workers as part of the assessment system are correctly validated for each function by an accredited workplace assessor or the workers' Supervisors, prior to certifying or recertifying those workers.

**Organisations with Authorised Persons** are responsible for:

- a. providing systems to ensure that appropriate training, recording of results and certification are maintained for each worker carrying out functions requiring those certifications
- b. ensuring that each worker carrying out functions requiring electrical authorisation holds a valid Certificate of Competency for that function.

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### NOTE

**The relevant TSS Manager engaging a PCBU shall ensure that Sydney Trains/TfNSW engineering, quality and safety standards are being met by the PCBU and that contract workers are electrically authorised as per this document for the assigned task.**

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### 5.1 Assessments and Training Materials

Non-TfNSW organisations shall provide a copy of their initial and any future updated competency management and assessment material to the Electrical Distribution Unit for endorsement. Non-TfNSW organisations that have persons authorised with an Electrical Authorisation shall conduct an external third party audit of their competency management and assessment system against this document when requested by the Electrical Distribution Unit. The audit report and action plan shall address any recommendations/non-conformances to the Electrical Distribution Unit.

Refer to the Auditing and Assurance Standards Board (AUASB) for more information.

## 6 Certificate of Competency

The Associate Director Electrical Distribution Unit or where delegated, an Electrical Authorising Officer of Electrical Distribution Unit, is presented with and considers evidence that a person has been deemed competent to perform certain functions as defined in SP D 79055. Once Authorised, certification is issued typically in the form of a TfNSW Rail Safety Worker Card (commonly referred to as the "Gold Card") or a Rail Industry Workers (RIW) Card.

Authorised Persons are issued with a Rail Safety Worker Card or Rail Industry Worker Card showing the specific certifications and if applicable a supporting letter detailing specific work functions for which they are certified.

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

Refer to flowchart Appendix A Certification Process outlining how to obtain an electrical authorisation.

## 7 Persons undergoing training

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:

- a. The work is carried out under the **direct/constant** supervision of another person who is certified to carry out the function concerned.
- b. The Authorised Person supervising the work is responsible for the safety of the person undergoing training and shall implement appropriate controls.
- c. 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 (for Authorised Persons) 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 ENSR documents unless currently certified to do so.

The person undergoing training must be identified by their Technically Assured Organisation (TAO) Manager or Supervisor as undergoing training to become Authorised. The person shall be undertaking the work in order to achieve the competence required to become an Authorised Person.

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### NOTE

**Further information and guidance regarding the supervision of persons undergoing training is available in the "Supervising your apprentice or trainee" document. Refer to Section 12 Reference documents.**

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## 8 Delegation of authority to certify

The Associate Director Electrical Distribution Unit may delegate a person to certify persons as defined in SP D 79055. The requirements of a specific certification stipulate that the Associate Director Electrical Distribution Unit may delegate a particular class of person as the "Certifying Authority" for the respective workers. This does not preclude the delegation of this authority to others.

All delegations of authority granted by the Associate Director Electrical Distribution Unit to certify persons are reviewed on an annual basis.

The Associate Director Electrical Distribution Unit may delegate a person to assess persons with respect to switching operations or safe entry into substation functions.

## 9 Suspension and withdrawal of authorisation

Following an electrical safety incident, a person's Authorisation may be suspended while the matter is investigated.

The following persons may suspend any person:

- the Associate Director Electrical Distribution Unit
- an ICON Electrical System Operator
- an Electrical Authorising Officer who is working for Sydney Trains, Electrical Distribution Unit.

Formal written suspension of a person's electrical authorisation will be forwarded to the individual and their manager by the Principal Electrical Assessor EDU and will remain in force until all formal investigations have been completed.

If the investigation reveals no breach of the ENSR documents, the person's Authorisation may be restored by the officer who suspended it or by an Electrical Authorising Officer.

If the investigation reveals human factors are identified as a contributing factor to the incident, a behavioural competency assessment coordinated by the Associate Director Electrical Distribution Unit shall be undertaken as part of the recertification. In addition, the Certificate of Competency will be removed and notification forwarded to TfNSW Learning & Development (L&D) with reasons of removal.

For recertification, an assessment of the withdrawn Authorisation should be undertaken within four weeks by an EDU Electrical Authorising Officer.

After four weeks, if a person has failed to be re-certified, they shall have a new Certificate of Competency issued, precluding the function that was withdrawn.

A person whose Authorisation in a particular function has been suspended or withdrawn must not perform that particular function until the certification has been restored, or the person has been re-certified, regardless of what is shown on the person's Certificate of Competency.

Refer to flowchart Appendix B Post Incident Recertification Process of persons accredited in accordance with PR D 78701.

## 10 Recertification

The date from which the next required recertification is calculated is based upon the original due date and not the date of the assessment.

Where a person is deemed to be not yet competent, the respective Electrical Authorising Officer shall arrange either:

- further assessments to ensure that the person demonstrates continued competency
- to have that person's Certificate of Competency withdrawn, or replace it with one clearly indicating what competency or competencies are no longer valid.

Persons not currently certified shall not be put forward for recertification. Consult with the Electrical Distribution Unit for certification.

For TfNSW employees, Log Books are to be utilised and presented as evidence of maintaining currency of competency for each of the listed electrical authorisations before an individual is recertified. Further information can be found in *PR D 78704 Electrical Log Book Procedure*.

## 11 Specific certifications

Certification requirements can be found in SP D 79055. Below is the current listing of accreditations or competencies obtainable to work on the Electrical Distribution Network on Sydney Trains Electrical Assets. These certifications are non-transferable and must be obtained in order to complete associated works.

**Table 1: Personnel Certifications**

Section	Certificate	Ellipse code	Organisation*
<b>Electrical work</b>			
4.1	Accredited Aerial Line (HV & LV) Worker	MEL56	External
4.2	Accredited OHW Assembler	MEL55	External
4.3	Accredited OHW Rigger	MEL54	External
4.4	Accredited OHW Installer	MEL52	External
4.5	Accredited OHW Worker	MEL53	External
4.6	Accredited Electrolysis Interference Tester	AES02	TfNSW
4.7	Accredited Cable Jointer	AES13	TfNSW & External
4.8	Overhead Worker	AES04	TfNSW
4.9	Authorised Overhead Traction Worker	AES15	TfNSW
4.10	Authorised Traction Operator	AES16	TfNSW
4.11	Authorised Officer (Mains)	AES06	TfNSW
4.12	Authorised Attendant	AES05	TfNSW
4.13	Authorised Operator	AES08	TfNSW
4.14	Authorised Officer (Substations)	AES07	TfNSW
4.15	Electrical Authorising Officer	AES14	TfNSW
4.16	Authorised Person (Low Voltage)	AES19	TfNSW
4.17	Electrical System Operator	AES22	TfNSW
4.18	Accredited Safety Assistant for Switching Operations	AES23	TfNSW
<b>Non-electrical work</b>			
4.19	Accredited Electrical Permit Holder	ME161	TfNSW & External
4.20	Accredited for Entry	AES03	TfNSW
4.21	Accredited Substation Permit Holder	AES24	External

### NOTE

**Organisation indicates whether the accreditation can be held only by TfNSW employees or external contractors engaged by TfNSW.**

## 12 Reference documents

Australian Skills Quality Authority ([ASQA](#))

AS/NZS 3000:2018 Electrical Installations (known as the Australian/New Zealand Wiring Rules)

[Training.gov.au for the Electricity Transmission, Distribution and Rail Training Package](#)

[Training.gov.au for the Electrotechnology Training Package](#)

Electricity Supply Act 1995/ENA DOC 001-2019 National Electricity Network Safety Code

[Engineers Australia](#)

GL D 79104 Assessment Guide for AES24 Accredited Substation Permit Holder

[Health Assessment Categories for Rail Safety Workers](#)

[National Register on Vocational Education and Training \(VET\)](#)

[NSW Fair Trading](#)

PR D 78201 Removal and Restoration of High Voltage Supply

PR D 78202 Working High Voltage Instruction

PR D 78301 Removal and Restoration of 1500 Volt Supply

PR D 78301 FM01 Notification for the Removal of 1500V Supply in EVMCs

PR D 78302 1500 Volt Authority

PR D 78401 Isolation and Energisation of Low Voltage Equipment

PR D 78402 Work on Low Voltage Distribution System

PR D 78403 Work on Live Low Voltage Equipment

PR D 78500 Electrical Permits

PR D 78501 Electrical Permit to Work

PR D 78502 Substation Access Permit

PR D 78700 Working around Electrical Equipment

PR D 78704 Electrical Log Book Procedure

RL D 79800 Electrical Network Safety Rules

[Rail Industry Worker](#)

Rail Safety National Law (NSW)

SafeWork NSW White Card ([General Construction Industry Card](#)) and [High Risk Work Licences](#)

Service and Installation Rules of New South Wales

SMS-11-SP-3014 Training and Competence

SP D 79048 Competence of Persons

SP D 79049 Safe Approach Distances (SADs)

SP D 79050 Safe Use of Mobile Plant around Electrical Equipment

SP D 79051 Temporary Structures around Electrical Equipment

SP D 79052 Cables – Work near or on/within

SP D 79053 Risk Management: Mobile Plant in proximity to aerial lines

SP D 79055 Electrical Competency Specific Certifications

[Supervising your apprentice or trainee NSW Dept Of Education](#)

T HR EL 17001 ST Electrical Distribution System Installation Connection and Inspection

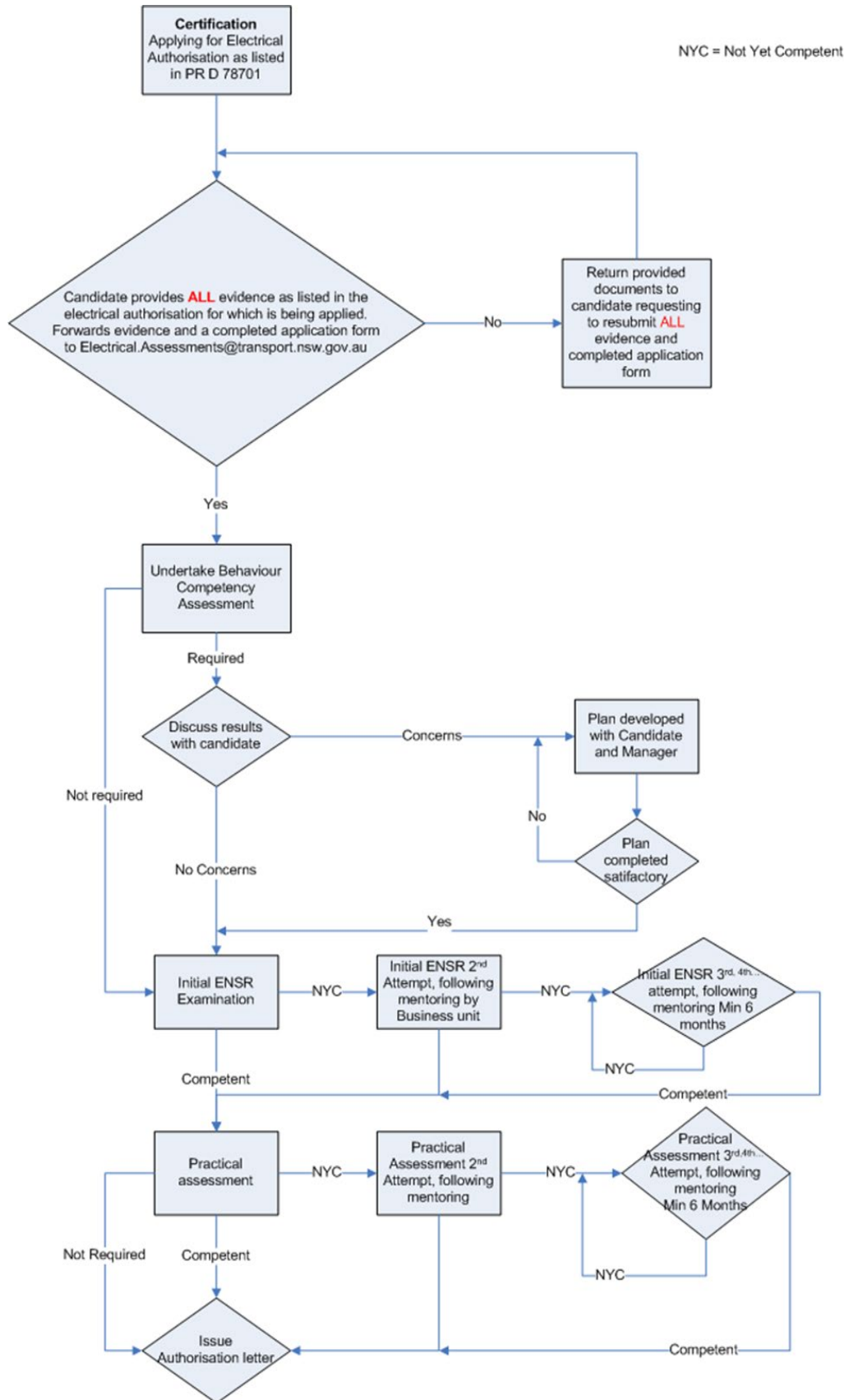
T HR SS 80002 ST Low Voltage Electrical Installations

T MU AM 06016 GU Guide to Verification and Validation

T MU MD 20001 ST System Safety Standard for New or Altered Assets

Work Health and Safety Act 2011 (NSW)

## Appendix A Certification Process





## Appendix B Post Incident Recertification Process



### Post Incident Re-accreditation of persons accredited in accordance with PR D 78701

