Engineering Instruction Signalling and Control Systems	EI S 19-03
Approved by: Stuart Tweedie, A/Professional Head Signalling and Control Systems, Sydney Trains **Authorised by:** Jonathan McKinnon, Engineering Technical Publications Manager, Sydney Trains	Date in Force: 15 April 2019 Date Expires: 1 July 2019
This Engineering Instruction includes urgent engineering information. Adherence to the information in this Instruction is **MANDATORY**.	

New Competency Proficiency Levels

Audience:	Main Points:
• All licensed and authorised Signals and Control Systems staff	• Updated competency proficiency levels • Interim process in place until the 1st July 2019

Primary Affected Document: MN S 41412 Process for Signalling and Control Systems Personnel – Authorisations and Licensing

Scope

This engineering instruction describes the changes to the competency proficiency levels for Signalling and Control Systems staff.

Background

The Certificate of Competency (CoC) details the various safety related tasks, functions, equipment types and systems activities a worker is competent to perform or work on. When being assessed, a worker will be deemed to be competent in a task or an activity at a certain level of proficiency.

TMG A 1412 Process for signalling personnel – Authorisations and Licensing has been replaced by MN S 41412 Process for Signalling and Control Systems Personnel – Authorisations and Licensing. As part of this update to the procedure, the competency proficiency levels have been changed to align with ASA standard T HR CY 03000 ST Competency Standard – Signalling and other Australian railways.

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Below is a table that describes the new competency proficiency levels and definition of simple and complex tasks, as well as the difference between direct and indirect supervision.

Level of Proficiency	Task Complexity		Supervisory Authority
	Simple Tasks	Complex Tasks	
Level 3	Competent to perform simple tasks unsupervised	Competent to perform complex tasks unsupervised	May supervise and assess all other levels
Level 2	Competent to perform simple tasks unsupervised	Competent to perform complex tasks under indirect supervision	May supervise Levels 0 & 1 performing simple or complex tasks
Level 1	Competent to perform simple tasks under indirect supervision	May perform complex tasks under direct supervision	May supervise Level 0 performing simple tasks
Level 0	May perform simple tasks under direct supervision	May perform complex tasks under direct supervision	Nil

Simple Tasks are generally tasks and activities that are detailed in standards, procedures and work instructions and are repetitive in nature, especially in relation to the work of maintenance and construction staff.

Complex Tasks are defined as any tasks that are novel or unique in nature, require the application of a worker's knowledge and skills in non-routine ways, or work that have multiple simultaneous elements of risk.

Direct Supervision: The purpose of direct supervision is for a supervisor to monitor a person's work to ensure compliance with relevant standards and procedures and to be able to take corrective action in a timely manner. Consequently the nature of direct supervision will vary depending on the nature of the job at hand.

Indirect Supervision: The purpose of indirect supervision is to provide a worker with a mentoring resource to guide and support the worker while performing non-routine activities.

Examples of simple and complex tasks are available in MN S 41412 Process for Signalling and Control Systems Personnel – Authorisations and Licensing.

Action required

1. Transition Period

The new competency proficiency levels will be come into mandatory effect on the 1st July, 2019. Current CoCs (issued under TMG A 1412) will continue to remain valid for three years from their date of issue at which time the replacement CoC, with the new competency proficiency levels, will be issued.

2. Equivalence

The following equivalents should be used when transition from the old competency rating system to the new.

Old Competency Level	New Competency Level
1	3
n/a	2
2	1
-	0

Please note, when renewing a CoC the candidate is required to submit at least one form of supporting evidence for each competency on their CoC:

1. Relevant work experience as recorded and validated in the worker's log book. See PR S 41416 Log Book Procedures.

2. Relevant refresher training, e.g. the three-yearly Safeworking Reaccreditation course.

3. Recommendation by a licensed Signal or Control Systems Engineer (this includes the assessing Engineer).

   Note: The recommending Engineer must keep evidence of the assessment process used to justify the recommendation (e.g. minutes of an assessment interview, copies of questions asked and answers given, diary entry of workplace observations, etc.)

As noted in the table above candidates who hold a level two (2) under the old system will automatically be allocated a level one (1) under the new system when next renewing their CoC, however candidates may be allocated a new competency level 2 providing they meet the requirements of MN S 41412.

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Safeworking Procedures for Control Systems

Audience:	Main Points:
• Signals Electricians (ASI01) • Signal Engineer Field (ADI01) • Control Systems Operations Staff	• Updates to signalling safeworking procedures • Deviation in place for CSO staff until license has been issued. • Once licence has been issued, CSO staff to follow safeworking principles

Primary Affected Document: Safeworking Procedures and MN S 41412 Process for Signalling and Control Systems – Authorisation and Licensing

Scope

The scope of this instruction details the changes to Signalling Safeworking Procedures and MN S 41412 Process for Signalling and Control Systems – Authorisation and Licensing, and how Control Systems staff will be affected by the updates.

Background

With the upcoming publishing of the Signalling Safeworking Procedures to include requirements for Control Systems and ATP (Automatic Train Protection) and MN S 41412 Process for Signalling and Control Systems – Authorisation and Licensing a concern has been raised that Control Systems Operations (CSO) Staff will be unable to adhere to Signalling Safeworking Procedures as they have yet to be trained in Signalling Safeworking Procedures and do not have a CoC that details there competence in Signalling Safeworking.

A transition plan has been developed to train and assess control systems staff in relevant Signalling Safeworking Procedures and obtain the CoC.

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Action required

A deviation has been granted for Control Systems Operations team to continue as business as usual until they have been trained and assessed in Signalling Safeworking Procedures and circuit testing procedures including sitting the License to Practice board exam. Once staff have been assessed competent and a CoC has been issued, the staff member is to begin following the Signalling Safeworking Procedures.

Deviation expires on the 1st March, 2020.

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Engineering Manual
Signalling and Control Systems

MN S 41412

Process for Signalling and Control Systems Personnel - Authorisations and Licensing

Version 1.0

Date in Force: 8 March 2019

Manual

Transport Sydney Trains

NSW GOVERNMENT

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Document control

Version	Date	Author/ Prin. Eng.	Summary of change
1.0	8 March 2019	Mark Albrecht	Update from RailCorp TMG A1412 v 2.5 format and additional authorisations, licenses and updated and new forms.
		Eric Pace	Rewrite of Section 12 Certificate of Competency. Updated samples COC in appendix. Merged reassessment process from old TMGA 1413. Minor edits.

Summary of changes from previous version

Summary of change	Section

Table of Contents

1 Introduction

The Asset Standards Authority (ASA) is accountable for the production and management of standards for use with Transport for NSW. Sydney Trains is accountable for the processes that govern the integrity of defined elements of Rail infrastructure. This includes not only the physical condition of the infrastructure but also the integrity of the installation and maintenance and construction activities that affect, or potentially affect, its continuing integrity.

To ensure integrity of the design, configuration, installation and maintenance processes it is necessary to have competent people working to standards that meet safety and reliability requirements. Candidates are required to follow this procedure to demonstrate competency to work on the Sydney Trains network. Candidates are required to produce and maintain a log book (also known as work experience log) of prior works completed on Sydney Trains and other networks.

Rail Safety National Law (NSW) and *AS 4292.1* requires signalling personnel to be trained in a competency system based on appropriate nationally endorsed industry training packages and are competent to perform the work they are allocated.

Licences and Authorisations have been implemented by Sydney Trains to confirm that Rail Safety Workers working on the Sydney Trains network apply the necessary domain specific Network Rules and Procedures and the Sydney Trains Signalling Safeworking Procedures which incorporates the extra training that is required by Sydney Trains as a rail transport operator in complying with the Rail Safety National Law (NSW) section 117 (5).

The courses that are specified in this document are listed so the candidate can obtain the domain knowledge required to work on Sydney Trains infrastructure.

There is no National Competency Training Package for Signal Engineers (Field) and Control Systems, a technical component has been added in addition to the Signalling Safeworking requirements as described in section 10.

All Authorised and Licensed personnel require a Permit to Work *(MN S 41419 Authority to Work on Sydney Trains Signalling Infrastructur*e).

2 Scope

The scope of this document and the associated capability requirements matrix details the process and requirements to achieve a Sydney Trains Licence or Authorisation. Licencing and Authorisations applies to all rail safety workers (employees and contractors) that work on the Sydney Trains Network signalling infrastructure.

3 Purpose

The purpose of this document is to detail the processes required for signals and control system personnel to obtain and maintain Authorisations or Licences to enable them to have the generic competencies, domain knowledge, product knowledge, behavioural competencies and skills to work on the Sydney Trains Network.

4 Reference documents

MN S 41412 CL01 Capability Requirements Matrix

MN S 41419 Authority to Work on Sydney Trains Signalling Infrastructure

5 Terms and definitions

The following definitions apply in this document:

Australasian Railway Association (ARA)

Australian Qualifications Framework (AQF) defines all nationally recognised and endorsed qualifications across three levels of education and training – schools, vocational education and training, and universities.

Australian Quality Training Framework (AQTF) is the set of nationally agreed quality assurance arrangements and standards which are applied to:

- Registered Training Organisations (RTOs) which deliver training and assessment services; and
- State and Territory Registering and Course Accrediting Bodies – which for example, register RTOs.

Assessment of competence the process of checking and confirming the ability to carry out specific work activities and/or functions based on evidence that shows a person can carry out such work safely and to the requirements.

Capability Requirements Matrix is a detailed table outlining the minimum accepted Prerequisites, Training, Competency and Behavioural requirements that an applicant must hold to be considered for a Licence or Authorisation. The Capability Requirements Matrix (MN S 41412 CL01) is a separate table referenced by this manual.

Certificate of Competency (CoC) is a detailed list of the technical component (engineering activities) of the Rail Safety Worker Card or Rail Industry Worker Card. E.g. Signal Engineer (Field),

Competency is the ability (knowledge, skills and attitudes) to perform tasks and duties to the standard expected in employment.

Competency focuses on what is expected of an employee in the workplace rather than on the learning process, and embodies the ability to transfer and apply skills and knowledge to new situations and environments.

Competency Based Training (CBT) focuses on the skills and knowledge that an individual has rather than on how or where they attained them.

There are many pathways to achieving such competence, including workplace experience, training and a combination of the two.

Control Systems (CS) refers to non-vital systems and data associated with control of the signalling system.

Electrical Trades Certificate *(Cert III in Electro Technology and Certificate of Proficiency*) or Cert IV in Electrical – Rail Signalling or a statement of equivalence by the *Office of Fair Trading* using the website tool (http://www.licencerecognition.gov.au/LRSearch.aspx) that aligns the licenses between the states.

FAT Factory Acceptance Test

FQT Formal Qualification Test

Identification Card can be either a Rail Safety Worker Card (Gold Card) or a Rail Industry Worker Card.

Interface Wiring means wiring on/in a live item of signalling equipment, cabling, rack, relay and circuitry, but not the termination of that wiring on working equipment.

Note: Additional cable installation into a piece of working signalling equipment (e.g. a points machine) must be treated as interface wiring.

Licence to Practice (Sydney Trains Signals or Control Systems Licence) a relevant licence to work on the operational signalling system in accordance with Signalling Safeworking Procedures is issued to a person who has been trained and assessed as competent and has satisfactorily passed the Sydney Trains "Licence to Practice" board examination. Relevant persons are listed within the Register *RG S 41415 "Signals and Control Systems Personnel – Licensing and Authorisation Status".*

Mechanical Trades Certificate *(Cert III in Transport and Logistics TLI31915 for Mechanical Rail Signalling* or from a *Cert III Metal & Engineering MEM05* for an Interlocking Fitter or a statement of equivalence by the *Office of Fair Trading* using the website tool (http://www.licencerecognition.gov.au/LRSearch.aspx) that aligns the licenses between the states.

OPQ Occupational Personality Questionnaire is a behavioural competency assessment in which the process is documented in sections B of the relevant competency assessment procedures e.g. PR S 43002B.

Permit to Work is an authority to conduct signalling activities on the Sydney Trains Network that a person is permitted to undertake in a particular location or project, and the equipment types upon which those activities may be performed.

Proficiency Level 0, 1, 2 or 3 Levels are provided to demonstrate an individual's ability with a certain task/subject as documented on their specific CoC. Levels are ranked from lowest (0) to highest (3). The higher the number generally means the more responsibility and less supervision an individual requires.

Rail Industry Worker Card is an Identification card for contractors that is issued by ARA provider listing the Safeworking and Technical competencies that the person has gained.

Rail Safety Worker Card (Gold Card) is an Identification card for Sydney Trains employees that is issued by TfNSW listing the Safeworking and Technical competencies that the person has gained.

Relevant Tertiary Qualification

- **Signals (S)** Professional Engineer who holds a minimum of:
  - Bachelor Degree in Electrical Engineering (or statement of equivalence by Engineers Australia),

    or

  - Grad Diploma in Rail Signalling & Telecommunications (or statement of equivalence by Engineers Australia), or an IRSE corporate membership (MIRSE or higher), or a Bachelor Degree in Engineering (or statement of equivalence by Engineers Australia), with completion of the following electrical units of study (or statement of equivalence by Engineers Australia);
    - Introduction to electrical engineering – fundamentals
    - Basic electrical logic systems
    - PLC's and microprocessors
    - Basic data communication networks

  - Analogue electronics (including problem solving in DC and low voltage AC circuits)

- **Control Systems (CS)** Professional who holds a minimum of a Bachelor Degree in Engineering, Computing Science or Information Technology or statement of equivalence by Engineers Australia.

SAT Site Acceptance Test

Self-Assessment is the process for an individual to review their own experience, knowledge and understanding within the confines of their role description against set requirements as defined by Sydney Trains.

Signal Location in the context of authorisations means Relay rooms, Walk in locations, Apparatus cupboards and Signalling equipment outside of a Relay room, Walk in location and Apparatus cupboard e.g. points, signals, trainstops, level crossing mechanisms etc.

Signalling (S&CS) within this document the term 'signalling' shall encompass any work associated with both Signals and Control Systems.

Signalling Authorised Person is a person who is competent to perform defined signalling work activities as described within this document and authorised by the issue of a Certificate of Competency.

Signals (S) refers to vital and some non-vital systems used to control the signalling infrastructure.

Skills Recognition refers to competence that can be currently demonstrated which may have been achieved through a prior learning, usually involving a combination of training courses and work experiences.

Standalone new work is referred to new signalling works which are not commissioned and which are located on an isolated rack in a live location or in a location that is not a live signalling location.

Telecommunications Trades Certificate *(Cert III or Cert IV* – In a relevant Telecommunication, Information Technology, Robotics qualification from the integrated Telecommunication training package or a statement of equivalence by the *Office of Fair Trading* using the website tool (http://www.licencerecognition.gov.au/LRSearch.aspx) that aligns the licenses between the states.

Training Package is an integrated set of nationally endorsed competency standards, assessment guidelines and qualifications. It may also include optional non-endorsed components such as learning strategies, assessment resources and capability development materials.

A Training Package is made up of three parts:

- **Units of Competency:** which define the skills and knowledge required for competent performance in the workplace;
- **Qualifications Framework:** which groups individual units together and describes what a person has to do to achieve a level of qualification; and
- **Assessment Guidelines:** which set out the industry's preferred approach to assessment, including specific advice on the qualifications needed by assessors, the design of the assessment processes and the conduct of assessment.

Training Packages are developed by Industry Skills Councils to meet the training needs of occupations within an industry or group of industries.

Qualifications are achieved by attaining competencies selected from designated Training Packages.

6 Capability Requirements Matrix MN S 41412 CL01

This manual must be read in conjunction with the Capability Requirements Matrix MN S 41412 CL01

The Matrix defines the minimum mandatory requirements that an individual must meet to be awarded a specific Licence or Authorisation. Ticks (✓) denote the specific Prerequisites, Training Courses, Competencies and Behavioural Capabilities required to be met by an applicant.

The required Licence or Authorisation is shown horizontally on the Matrix, the training, competency and behavioural competency requirements needed to be met to attain that licence or authorisation are detailed vertically. The Matrix can be readily used to carry out a gap analysis (refer to section 13 'Competency Gap Analysis') between differing authorisations and licenses.

Refer to Figures 1 and 2 regarding the possible pathways for Licencing or Authorisations.

Note: Some categories of Licence or Authorisation may require the completion of additional separate competency(s).

7 Functions and Roles Requiring a Licence or Authorisation

Personnel who perform the following signalling functions are required to hold the appropriate Signalling Licence or Signalling Authorisation.

- Certification and testing of new or altered Signalling works (as detailed in Inspection and Testing of Signalling MN S 47000)
- Disconnection and decommissioning of Signalling equipment or systems
- Signalling maintenance activities, including fault finding, and like for like renewals
- Interfering with live signalling systems (as detailed in the Signalling Safeworking Procedures MN S 40000)
- Managing Signalling Safeworking activities and matters
- Carry out an inspection or work safely in a live signalling location.
- Perform signal sighting
- Training and assessment of licenced or authorised signalling personnel

Additionally signal personal must only perform signalling related functions in accordance with the limits identified on the certificate of competency associated with the licence or authorisation they hold.

Supervisors and human resource personnel should take into account the licencing and competency requirements outlined in this procedure when developing position descriptions and essential job requirements.

7.1 Roles and Positions

The table below identifies what licence and authorisations are required for specific Sydney Trains signal roles/positions.

LICENCE / AUTHORISATION	ROLE / POSITIONS
Signal Engineer (Field) (ADI01)	Principal Engineers
	Signals Engineering Manager
	Regional Signals Engineer
	Senior Asset Engineer Sigs & Ctrl System
	Senior Signalling Integrity Engineer
	Senior Project Engineer
	Senior Signals Engineer
	Commissioning Engineer
	Commissioning Managers
Control Systems Engineer (ADI02)	Systems Integrations Senior Specialist
	Systems Integrations & Commissioning Manager
	Test and Commissioning Manager
	Project Delivery Manager
	Control Systems Maintenance Engineer
Signal Electrician (ASI01)	Infrastructure Worker Signals Electrical
	Team Leader Signals
	Work Group Leader Signals Electrical
	Asset Assurance Inspector Signalling
	Team Manager Signals
	ICON Infrastructure Controller Signals
	Trainer Signals
Control Systems Technician (ASI02)	Control Systems Technician
Signals Mechanical (ASI05)	Infrastructure Worker Signals Mechanical
	Work Group Leader Signals Mechanical
	Team Manager Signals Mechanical
	Signal Ganger
	Signal Sectioner
	Assistant Signal Sectioner
	Leading Interlocking Fitter
	Interlocking Fitter

LICENCE / AUTHORISATION	ROLE / POSITIONS
Signals Ancillary (ASI06)	Rail Bond Welder
	Cable Jointer
	Cable Locator
	Airline Fitter
	Locksmith
Signalling Authorised Person (ASI07)	Signalling Electrical Installer
	Signals Mechanical Installer
	C & CS Cable Locator Authorisation
	Signalling Cable Locator Authorisation
	Signalling Assistant Tester
	Signalling Circuit Tester
	Signalling Circuit Function Tester
	Signalling Tester in Charge
	Program, Test & Commission of LX Monitors
	Signalling Telemetry Technician
	Set to Work, Test and Certification of Track Circuits
	Set to Work, Test and Certification of Point Mechanisms
	Set to Work, Test and Certification of Train Stops
	Set to Work, Test and Certification of Signals
	Set to Work, Test and Certification of Power Supplies
	Set to Work, Test and Certification of Trackside ATP
Signalling Authorised Person (ASI07) Other personnel that are also required to hold a Signalling Authorisation	Carry out an Inspection in a live Signal Location
	Work Safely in a live Signalling Location
Signals Designer Authorised Person (ASI08)	Technical Specialist
	Documentation Manager
	Senior Signal Design Engineer
	Documentation Engineer
	Signal Design Engineer
Control Systems Designer Authorised Person **(**ASI09)	Control Systems Software Designer
	Control Systems Infrastructure Designer
	Control Systems Configuration Designer
	Control Systems FAT/FQT

Table 1 - Roles Requiring a Signalling Licence or Authorisations

8 Signalling Authorisations

Signalling Authorisations are issued to personnel, who are not issued with a Signalling Licence, but are authorised to carry out work activities defined as outlined in the following sections.

Refer to Capability Requirements Matrix MN S 41412 CL01 for the minimum Prerequisites, Training, Competency and Behavioural requirements.

Application Requirements

Unlicensed persons seeking a Signalling Authorisation must:

a. Complete the application for Signalling Licence / Authorisation Form (included in Appendix A and the internet).

b. Complete the Technical self-assessment titled “Survey of Engineering Competencies” (refer document MN S 41412 Appendix) for the relevant authorisation, which captures a candidate’s own assessment of their qualifications, experience and competency. (except for Carry out an Inspection in a Live Signal Location and Signal Mechanical Installer Authorisations)

c. Complete the Behavioural competency OPQ self-assessment (as required in the Capability Requirements Matrix)

d. Provide:

   i. A request for which authorisation/s is required and in the case of Set to Work, Test and Certification of Track Circuit Authorisation stating the type/s of track circuits for which authorisation is sought.

   ii. Proof of appropriate qualifications for Inspection and Work Safely in a Live Signal Location Authorisations or an Electrical Trades Certificate or Relevant Tertiary Qualification for the other Authorisations.

   iii. Details in their Logbooks of relevant signalling work experience and training applicable to the authorisation being sought (except for Carry Out an Inspection in a Live Signal Location Authorisations)

   iv. Contact details of previous relevant supervisors. Statements of experience should include supervisor’s verification signatures where available.

   v. Proof of satisfactory completion of the prerequisite training courses as described below.

e. For:

   i. Sydney Trains applicants send the application and supporting documentation to their controlling Licensed Engineer. The controlling Licensed Engineer will review the information and if approved, provide the employee with a Certificate of Competency and send a copy of the Certificate of Competency to the Principal Engineer Signalling Integrity so that the applicant's name is registered in RG S 41415 as a “Signalling Authorised Person”.

   ii. Non Sydney Trains applicants send the application and supporting documentation directly to the Principal Engineer Signalling Integrity. The Principal Engineer Signalling Integrity will review the information and if approved, provide the employee with a Certificate of Competency and register their name in RG S 41415 as a “Signalling Authorised Person”.

The competency assessment will be conducted as detailed in the relevant Competency Assessment Procedure e.g. PR S 43002 Work Safely in a Live Signal Location. This following section describes the process needed to gain the following Authorisations.

8.1 Carry out an Inspection in a Live Signal Location Authorisation

This Authorisation entitles personnel to carry out inspections of live signalling environments as outlined below:

- Pre work inspections for future work (estimations, planning activities, etc.) of any type of equipment within the location.
- Inspections and maintenance of equipment other than signalling (fire protection, air conditioning, communication, stores, etc.)

Entry Qualification Requirements

- Appropriate qualification relevant to the work

See also detailed requirements for this authorisation in MN S 41412 CL01 Capability Requirements Matrix.

8.2 Work Safely in a Live Signal Location Authorisation

This Authorisation entitles personnel to work safely in a live signalling environment as outlined below:

- Installation and removal of equipment other than signalling (fire protection, air conditioning, communication, control systems, cable searches, etc.)
- Installation and removal of signalling equipment not connected to working equipment.
- Carry out construction signalling work in a live signal location provided the work is standalone new work.
- Carry out other signalling activities including disconnect or connect to the signalling system provided that they are directly supervised by a suitably licensed signalling person. (Ref *PR S 40001 Section 1.5 g*)

Entry Qualification Requirements

- Appropriate qualification relevant to the work

Entry Authorisation Requirements

- Nil

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.3 Signalling Electrical Installer Authorisation

This Authorisation entitles Signalling Electrical personnel to work in a live signalling environment as outlined below:

- Carry out interface wiring in a live signal location but not the termination of new wiring on working equipment.

Entry Qualification Requirements (refer to Section 5)

- Either
  - Electrical Trades Certificate, or
  - Relevant Tertiary Qualification

Entry Authorisation Requirement

- As per the Capability Requirements Matrix (MN S 41412 CL01)

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.4 Signals Mechanical Installer Authorisation

This Authorisation entitles Signals Mechanical personnel to work in a live signals environment as outlined below:

- Carry out the signals installation of mechanical signals equipment, which includes the set up and adjustment but not the certification of the equipment.

Note: Certification of new signals equipment must be a Sydney Trains Licensed Signal Engineer (Field).

Entry Qualification Requirements

- Entry requirements as per TLI31915 Certificate III in Mechanical Rail Signalling

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.5 Communication & Control Systems (C&CS) Cable Locator Authorisation

This Authorisation entitles utilities service locators the purpose of locating Sydney Trains services. Each discipline within Sydney Trains may require additional entry requirements, training to reach competency levels as set out in “TMG 1310 Locating of Underground Services” section 7 in a live signalling environment as outlined below:

Entry Qualification Requirements

- Dial Before You Dig (DBYD) Certified Locator or equivalent.

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01), plus
- Locating of Underground Services Non - CBI areas
- Locating of Underground Services - CBI areas

Demonstrated experience in locating a range of cables in both CBI and non-CBI areas within the Sydney Trains network, and recorded in log book with accompanying field/work as executed drawings.

8.6 Signalling Cable Locator Authorisation

This Authorisation entitles utilities service locators the purpose of locating Sydney Trains services. Each discipline within Sydney Trains may require additional entry requirements, training to reach competency levels as set out in “TMG 1310 Locating of Underground Services” section 7.in a live signalling environment as outlined below:

Entry Qualification Requirements-

- Dial Before You Dig (DBYD) Certified Locator or equivalent.

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01), plus
- Locating of Underground Services Non - CBI areas
- Locating of Underground Services - CBI areas
- Locating of Underground Services – Live cables

Demonstrated experience in locating a range of cables in both CBI and non-CBI areas within the Sydney Trains network, and recorded in log book with accompanying field/work as executed drawings.

8.7 ATP Balise Data Installer Authorisation

This Authorisation entitles ATP Data Installer personnel to work in a live signalling environment as outlined below:

- Installation of data on non-installed off-track controlled or fixed ATP Balises in working ATP areas only.
- Verify data on non-installed off-track controlled of fixed ATP Balises in working ATP areas only.

Entry Qualification Requirements (refer to Section 5)

- Either;
  - Electrical Trades Certificate, or
  - Relevant Tertiary Qualification

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01), plus
- Training in use of the BEPT (Balise Encoder Programming Tool)

8.8 Signalling Assistant Tester Authorisation

This Authorisation entitles Signalling Assistant Tester personnel to work in a live signalling environment as outlined below:

- To assist the lead Tester in carrying out defined inspection and testing activities on new or altered signalling works in conjunction with PR S 47111 Roles, Responsibilities and Authorities Table 1 - Minimum Licensing or Authorisation requirements for suitably experienced personnel implementing New and Altered Works.
- All testing work is carried out under the direction and supervision of the lead tester responsible.
- The work may be conducted as interface wiring or as standalone new work.

Entry Qualification Requirements (refer to Section 5)

- Either;
  - Electrical Trades Certificate, or
  - Relevant Tertiary Qualification, or
  - Design Checking Competencies in Signal Design, or
  - IRSE Licence 1.3.150 – Signalling Test Assistant

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.9 Signalling Circuit Tester Authorisation

This Authorisation entitles Signalling Circuit Tester personnel to work in a live signalling environment as outlined below:

- Carry out inspection and testing of new or altered signalling works in accordance with an Inspection and Test Plan provided by others and in conjunction with PR S 47111 Roles, Responsibilities and Authorities Table 1 - Minimum Licensing or Authorisation requirements for suitably experienced personnel implementing New and Altered Works.
- The work may include leading a small team of Signalling Assistant Testers and / or Signalling Circuit Testers.
- The work may be conducted as interface wiring or as standalone new work.

Note: This unit does not include verification that the system interlocking functions in compliance with design, or validation of the design to specifications and signalling principles.

Entry Qualification Requirements (refer to Section 5)

- Either;
  - Electrical Trades Certificate; or
  - Relevant Tertiary Qualification.

- And either;
  - Minimum of Signal Electrician Work Group Leader (or supervisor equivalent); or
  - Demonstrated experience as a Signalling Assistant Tester; and either
    - Signalling Electrical Installer Authorisations; or
    - Design Checking Competencies in Signal Design; or
  - Demonstrated experience of the use of IRSE Licence 1.3.155 – Signalling Verification Tester.

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.10 Signalling Circuit Function Tester Authorisation

This Authorisation entitles Signalling Circuit Function Tester personnel to work in a live signalling environment as outlined below:

- Carry out inspection and testing of new or altered signalling works in accordance with an Inspection and Test Plan provided by others and in conjunction with PR S 47111 Roles, Responsibilities and Authorities Table 1 - Minimum Licensing or Authorisation requirements for suitably experienced personnel implementing New and Altered Works.
- The work may include leading a small team of Signalling Assistant Testers and / or Signalling Circuit Testers.
- The work may be conducted as interface wiring or as standalone new work.

Note: This unit does not include verification that the system interlocking functions in compliance with design, or validation of the design to specifications and signalling principles.

Entry Qualification Requirements (refer to Section 5)

- Either;
  - Electrical Trades Certificate; or
  - Relevant Tertiary Qualification
- And demonstrated experience in either;
  - Signalling Circuit Tester Authorisation; or
  - IRSE License 1.3.170 – Signalling Functional Tester.

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.11 Signalling Tester in Charge Authorisation

This Authorisation entitles Signalling Tester in Charge personnel to work in a live signalling environment as outlined below:

- Lead, manage and direct defined inspection and testing activities on new or altered signalling works under the direction of the Commissioning Engineer.
- Be responsible for directing, controlling and ensuring that all the inspection and testing plans, procedures, activities and tasks required by the inspection and test plan are competently and correctly completed and recorded.

Note: The role is defined after consultation with the Commissioning Engineer and is responsible for ensuring that all inspection and testing tasks have been correctly carried out and documented so that the Commissioning Engineer has sufficient evidence to sign off the safety assurance of completed works and certify that the systems and equipment have been properly installed using effective quality system processes and have undergone and passed all tests and inspections necessary to ensure safe and reliable operation.

Entry Qualification Requirements (refer to Section 5)

- Either;
  - Electrical Trades Certificate; or
  - Relevant Tertiary Qualification.
- And demonstrated experience in either;
  - Signalling Circuit Function Tester Authorisation; or
  - IRSE License 1.3.190 Tester in Charge.

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

Licensing Board Requirements

- This Authorisation is not required to sit the Licensing Board as described in Section 11 if the applicant has progressed from the Circuit Function Tester Authorisation.

8.12 Set to Work, Test and Certification of Track Circuit Authorisation

This Authorisation covers the application of knowledge required to lead a team in setting to work, certifying safe for normal operation, a newly installed track circuit. The work includes clearing of any previous track circuit equipment and connections, completion of previously installed new connections and track bonding (but not including installation of new wiring), inspection of new equipment and installation, powering-up, setting of final operating parameters, completion of functional checks and recording of as-commissioned settings and values.

Entry Qualification Requirements (refer to Section 5)

- Either;
  - Minimum of Signal Electrician Work Group Leader (or supervisor equivalent); or
  - Relevant Tertiary Qualification

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.13 Signalling Telemetry Technician Authorisation

This Authorisation entitles Signalling personnel to work in a live signalling environment as outlined below:

- Carry out defined installation, testing and set to work activities on telemetry systems.

Entry Qualification Requirements (refer to Section 5)

- Relevant Tertiary Qualification

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.14 Signals Design Authorisation

The following Authorisations are based on design of Signals systems only:

8.14.1 Signals Designer

This Authorisation entitles Signals Design personnel to work in a live signalling environment as outlined below:

- Carry out defined signals design and testing activities on signals system software, data or equipment.

Entry Qualification Requirements

- To be advised

Training Requirements

- To be advised

8.15 Control Systems Design Authorisations

The following Authorisations are based on design of Control Systems only:

8.15.1 Control Systems Software Designer

This Authorisation entitles Control Systems personnel to work in a live signalling environment as outlined below:

- Carry out defined control system design and testing activities on control system software, data or equipment.

Entry Qualification Requirements

- To be advised

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.15.2 Control Systems Infrastructure Designer

This Authorisation entitles Control Systems personnel to work in a live signalling environment as outlined below:

- Carry out defined control system design, installation and testing activities on control system equipment associated with the deployment of new or altered signalling infrastructure

Entry Qualification Requirements

- To be advised

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.15.3 Control Systems Configuration Designer

This Authorisation entitles Control Systems personnel to work in a live signalling environment as outlined below:

- Carry out defined control systems data configuration works associated with the deployment of new or altered signalling infrastructure

Entry Qualification Requirements

- To be advised

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

8.15.4 Control Systems FAT/FQT Authorisation

This Authorisation entitles signalling personnel to work in a live signalling environment as outlined below:

- Carry out defined testing procedures works associated with the deployment of new or altered signalling infrastructure.

Entry Qualification Requirements

- To be advised

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

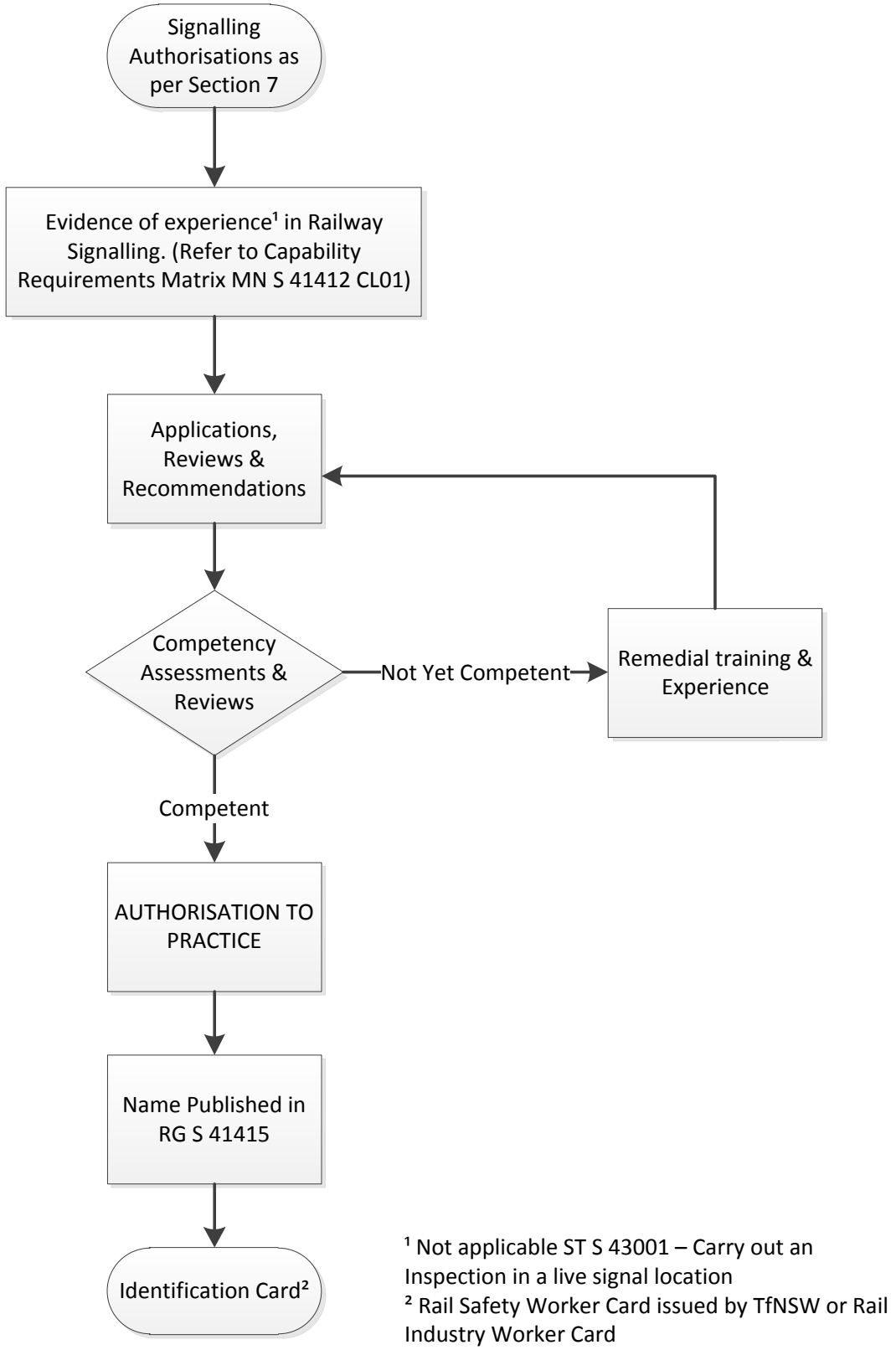


Figure 1 – 'Authorisation to Practice' pathway

9 Signalling Licensing

Sydney Train's competency based structure covers non-trade and trade staff up to certificate IV level for a range of national training packages.

The initial training and assessment of signalling personnel will only be accepted providing it was conducted by a Registered Training Organisation (RTO) as determined by the State or Territory registering body.

Therefore only the Licensing requirements for signalling personnel who have varying levels of engineering authority and thus require a 'licence to practice' for certifying signalling equipment/systems 'fit for purpose' in the testing, commissioning, de-commissioning and or maintenance phases of its life-cycle, or who are required in the course of their duties to disconnect and or otherwise interfere with operational signalling equipment/systems, will be described below.

Application to sit before the Licensing Board for a 'licence to practice' for tradespersons will only be accepted providing the applicant has successfully been assessed as competent by an accredited workplace assessor at the minimum level in the stream (ancillary, mechanical or electrical) for which they are applying. (See Appendix A)

Since there are no national training packages for Signal Engineer (Field) or Control Systems, the process is described in Section 10.

Refer to Capability Requirements Matrix MN S 41412 CL01 for the minimum Prerequisites, Training course, Competency and Behavioural Requirements.

The functions that require a Signalling Licence for the various streams are shown in section 7.

Applicants (excluding Apprentices) who wish to apply for a Sydney Trains signalling Licence,

a. who have never held a Sydney Trains Signalling Licence must fulfil the application requirements as described below, or
b. who have previously held
    i. a Sydney Trains Signalling Licence but did not maintain the accreditation, or
    ii. who hold a current signalling licence from another recognising signalling authority (e.g. IRSE or ARTC) or
    iii. a form of formal signalling competency,

    must fulfil the application requirements as described below. A gap analysis will then be conducted. A tailored plan will be suggested to satisfactorily meet the application requirements as determined by Sydney Trains.

Application Requirements

Unlicensed persons seeking a Signalling Licence must:

a. Complete the application for Signalling Licence / Authorisation Form (included in Appendix A and the internet).
b. For initial application complete the Technical self-assessment titled "Survey of Engineering Competencies" (Appendix A) for the relevant Licence, which captures the candidate's own assessment of their qualifications, experience and competency (except for Signals Ancillary).
c. Complete the Behavioural Capability Requirements

d. Provide:

   i. Proof of appropriate Qualification.

   ii. Details in the Logbook of relevant signalling work experience and training that is applicable to the licence being sought.

   iii. Contact details of previous relevant supervisors. Statements of experience should include supervisor's verification signatures where available.

   iv. Proof of satisfactory completion of the prerequisite training courses as described below.

e. For:

   i. Sydney Trains applicants send the application and supporting documentation to their controlling Signal Engineer or Control Systems Engineer.

   ii. Non Sydney Trains applicants send the application and supporting documentation directly to the Principal Engineer Signalling Integrity.

Licensing Board

Once the applicant has met all the requirements, the applicant will attend an interview with the Sydney Trains Licensing Board which will be organised by the controlling Signal Engineers as described in e) above.

This following section describes the process needed to gain the following Licences.

9.1 Signals Ancillary

Depending on the applicants role the competency structure is derived from National Training Packages from either, Transport and Logistics (Rail Infrastructure) TLI15, or Electro technology Electrician UEE11, or Integrated Telecommunications ICT10, or Metal & Engineering MEM05, etc.

Note: Persons require a Signals Ancillary "Licence to Practice" to perform work on operational signalling equipment.

9.2 Signals Mechanical

This Licence entitles Signals Mechanical personnel to work on operational signals mechanical equipment.

Entry Qualification Requirements (refer to Section 5)

- Mechanical Trades Certificate

Entry Authorisation Requirement

- Work Safely in a live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

9.3 Signals Electrical

This Licence entitles Signals Electrical personnel to work on operational signalling equipment.

Entry Qualification Requirements (refer to Section 5)

- Electrical Trades Certificate

Entry Authorisation Requirement

- Work Safely in a live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

9.4 Control Systems Technician

This Licence entitles Control Systems Technician personnel to work on operational control systems equipment as detailed below:

- Carry out defined inspection, like for like replacement, rectification and testing activities on existing control system equipment.
- Ensure that all the inspection and testing plans, procedures, activities and tasks required by the technical maintenance plan are competently and correctly completed and recorded.

Entry Qualification Requirements (refer to Section 5)

- Either of the following
  - Relevant Tertiary Qualification, or
  - Telecommunications Trade Certificate, or
  - Electrical Trade Certificate.

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01)

9.5 Signal Engineer (Field)

This Licence entitles Signal Engineer (Field) personnel to work on operational signalling equipment and the testing and certification of new and altered signalling.

Entry Qualification Requirements (refer to Section 5)

- Either;
  - Electrical Trades Certificate, or
  - Relevant Tertiary Qualification

Candidates must have at least three years practical experience in the signalling maintenance and construction environments supported by documented evidence (e.g. Log Book) and at least some agreed time of practical experience in a Sydney Trains environment.

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01), plus;

The information on the Signal Engineer (Field)'s Exam process is described in the document "*Signal Engineer (Field) Exam Material*"

An assessment examination consisting of two written papers of three hours duration each, based on Sydney Train's signalling systems and safeworking practices is held to assess the candidate's signalling knowledge and covers both the technical aspects including design, typical layouts and equipment, testing and certification for commissioning new and altered signalling and the signalling safeworking requirements. Both papers include approximately seven questions each, the first a series of short answer questions covering general knowledge, other questions may be presented as multiple choice covering either the maintenance or construction environment as described in section 10.

Additional technical subjects to be covered in the written examination are:

- Knowledge and testing of Mechanical Interlocking
- Electrical calculation, including, Ohms law, series and parallel resistance and impedance.
- Signalling technology.
- Signal design principles.

9.6 Control Systems Engineer

This Licence entitles Control Systems Engineer personnel to work on operational control systems equipment and the testing and certification of new and altered control system equipment.

Entry Qualification Requirements (refer to Section 5)

- Either;
  - Relevant Tertiary Qualification, or
  - Telecommunications Trade Certificate, or
  - Electrical Trade Certificate.

Candidates must have at least three years practical experience in the control systems maintenance and construction environments supported by documented evidence (e.g. Log Book) and at least some agreed time of practical experience in a Sydney Trains environment.

Entry Authorisation Requirement

- Work Safely in a Live Signal Location

Training Requirements

- As per the Capability Requirements Matrix (MN S 41412 CL01), plus;
- Additional training and examination requirements under development. Refer to Professional Head Signalling and Control Systems for more information.

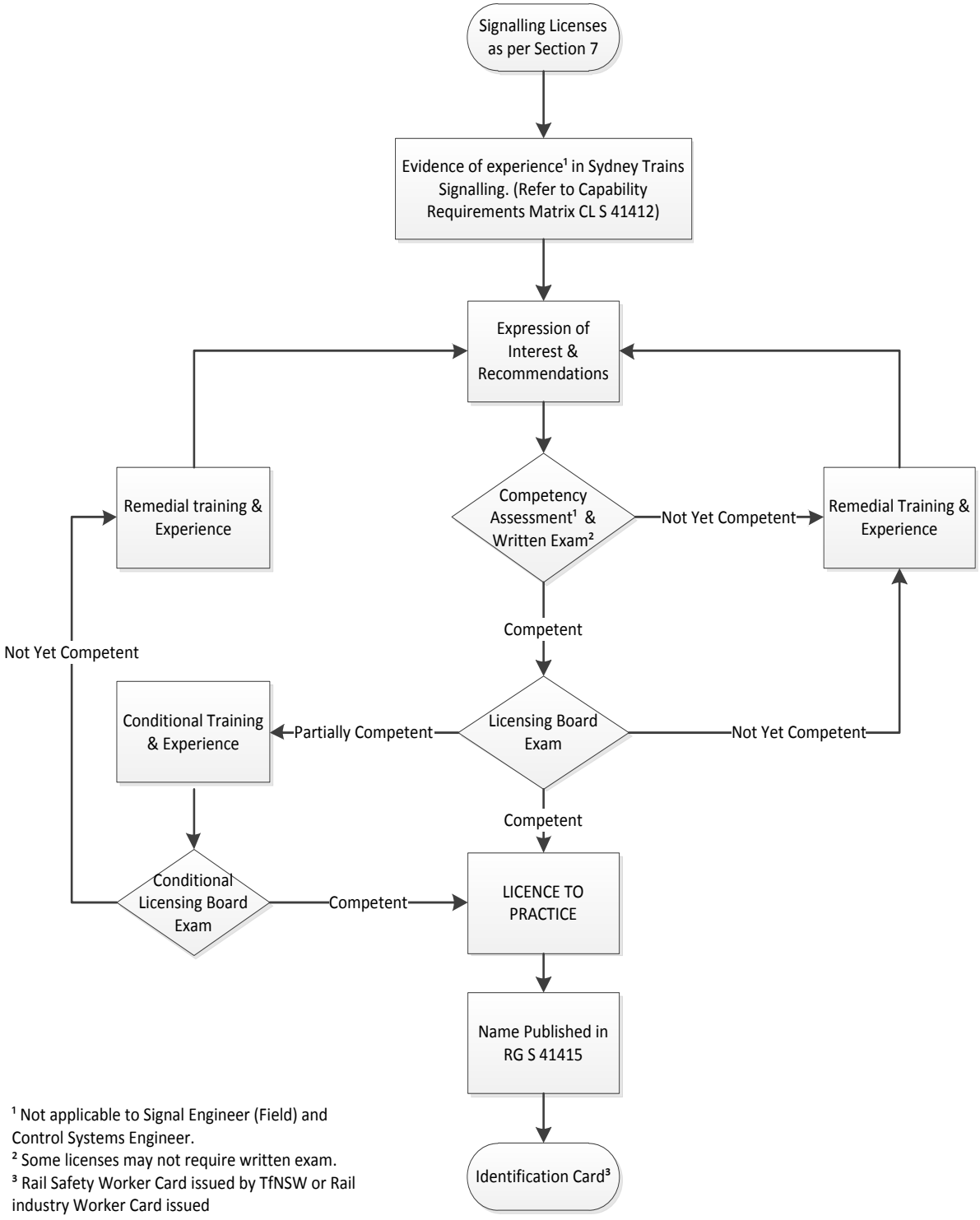


Figure 2 – 'Licence to Practice' pathway

10 Signalling Safeworking – Licensing Examination Format

The format of the licensing assessment will be scenario based, i.e. the candidate will be asked to answer a series of questions based on typical operational situations that can occur during the normal course of their duties. Scenarios are to be restricted to questions relating the signalling safeworking, testing and safety critical maintenance activities and are not to include the technical and theory based subject matter already assessed by the various competences in the applicable classification structures. The lists of assessment subjects that may be used in the licensing assessment are listed below.

Licensing Assessment Subjects

The following references are used in this clause:

(Signals Ancillary)	-	Ancillary staff
(Signals Mechanical)	-	Sectioner
(Signals Electrical)	-	Electricians and Engineers
(Signal Engineers)	-	Engineers
(Control Systems Technicians/Engineers)	-	Control Systems

10.1 Signalling Safeworking Procedures

Temporary Bridging of Signalling Circuits (Electrical)

- Signalling Safeworking Procedure – PR S 40002
- Network Procedure - NPR 704,
- Forms - IBA NRF 003, PR S 40002 FM01.

Major Incidents (Including Accidents or Derailments) – Action to be taken (Signals Ancillary, Mechanical, Electrical and Control Systems)

- Signalling Safeworking Procedure – PR S 40003,
- Network Rule - NSG 614, Network Procedure - NPR 720.

Failures (Mechanical, Electrical and Control Systems)

- Signalling Safeworking Procedure – PR S 40004,
- Network Rules - NWT 312, NSY 518, NGE 216, NSG 608,
- Network Procedures - NPR 704, NPR 715
- Forms - IBA NRF 003, PR S 40004 FM01 & FM02

Release of Track Locking or Indication Locking (Electrical)

- Signalling Safeworking Procedure – PR S 40006,
- Network Rules - NSG 608, NGE 234, Network Procedure - NPR 740,
- Form - IBA NRF 003.

Securing Signalling Apparatus Out of Use (Mechanical, Electrical and Control Systems)

- Signalling Safeworking Procedure – PR S 40008,
- Network Rule - NWT 312, Network Procedure - NPR 704,
- Form - IBA NRF 003.

Disconnection of Signalling Apparatus (Mechanical, Electrical)

- Signalling Safeworking Procedure – PR S 40009,
- Network Rules - NWT 312, NGE 218, Network Procedures - NPR 704, NPR 715, Form - IBA NRF 003.

Rerailing and Traction Return (Electrical)

- Signalling Safeworking Procedure – PR S 40026 & 40027,
- Network Rules - NWT 300, to 314, NWT 318, Network Procedure - NPR 715, Forms - IBA 003, Temporary Rail Bond Approval NRF 013.

10.2 Safety Critical Procedures

Risks and Controls Associated with Testing and Certifying Equipment (Mechanical, Electrical and Control Systems)

Signalling Safeworking Procedure – PR S 40010.

Renewals Work (Mechanical, Electrical and Control Systems)

Signalling Safeworking Procedure – PR S 40011.

Repair / Replacement of Signalling Wires (Electrical and Control Systems)

Signalling Safeworking Procedure – PR S 40012.

Vital Signalling Relays (Electrical)

Signalling Safeworking Procedure – PR S 40024.

Track Circuits (Electrical)

Signalling Safeworking Procedure – PR S 40025.

Point Lock and Detection Testing on Power Operated Points (Mechanical and Electrical)

Signalling Safeworking Procedures – PR S 40029 & 40030.

10.3 Inspection and Testing of Signalling

Inspection and Testing of Signalling: Roles, Responsibility and Authorities (Electrical and Control Systems) PR S 47111
Inspection and Testing of Signalling: Plans, Programs, Documentation and Packages PR S 47112

Inspection and Testing of Signalling: Inspection and Testing Principles (Electrical) PR S 47113

Inspection and Testing of Signalling: Inspection and Testing Procedures (Electrical) PR S 47114

Inspection and Testing of Signalling: Typical Inspections and Tests for Signalling Apparatus (Electrical) PR S 47115

Inspection and Testing of Signalling: Interface Requirements and Procedures for Alterations (Electrical and Control Systems) PR S 47116

Inspection and Testing of Signalling: Standard Forms (Electrical and Control Systems) PR S 47117

Inspection and Testing of Signalling: Typical Signal Support Procedures for Trackworks (Electrical) PR S 47118

10.4 Structure of the Licensing Examination

10.4.1 Circuit Testing

A scenario for Circuit Tester or Circuit Function Tester personnel covers all the applicable Circuit Tests in accordance with *ST S 43012* or *ST S 43013*.

10.4.2 Signals Ancillary

To be advised.

10.4.3 Signals Mechanical

The number of scenarios for mechanical personnel would be a minimum of three (3) but no more than five (5) and is to cover all the applicable safeworking subjects with a major portion of the safety critical procedures to be included. The subjects concerned are listed under the heading “Mechanical and Electrical” in section 10.1. Where the subject matter includes both mechanical and electrical requirements, only the mechanical component is to be tested.

Interlocking Fitter

In addition to the above the Interlocking Fitter’s licensing assessment is to include a separate mechanical interlocking assessment that tests the candidate’s ability to read and interpret mechanical interlocking diagrams and complete a practical assessment through demonstration, on the testing of the interlocking arrangements for mechanical interlocking machines and associated equipment.

A separate “Interlocking Certificate” is issued following successful assessment and remains current for the duration of that person’s employment.

10.4.4 Signal Electrician

For electrical staff the number of scenarios would typically be a minimum of five (5) but no more than seven (7) and would cover all signalling safeworking subjects relating to accidents and derailments, bridging of signalling circuits, disconnect and booking equipment out of use, rerailing including traction return arrangements, fault finding including investigation of irregularities and wrong side failures, releasing of track locking and a major proportion of the safety critical procedures such as, level crossings, track circuit shunt testing, certifying equipment covering new, altered and like for like situations and points lock and detection test requirements.

10.4.5 Control Systems Technician

For Control Systems Technician personnel the number of scenarios would typically be a minimum of five (5) but no more than seven (7) and would cover signalling safeworking subjects relating to, disconnect and booking equipment out of use, fault finding including assisting the Lead Signal Engineer in an investigation of irregularities, safety critical procedures, and certifying equipment covering new, altered and like for like situations.

10.4.6 Signal Engineer (Field)

For Signal Engineer personnel the number of scenarios would typically be a minimum of five (5) but no more than seven (7) and would cover all signalling safeworking subjects relating to accidents and derailments, bridging of signalling circuits, disconnect and booking equipment out of use, traction return arrangements, fault finding including investigation and management of irregularities and wrong side failures, Circuit Testing, releasing of track locking and a major proportion of the safety critical procedures such as, level crossings, track circuit shunt testing, certifying equipment covering new, altered and like for like situations and the Roles and Responsibilities of the Signal Engineer in Maintenance and Construction activities.

10.4.7 Control Systems Engineer

For Control Systems Engineering personnel the number of scenarios would typically be a minimum of five (5) but no more than seven (7) and would cover signalling safeworking subjects relating to, disconnect and booking equipment out of use, fault finding including assisting the Lead Signal Engineer in an investigation of irregularities, safety critical procedures, and certifying equipment covering new, altered and like for like situations.

11 Licensing Boards

Signalling Licensing boards are formed by Signal Engineers (Field) and Control System Engineers listed on the “Authorised Officers List” of the training and competency procedures document, *RG S 41415 Signals and Control Systems Personnel – Licensing and Authorisation Status'.'*

The composition of the licensing board for each signalling position requiring a “Licence to Practice” is shown in section 11.1, ‘Licensing Examination Board List’ of this document.

When a board is formed the senior engineer on the board will be deemed the board chairperson for the duration of the board. The chairperson’s role shall be to provide the various exam scenarios for the assessment and ensure that all the relevant documentation relating to the candidate’s eligibility to apply for a licence is examined and verified.

The chairperson will issue an initial Certificate of Competency (see section 12) and advise the candidate’s controlling Licensed Engineer, for issue of a “*Permit to Work*” if successful or any remedial training required if the candidate was unsuccessful.

The chairperson will issue the appropriate “License to Practice” certificate to the applicant with copies forwarded to the controlling Licensed Engineer and to the Principal Engineer Signalling Integrity.

Once the Principal Engineer Signalling Integrity receives a copy of the completed “License to Practice” certificate the successful candidate’s name shall be updated in *RG S 41415 Signals and Control Systems Personnel – Licensing and Authorisation Status* and maintained on the list as long as they have a current *“Identification Card”*.

The following specification lists the essential criteria for an officer to achieve the authority levels shown.

LEVEL A:

a. Principal Engineers, Senior Engineers Signalling Integrity

LEVEL B:

a. Minimum five (5) years as a Signal Engineer (Field) or Control Systems Engineer with experience,

   AND

b. Minimum grade RC 6 or equivalent,

   AND

c. Experienced as member of “C” board,

   AND

d. Observer on “B” board (minimum 3 occasions),

   AND

e. Recommended by two (2) “B” board members and approved by a Level ‘A’ member.

   OR

f. Recommended and approved by the Professional Head Signalling & Control Systems.

LEVEL C:

a. Minimum Two (2) years as Signal Engineer (Field) or Control Systems Engineer with experience

   OR

   An experienced Signal Engineer (Field) or Control Systems Engineer approved by a Level 'A' member,

   AND

b. Qualified as a Level of "D",

   AND

c. Observer on "C" boards, (minimum 2 occasions),

   AND

d. Recommended by "B" board member and approved by a Level 'A' member.

   OR

e. Recommended and approved by the Professional Head Signalling & Control Systems.

LEVEL D:

This is the entry level and the requirement is for officers to have passed the Signal Engineers (Field) examination or equivalent and be appointed to a Field Signal Engineers position as well as the following criteria:

a. Current qualifications in the competency or competencies being assessed, and
b. The following competencies from the Training and Assessment Training Package (TAE40116), (as amended from time to time) or be able to demonstrate equivalent competencies:
   i. TAEASS401 Plan assessment activities and processes;
   ii. TAEASS402 Assess competence;
   iii. TAEASS403 Participate in assessment validation, and
c. A minimum of two years' practical experience in each competency being assessed.

LEVEL X:

a. An experienced Senior Signal Engineer (Field) with extensive experience in Mechanical Interlocking.

   AND

b. Recommended and approved by the Professional Head Signalling & Control Systems.

11.1 Licensing Board List

POSITION	LICENSING BOARDS
Signal Engineer (Field)	A (S) + B (S) + B (S)
Control Systems Engineer	A (S)+ B (S or CS) + B (S or CS)
Signalling Authorised Person (Circuit Function Tester Authorisation)	B (S) + B (S)
Signal Electrician	B (S) + C (S)
Control Systems Technician	B (S) + C (S or CS)
Signalling Authorised Person (Circuit Testing Authorisation)	B (S)+ C (S)
Signals Mechanical	B (S)+ C (S)
Signals Ancillary	C (S)+ C (S)
Mechanical Interlocking	X (S) + X (S)

*See Note in section 8.11.

(S) – Signals Licensing Board

(CS) – Control Systems Licensing Board

Note: Officers of a higher authority level may sit on boards requiring a lower authority level.

11.2 Authorised Officers List – Amendments

An Officer wishing to be included on the list, raised in authority level or deleted from the list, may make written application to the Principal Engineer Signalling Integrity who will after consideration of the merits and experience of the applicant authorise any necessary amendments to the list.

Where applicable the application must include the recommendations of the required authorised officer.

12 Certificate of Competency

A Certificate of Competency states the following;

a. competency proficiency levels of a rail safety worker undertaking rail safety work such as Signalling safeworking, maintenance, design, configuration and construction

b. equipment and systems a rail safety worker is deemed competent to work on

c. supervisory requirements and authorisation.

Signalling Certificates of Competency are issued in the following categories:

- Signalling Authorised Person
- Signals Ancillary
- Signals Mechanical
- Signal Electrician
- Signal Engineer (Field)
- Signals Designer Authorisation
- Control Systems Technician
- Control Systems Engineer
- Control Systems Designer Authorisation

To be issued a Certificate of Competency a candidate must first be issued either a Licence to Practice (Section 9) or an Authorisation to Practice (Section 8). Additionally a candidate will undergo an assessment of their proficiency by the candidate's controlling licenced Signal Engineer or Licenced Control Systems Engineer (Section 12.3) who will also issue a Permit to Work (Ref PR S 41419 Permit to Work). Both documents are required before the worker is allowed to perform signalling safety related duties.

Workers shall not be employed in any of the categories listed above without a current Certificate of Competency except under direct and close supervision as detailed in the signalling safeworking procedures.

A Certificate of Competency is valid for three years. Renewal of a Certificate of Competency is through application to the controlling Signal or Control Systems Engineer, see section 12.4.

For the purposes of issuing a Certificate of Competency a Non Sydney Trains rail safety worker's controlling Engineer shall be the Principal Engineer Signalling Integrity.

12.1 Requirements for Issue of Certificate of Competency

12.1.1 Signals

Senior Signal Engineers are denoted as "Senior" in the comment section of RG S 41415.

The following essential criteria is required for an officer to be denoted as a Senior Signal Engineer, and is applicable to licenced Signal Engineers (Field) who have a current need to issue Certificate of Competency and work on Sydney Trains signalling infrastructure:

a. Hold a senior position (RC 7 or equivalent) within an organisation for a minimum of five (5) years, and

b. Minimum ten (10) years as a licenced Signal Engineer, and

c. Recommended by two (2) Senior Signal Engineers and approved by a Principal Engineer

or

d. Recommended and approved by the Professional Head Signalling & Control Systems.

The Professional Head Signalling & Control Systems, Principal Engineer Signalling Integrity, Signals Engineering Manager or Testing and Commissioning Manager Signalling can issue a Signal Engineer (Field) Certificate of Competency to a Senior Signal Engineer.

Senior Signal Engineers can assess and issue Signal Engineer (Field) Certificate of Competency to other Signal Engineers.

Signal Engineers who have a Signal Engineer (Field) Certificate of Competency can assess and issue a Certificate of Competency to all grades of infrastructure workers as long as the Engineer has a minimum of two years' practical experience in each competency being assessed.

12.1.2 Control Systems

Senior Control System Engineers are denoted as Senior in the comment section of RG S 41415.

The following essential criteria is required for an officer to be denoted as a Senior Control Systems Engineer

a. Hold a senior position (RC 7 or equivalent) within an organisation for a minimum of five (5) years, and

b. Minimum ten (10) years as a licenced Control Systems Engineer, and

c. Recommended by two (2) Senior Control Systems Engineers and approved by a Principal Engineer (as mentioned above),

or

d. Recommended and approved by the Professional Head Signalling & Control Systems.

The Professional Head Signalling & Control Systems, Principal Engineer Signalling Integrity, Operations Manager Control Systems or Testing and Commissioning Manager can issue a Control Systems Engineer Certificate of Competency to a Senior Control System Engineer.

Senior Control Systems Engineers can then issue a Control Systems Engineer Certificate of Competency to other Control Systems Engineers.

Control Systems Engineers who have a Certificate of Competency can assess and issue a Certificate of Competency to all grades of Control Systems Technicians as long as the Engineer has a minimum of two years' practical experience in each competency being assessed.

12.2 Proficiency Levels

A Certificate of Competency lists a worker's competencies relevant to their role, to which various proficiency levels are assigned as described in Table 1 below.

Level of Proficiency	Task Complexity		Supervisory Authority
	Simple Tasks	Complex Tasks	
Level 3	Competent to perform simple tasks unsupervised	Competent to perform complex tasks unsupervised	May supervise and assess all other levels
Level 2	Competent to perform simple tasks unsupervised	Competent to perform complex tasks under indirect supervision	May supervise Levels 0 & 1 performing simple or complex tasks
Level 1	Competent to perform simple tasks under indirect supervision	May perform complex tasks under direct supervision	May supervise Level 0 performing simple tasks
Level 0	May perform simple tasks under direct supervision	May perform complex tasks under direct supervision	Nil

Table 2 – Proficiency Levels

While it is up to the supervisor to determine if a specific task is simple or complex, and the exact nature of the direct/indirect supervision, the following definitions apply.

Simple Tasks are tasks that meet one of the following conditions.

a. Work that is detailed/described in standards, procedures, and service schedules.
b. Work that is covered by work instructions (except for work instructions that deal with complex tasks).
c. Work that is repetitive in nature.
d. Investigating and certifying right side failures of the signalling system
e. Design tasks that are based on other very similar or pre-existing designs.
f. Work that poses no risk to the integrity or reliability of the signalling system.

Examples of simple tasks include:

- Like for like replacement of a points mechanism where a no bridging authority is required.
- Testing, adjusting and certifying a facing point lock and detection during maintenance or after a failure.
- New design for a configuration that is similar to an existing design - for example design for three aspect automatic signalling, or a new Map design that is similar to a previous project.

Complex Tasks are defined as tasks that meet any of the criteria below.

a. Work that is novel or unique in nature.
b. Work that requires the application of a worker's knowledge and skills in non-routine ways.
c. Work that has multiple simultaneous elements of risk.

For example:

- Correlation of circuits in a location with shelf relays and non-PCV insulated wiring.
- Setting up, testing, adjusting and certifying a facing point lock and detection on commissioning or renewal.
- Like for like replacement of a points mechanism where a bridging authority of the detector circuit is also required.
- Site Acceptance Testing of a new Control Systems software release.

Direct Supervision: The purpose of direct supervision is for a supervisor to monitor a person's work to ensure compliance with relevant standards and procedures and to be able to take corrective action in a timely manner. While engaged in direct supervision, the responsibility for the continued integrity of the signalling systems rests with the supervisor.

The nature of direct supervision will vary depending on the nature of the job at hand. Some tasks will require the supervisor to constantly monitor performance of the work whereas other tasks will require only periodic review. For example, direct supervision of a worker performing safety critical work or working in an operational environment (e.g. adjusting a facing point lock) would require direct observation and communication between the supervisor and the worker (i.e. they would typically be working side-by-side). Alternatively direct supervision of an installer wiring up a new signalling cupboard may only require periodic inspection of their work throughout the day. Because of the variable nature of signalling works it is the supervisor's responsibility to determine the exact nature of the direct supervision to meet their prime responsibility of ensuring the continued integrity of the signalling system.

Under direct supervision communication is generally face to face and the onus to initiate communication is with the supervisor since in this case the worker is not expected to be aware of their own limitations or the full requirements of the task at hand.

A secondary purpose of direct supervision is to foster and develop a worker's knowledge and skillset to facilitate their continuous development and career progression. Supervisors therefore are encouraged to promote informal worksite learning opportunities.

Indirect Supervision: The purpose of indirect supervision is to provide a worker with a mentoring resource to guide and support the worker while performing non-routine activities. Similar to direct supervision, indirect supervision requires various levels of interaction between the worker and supervisor that is task dependent.

For example, indirect supervision of a control systems technician or signal electrician attending a fault/failure may require communication between the supervisor and worker after every series of tests and before repairs are made. Alternatively indirect supervision of a designer may require only very limited communication between the supervisor and worker, say once or twice a week or at the completion of a design task.

While indirect supervision may be face-to-face it is more likely to be remote (i.e. via phone or two-way radio) or under certain circumstances via email. The onus to initiate communication under indirect supervision rests equally with the supervisor and the worker as both people should have a reasonable understanding of the limits of the worker's knowledge, skills and abilities.

12.3 Assessment of Competency

The Certificate of Competency details the various safety related tasks, functions, equipment types and systems activities a worker is competent to perform or work on. When being assessed, a worker will be deemed to be competent in an activity at a certain level of proficiency where the worker meets the criteria in Table 2 below.

roficiency Level	Evidence Required
To qualify at Level 3	Qualified at Level 2 Verified Work Experience Record – Successfully complete three full sets of a complex task under indirect supervision
To qualify at Level 2	Qualified at Level 1 Verified Work Experience Record – Successfully complete three full sets of a simple task under direct supervision
To qualify at Level 1	Hold a Licence/Authorisation to Practice Assessment by controlling Licenced Engineer
Level 0	No training prerequisite No experience prerequisite

Table 3 – Competency Assessment Criteria

The assessment required for Level 1 is conducted on a competency by competency basis by the candidate's controlling Licenced Engineer issuing the Certificate of Competency. The assessment is based on the details on the completed Licence to Practice form issued by the Licencing Board, the candidate's training records, log book records, supervisor reports, interview questions, and personal observation.

Verified Work Experience is the observation/verification by a supervisor of a candidate completing three full sets of simple or complex tasks necessary for qualification at the level of proficiency for the specific competency a person is being assessed.

Verified Work Experience tasks must be completed correctly, confidently, and efficiently in a normal working environment and without assistance from the supervisor verifying the works. The candidate records the work experience in their log book and then transfers the information to the Work Experience Record (see sample in Appendix A) which the supervisor endorses with comments on performance. A different supervisor may be used for each individual set of tasks being verified.

Successfully performing a full set of a task may include:

- demonstration of the knowledge of relevant standards and procedures to undertake the task at hand
- understanding of how to apply technical maintenance plans and service schedules
- proper use and completion of work instructions
- appropriate implementation of safeworking procedures
- correct use of tools, gauges and test instruments
- making relevant record keeping entries, e.g. history cards, circuit books, drawings, data file or documents.

Demonstration of a full set of three simple/complex tasks is required for each competency being assessed.

It is likely that when demonstrating a task for the purpose of applying for an increased proficiency level that a single complete task will require the demonstration of a number of competencies listed on a Certificate of Competency. All such competencies can be assessed at the same time.

Example 1: Like-for-like replacement of a Trainstop requires a range of competencies such as:

- Trainstop Gauging
- Replace, Inspect, Test & Certify Signalling Apparatus
- Trainstops (All Types) under the Install / Maintain Signalling System & Equipment

Example 2: Replacing a Rail Control Server may require the following competencies:

- Investigate & Repair Control System Failures
- Disconnect Operational Control System Infrastructure
- Inspect, Test & Certify Operational Control System Infrastructure
- Replace, Inspect, Test & Certify Control System Apparatus

The very nature of some tasks will make it impractical to demonstrate competency three times under real world conditions, for example investigation of a derailment or wrong side failure. In these cases it is acceptable for verified work experience to be based on a demonstration under simulated work experience conditions. Candidates should confirm the requirements of a work experience simulation with their controlling engineer prior to assessment.

To apply for an increase in proficiency, candidates should forward a completed Application for Signalling Licence/Authorisation (MN S 41412 FM01) together with their verified Work Experience Record to their controlling licenced Signal or Control Systems Engineer. Candidates may apply for increases in their competency at any time once they fulfil the assessment criteria above.

12.4 Maintenance of Competency

It is important to ensure that workers remain current in their capacity to perform their duties and maintain their proficiency ratings. As stated above Certificates of Competency are valid for a maximum of three years and then require review and renewal by an assessing Licenced Signal or Control Systems Engineer. There are three ways to maintain a competency:

1. Relevant work experience as recorded and validated in the worker's log book. See PR S 41416 Log Book Procedures.
2. Relevant refresher training, e.g. the three-yearly Safeworking Reaccreditation course is used to maintain Signalling Safeworking Competencies (as shown in the upper-left hand quadrant of a Certificate of Competency).
3. Recommendation by a licenced Signal or Control Systems Engineer (this includes the assessing Engineer). Note: The recommending Engineer must keep evidence of the assessment process used to justify the recommendation (e.g. minutes of an assessment interview, copies of questions asked and answers given, diary entry of workplace observations, etc.)

During reassessment any competency that cannot be supported by one of the three methods above will be reduced by one proficiency level. Such reduction can occur each time a Certificate of Competency is reviewed every three years without supporting evidence. Should a worker have their proficiency level reduced due to lack of evidence then reinstatement of their previous proficiency level can be achieved through one of the three methods mentioned in the preceding paragraph.

If a proficiency rating drops to Level 0 then the worker's competency level for that specific competency must be reinstated though the process described in section 12.3 above.

12.5 Reduction of Competency Due to Signalling Safeworking Breaches

Any reduction or loss of signalling competency due to Signalling Safeworking Breaches and their subsequent reinstatement is to be managed in accordance with MN S 41418 Signalling Safeworking Breaches.

13 Reassessment

The competency of rail safety workers qualified to certify signalling equipment or systems fit for purpose shall be formally reviewed for reassessment within a period not exceeding every three (3) years.

The following rail safety workers, as listed in RG S 41415 Signalling Personnel – Licencing and Authorisation Status, shall be subject to reassessment to maintain their licence and/or authorisation(s).

- All licenced signalling personnel
- Authorised Circuit Testers
- Authorised Circuit Function Testers

13.1 Reassessment process

Reassessment shall consist of two elements:

- A refresher course and written assessment
- An assessment by the controlling engineer of a person's competencies relating to the safeworking activities associated with the person's duties.

Topics to be covered in the reassessment shall include those listed in section 10 of this documents.

13.1.1 Reassessment course and training

The refresher course and assessment shall confirm the basic knowledge of the worker in the current, relevant signalling safeworking practices in accordance with Sydney Trains Network Rules and Procedures.

The course shall consist of refresher instruction and a knowledge based assessment based on a scenario format. The course length and content will be as authorised by the Professional Head Signalling and Control Systems, on the advice of the Signalling Training Committee.

The refresher course and assessment examination will not attempt to retrain or examine staff in the various makes and models of items of equipment or systems but will focus on the rules, regulations, procedures and practices that ensure the safety of trains, persons and the signalling system. The course material covered is detailed in the following documents:

- Signalling Maintenance Procedures MN S 40000 and PR S 40001 to PR S 40049
- Inspection and Testing of Signalling MN S 47110 and PR S 47111 to PR S 47118
- Relevant Network Rules and Procedures relating to signalling.

Persons who pass the assessment shall be instructed in the correct answers to any questions they may have answered incorrectly.

On completion of the refresher course and assessment the training provider shall forward written advice regarding the results of the assessment to the person's controlling Engineer.

A record of successful completion of the reassessment course shall be registered against a person's Rail Safety Workers Card (Gold Card) or Rail Industry Workers Card (as applicable).

Workers who successfully complete the reassessment course may apply for renewal of their Certificate of Competency in accordance with section 12 of this document.

If a person is unsuccessful refer to section 13.2.

13.1.2 Assessment by the controlling engineer

Engineers who conduct reassessment of signalling workers are responsible for the final certification of the competency of the worker. In determining a worker's competency the Engineer should consider the results of the refresher course written assessment and the person's work performance related to their signalling safeworking activities (also refer to section 12.4).

Controlling Engineers who are responsible for the reassessment of signalling workers, must themselves hold current signalling safeworking certification.

Engineers will be reassessed by the Principal Engineer Signalling Integrity or other nominated Senior Signal Engineer.

13.2 Workers deemed 'not yet competent'

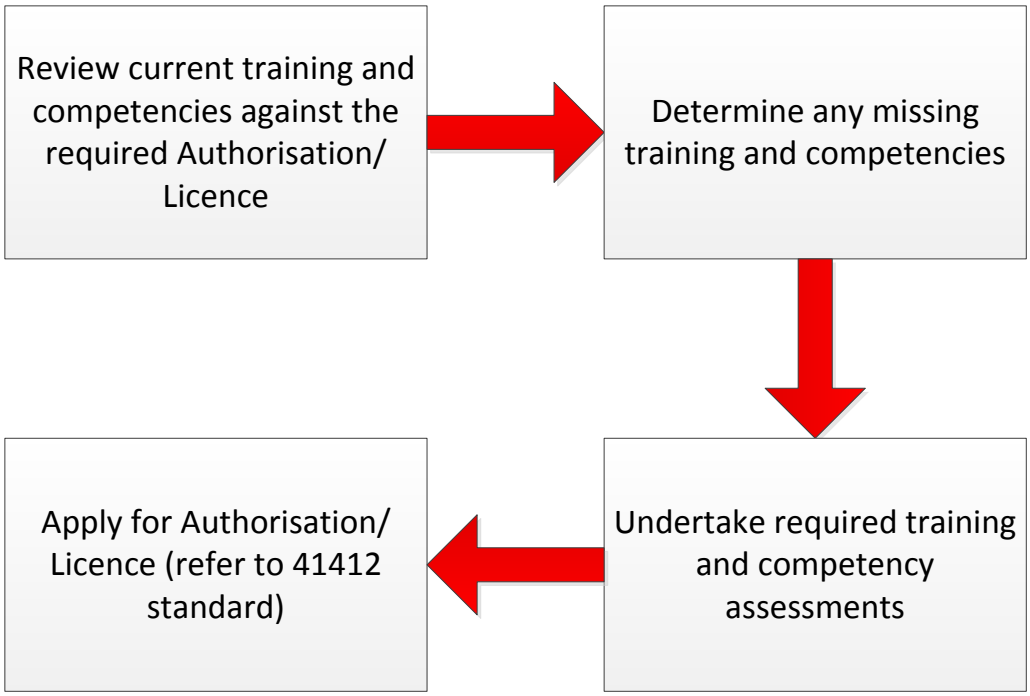
If a worker is deemed 'not yet competent' following the refresher course they may elect to be immediately reassessed. If they are again unsuccessful or elect not to be immediately reassessed they are to be removed from their signalling safeworking responsibilities until they successfully complete the next available refresher course and reassessment.

If a person is unsuccessful a confidential letter detailing areas covered by the refresher course and assessment together with any areas considered to need reinforcement will be forwarded promptly to their controlling Engineer. A copy of the letter shall be made available to the person concerned.

Until the worker is deemed competent they may only perform signalling safety related duties under the direct and close supervision by a certified person holding the relevant qualifications for the task.

14 Capability Gap Analysis

The Capability Requirements Matrix can be readily used to carry out a gap analysis between differing authorisations and licenses. The gap analysis shall be conducted by an applicant referencing the Capability Requirements Matrix to determine any deficiencies between the required prerequisites, training, competencies and behavioural requirements for the Licence or Authorisation they require.



15 Identification Card

Identification cards are issued as a either a:

- Rail Safety Worker Card (Gold Card) which is issued by TfNSW or
- Rail Industry Worker Card which is issued by an ARA provider

15.1 Rail Safety Worker Card

Once a candidate's name is published in RG S 41415 Signals and Control Systems Personnel – Authorisation and Licensing Status the applicant may make a request to TfNSW for an issue or reissue of the gold credit card sized Rail Safety Worker Card by emailing the request to rct_competencycards@transport.nsw.gov.au.

- The card is issued to the worker after being granted the qualification by the discipline's licensing board and is then renewable every three years through the reassessment process.
- A valid Rail Safety Worker Card will show the date of issue, expiry date, the workers name, and signalling safeworking qualification category code the worker is certified in as shown in the table in section 7.

Certificates of Competency or Statements of Competency issued by other organisations ARE NOT valid for work on Sydney Trains signal infrastructure.

The Rail Safety Worker Card must be carried by the holder at all times and presented for inspection upon request by a Rail Safety Officer.

A TfNSW Rail Safety Worker Card is only valid for work carried out for or on behalf of Transport for NSW, Sydney Trains and NSW Trains.

15.2 Rail Industry Worker Card

Once the candidates name is published in RG S 41415 Signals and Control Systems Personnel – Authorisation and Licensing Status the applicant may make a request to http://www.railindustryworker.com.au and upload the relevant information so that their competency profile may be updated.

- The card is issued to the worker after being granted the qualification by the discipline's licensing board and is then renewable every three years through the reassessment process.
- A valid Rail Industry Worker Card will show the QR code so a smart phone can access the date of issue, expiry date, the workers name, and signalling safeworking qualification code the worker is certified in as shown in the table in section 7.

Certificates of Competency or Statements of Competency issued by other organisations ARE NOT valid for work on Sydney Trains signal infrastructure.

The Rail Industry Worker Card must be carried by the holder at all times and presented for inspection upon request by a Rail Safety Officer.

16 Appendix

Application for Signalling Licence / Authorisation Form

Examiners Reports for Electrical-Rail Signalling Form

Authorisation to Practice Forms

- Circuit Tester
- Circuit Function Tester

Licence to Practice Forms

- Signals Mechanical (Assistant Sectioner)
- Signals Mechanical (Sectioner)
- Interlocking Fitter
- Mechanical Interlocking Accreditation for Signal Engineer
- Signal Engineer Field
- Signal Electrician
- Control Systems Technician
- Control Systems Engineer

Sample of Verified Work Experience Record

Certificate of Competency Forms

- Signalling Authorised Person
- Signals Mechanical
- Signal Electrician
- Signal Engineer, Field
- Signals Ancillary
- Signal Systems Section
- Control Systems Technician
- Control Systems Engineer
- Control Systems Designer

Survey of Engineering Competencies

MN S 41412 FM01

Application for Signalling Licence / Authorisation

Licence / Authorisation being applied for _____

A. Personal details			
Name:			
Address:			
		Postcode:	
Telephone #:		Email:	
Organisation:		Position:	
Location:			

B. Current or Previous Signalling Licenses or Authorisations (initial application only)

List and provide copies of any current or previous Signalling Licenses or Authorisations:

1)

2)

3)

C. Certificates and Records (for detailed application requirements refer to MN S 41412, initial application only)

Provide copies of the following:

1)	☐	Education Training relating to Licence or Authorisation applied for (e.g. Electrical Cert IV or Degree).
2)	☐	Evidence of required signalling training, required pre-requisite competencies, technical risk assessment "Survey of Engineering Competencies" (where required), for Licence / Authorisation applied for.
3)	☐	WHS General Construction Induction Card (GIT), Rail Safety Induction (RISI), and Health Assessment for Rail Safety Workers.

D. Work Experience and Recognition of Prior Learning

Provide copies of the following:

1)	☐	Verified Logbook detailing relevant signalling work experience and training applicable to the requested Licence / Authorisation.
2)	☐	Verified statements of experience and/or Curriculum Vitae (or Resume) of employment history, showing activities related to Licence or Authorisation being applied for, including contacts of referees able to verify the information provided.
3)	☐	Other information to demonstrate Recognition of Prior Learning.

E. Restrictions

List any suspensions, cancellations or related restriction on any Licenses, Authorisations, or performance of Signalling tasks or rail safety tasks that have occurred in the previous 3 years. If none, write "NIL"

F. Declaration

I Declare that the information on this form and attachments is true and correct and fully provides all relevant details for the assessment of my Signalling Licence or Signalling Authorisation application.

Signature: **Name:** Date:

Witness (Organisation Representative)

Signature: **Name:** Date:

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Transport Sydney Trains | NSW GOVERNMENT

MN S 41412 FM02

Examiner's Reports for Electrical – Rail Signalling Competency

Candidate's Name: _____ **Emp. Number:** _____

I confirm that the Candidate named above has completed all Training Modules and Passed all the Written Examination Papers for the position of Signal-Electrician.

Name: _____ **Signature:** _____

Position/Title: TRAINER SIGNALS **Date:** _____

CONFIRMATION OF ON THE JOB TRAINING

Unit number	Unit Title	Yes	No
UEENEEC001B	Maintain documentation	☐	☐
UEENEEE038B	Participate in development and follow a personal competency development plan	☐	☐
UEENEED101A	Use computer applications relevant to a workplace	☐	☐
UEENEEE009B	Comply with scheduled and preventative maintenance program processes	☐	☐
UEENEEE117A	Implement and monitor energy sector OHS policies and procedures	☐	☐
UEENEEG105A	Verify compliance and functionality of low voltage general electrical installations	☐	☐
UEENEEK145A	Implement & monitor energy sector environmental & sustainable polices & procedures	☐	☐
UEENEEN101A	Maintain mechanical rail signalling equipment and infrastructure.	☐	☐
UEENEEN102A	Assemble and wire internal electrical rail signalling equipment.	☐	☐
UEENEEN103A	Install and maintain rail track circuit leads and bonds.	☐	☐
UEENEEN104A	Test copper rail signalling cables.	☐	☐
UEENEEN105A	Install and maintain rail signalling power supplies.	☐	☐
UEENEEN106A	Install and maintain non-vital screen based control systems.	☐	☐
UEENEEN107A	Install and maintain active level crossing equipment.	☐	☐
UEENEEN108A	Install and maintain power operated point-actuating devices.	☐	☐
UEENEEN109A	Install and maintain train detection equipment.	☐	☐
UEENEEN110A	Install and maintain non-vital telemetry systems.	☐	☐
UEENEEN111A	Install and maintain trackside signal and train protection equipment.	☐	☐
UEENEEN112A	Install and maintain vital relay interlocking systems.	☐	☐
UEENEEN114A	Install and maintain computer based interlocking rail systems.	☐	☐
UEENEEN116A	Maintain electronic and microprocessor based remote control systems	☐	☐
UEENEEN118A	Find and repair rail signalling system faults	☐	☐
UEENEEN121A	Repair rail signalling power and control cables	☐	☐

The Team Leader/Manager must complete the columns above with a "Tick" ✓ in the appropriate boxes, this is to confirm that the named candidate has received "**ON THE JOB**" training and work activities on the listed Signalling Systems and Equipment and is ready for assessment.

Name: _____ **Signature:** _____

Position/Title: _____ **Date:** _____

CONFIRMATION OF ASSESSMENT

I confirm that the "**ON THE JOB**" Workplace Assessment has been carried out for the above candidate.

The result is Level: _____ has been attained

Name of Workplace Assessor: _____ **Signature:** _____

Position/Title: _____ **Date:** _____

COMPLETION OF TRAINING AND ASSESSMENT

We confirm the candidate named above has successfully completed the Safeworking Licensing Board Interview for the position of Signal Electrician for Sydney Trains.

	Interviewer 1	Interviewer 2
Name:		
Position/Title:		
Level:		
Signature:		
Date:		

Forward completed form to: Trainer - Signals, L&D Training, Petersham Training College

Transport Sydney Trains NSW

MN S 41412 FM03
Circuit Testing Authorisation to Practice

Assessment of Signalling Personnel for a Sydney Trains Authorisation to Practice

Circuit Tester

Candidate: _____ Date: / /

Conduct Circuit Testing in accordance with SPG 0711	Competent	Not Yet Competent
➢ Conduct Documentation Check	☐	☐
➢ Conduct Correlation Check	☐	☐
➢ Conduct Apparatus Inspection (Relay/Equipment/Wire)	☐	☐
➢ Conduct Wire Count	☐	☐
➢ Conduct Null Count	☐	☐
➢ Conduct Insulation Test	☐	☐
➢ Conduct Bell Continuity Test	☐	☐
➢ Conduct Hand Trace	☐	☐
➢ Conduct Apparatus Function Test (with appropriate authority for type)	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains Authorisation to Practice as a Circuit Tester	☐ Yes	☐No

Examination Board

B (S) Level Examiner: _____ Signature_____

C (S) Level Examiner: _____ Signature_____

Observer (if applicable): _____ Signature_____

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Transport Sydney Trains NSW

MN S 41412 FM04
Circuit Function Testing Authorisation to Practice

Assessment of Signalling Personnel for a Sydney Trains Authorisation to Practice

Circuit Function Tester

Candidate: _____ Date: / /

Conduct Circuit Testing in accordance with SPG 0711	Competent	Not Yet Competent
➢ Conduct Contact Proving Test	☐	☐
➢ Conduct Circuit Function Test	☐	☐
➢ Conduct Circuit Strap & Function Test	☐	☐
➢ Conduct Through Circuit Function Test	☐	☐
➢ Conduct Through System Function Test	☐	☐
➢ Conduct Power Supply Polarity and Isolation Tests	☐	☐
➢ Conduct Points Correspondence Test	☐	☐
➢ Conduct Points Out of Correspondence Test	☐	☐
➢ Conduct Earth Leakage Test	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains Authorisation to Practice as a Circuit Function Tester	☐ Yes	☐No

Examination Board

B (S) Level Examiner: _____ Signature_____

B (S) Level Examiner: _____ Signature_____

Observer (if applicable): _____ Signature_____

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Transport Sydney Trains NSW

MN S 41412 FM05
Signal Mechanical (Assistant Sectioner) Licence to Practice

Assessment of Signalling Personnel for a Sydney Trains Licence to Practice

Signals Mechanical (Assistant Sectioner)

Candidate_____ Date / /

Signalling Safeworking Procedures	Competent	Not Yet Competent
➢ Accidents & Derailments - Assess Situation, Make Safe	☐	☐
➢ Describe Signalling Failures & Wrong Side Failures	☐	☐
➢ Knowledge of Booking Signalling Equipment Out of Use	☐	☐
➢ Knowledge of Disconnection of Signalling Apparatus	☐	☐

Safety Critical Procedures		
➢ Knowledge of Testing & Certifying Equipment Worked On or Altered During Maintenance	☐	☐
➢ Understand Like for Like Renewals	☐	☐
➢ Understand Process for Point Detection & Facing Point Lock Testing	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains Licence to Practice as an Assistant Sectioner	☐ Yes	☐No

Examination Board

B (S) Level Examiner: _____ Signature_____

C (S) Level Examiner: _____ Signature_____

Observer (if applicable):_____ Signature_____

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Transport Sydney Trains NSW

MN S 41412 FM06
Signal Mechanical (Sectioner) Licence to Practice

Assessment of Signalling Personnel for a Sydney Trains Licence to Practice

Signals Mechanical (Sectioner)

Candidate_____ Date / /

Signalling Safeworking Procedures	Competent	Not Yet Competent
➢ Accidents & Derailments - Assess Situation, Make Safe	☐	☐
➢ Signalling Failures & Wrong Side Failures	☐	☐
➢ Booking Signalling Equipment Out of Use	☐	☐
➢ Disconnection of Signalling Apparatus	☐	☐

Safety Critical Procedures		
➢ Testing & Certifying Equipment Worked On or Altered During Maintenance	☐	☐
➢ Like for Like Renewals	☐	☐
➢ Point Detection & Facing Point Lock Testing	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains Licence to Practice as a Signal Sectioner	☐ Yes	☐No

Examination Board

B (S) Level Examiner: _____ Signature_____

C (S) Level Examiner: _____ Signature_____

Observer (if applicable):_____ Signature_____

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Transport Sydney Trains NSW

MN S 41412 FM07
Interlocking Fitter Licence to Practice

Assessment of Signalling Personnel for a Sydney Trains Licence to Practice

Interlocking Fitter

Candidate_____ Date / /

Knowledge	Competent	Not Yet Competent
➢ Knowledge of types and components	☐	☐
➢ Scope of interlocking inspection/testing	☐	☐
➢ Testing techniques	☐	☐
➢ Read from a Locking Diagram	☐	☐
➢ Compile a Locking Table	☐	☐
➢ Read from a Working Sketch	☐	☐
➢ Practical Assessment	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains Licence to Practice as an Interlocking Fitter on interlocking machines of any size.	☐ Yes	☐No

Examination Board

X (S) Level Examiner: _____ Signature_____

X (S) Level Examiner: _____ Signature_____

Observer (if applicable):_____ Signature_____

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Transport Sydney Trains NSW

MN S 41412 FM08
Signal Engineer Mechanical Interlocking Licence to Practice

Assessment of Signalling Personnel for a Sydney Trains Licence to Practice

Mechanical Interlocking Accreditation for Signal Engineer

Candidate_____ Date / /

Knowledge	Competent	Not Yet Competent
➢ Knowledge of types and components	☐	☐
➢ Scope of interlocking inspection/testing	☐	☐
➢ Testing techniques	☐	☐
➢ Read from a Locking Diagram	☐	☐
➢ Compile a Locking Table	☐	☐
➢ Read from a Working Sketch	☐	☐
➢ Practical Assessment	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains Licence to Practice for full interlocking accreditation and their signature will be accepted on interlocking certificates for any size machine.	☐ Yes	☐No

Examination Board

X (S) Level Examiner: _____ Signature_____

X (S) Level Examiner: _____ Signature_____

Observer (if applicable):_____ Signature_____

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Transport Sydney Trains NSW

MN S 41412 FM09
Signal Electrician Licence to Practice

Assessment of Signalling Personnel for a Sydney Trains Licence to Practice

Signal Electrician

Candidate_____ Date / /

Signalling Safeworking Procedures	Competent	Not Yet Competent
➢ Bridging or False Feeding of Signalling Circuits	☐	☐
➢ Accidents and Derailments	☐	☐
➢ Failures including Irregularities and Wrong Side	☐	☐
➢ Releasing of Track Locking or Indication Locking	☐	☐
➢ Booking Signalling Equipment Out of Use	☐	☐
➢ Disconnection of Signalling Apparatus	☐	☐
➢ Rerailing and Traction Return	☐	☐
Safety Critical Procedures		
➢ Testing & Certifying Equipment Worked On or Altered During Maintenance	☐	☐
➢ Repair/Replacement of Signalling Wires	☐	☐
➢ Like for Like Renewals	☐	☐
➢ Vital Signalling Relays	☐	☐
➢ Track Circuits	☐	☐
➢ Points Detection and Facing Point Lock Testing	☐	☐
The above candidate has successfully completed assessment for the Sydney Trains Licence to Practice as a Signal Electrician	☐ Yes	☐ No

Examination Board

B (S) Level Examiner: _____ Signature_____

C (S) Level Examiner: _____ Signature_____

Observer (if applicable): _____ Signature_____

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Transport Sydney Trains NSW

MN S 41412 FM10
Signal Engineer (Field) Licence to Practice

Assessment of Signalling Personnel for a Sydney Trains Licence to Practice

Signal Engineer (Field)

Candidate: _____ Date: / /

Signalling Safeworking Procedures	Competent	Not Yet Competent
➢ Signalling Principles	☐	☐
➢ Signalling Safeworking	☐	☐
➢ Signalling Technology	☐	☐
➢ Investigation & Management of:		
➢ Derailments, SPADS & Irregularities/Wrong Side Failures	☐	☐
➢ Failures (NCF & Repeat Failures)	☐	☐
➢ Circuit Testing & Certification of Signalling Equipment	☐	☐
➢ Electrical Calculations	☐	☐
➢ Traction Return	☐	☐
➢ Like for Like Renewals	☐	☐
➢ Mechanical Interlocking (up to 8 levers)	☐	☐
➢ Roles & Responsibilities:		
➢ Signal Maintenance Activities	☐	☐
➢ Signal Construction Activities	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains Licence to Practice as a Signal Engineer (Field)	☐ Yes	☐ No

Examination Board

A (S) Level Examiner: _____ Signature_____

B (S) Level Examiner: _____ Signature_____

B (S) Level Examiner: _____ Signature_____

Observer (if applicable): _____ Signature_____

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MN S 41412 FM11
Control Systems Technician Licence to Practice

Assessment of Signalling Personnel for a Sydney Trains License to Practice

Control Systems Technician

Candidate **Date**

Control Systems Safeworking Procedures	Not Yet Competent	Competent
Assist in Accidents & Derailments - Assess Situation, Make Safe	☐	☐
Control Systems Failures	☐	☐
Booking Control Systems Equipment Out of Use	☐	☐
Disconnection of Control System Apparatus	☐	☐

Safety Critical Procedures	Not Yet Competent	Competent
Testing & Certifying Control System Equipment Worked On or Altered During Maintenance	☐	☐
Repair/Replacement of Control System Wires and Cables	☐	☐
Like for Like Renewals of Control Systems Components	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains License to Practice as a Control Systems Technician	☐ No	☐ Yes

Examination Board

B (S) Level Examiner **Signature**

C (S or CS) Level Examiner **Signature**

Observer (if applicable) **Signature**

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MN S 41412 FM12
Control Systems Engineer Licence to Practice

Assessment of Signalling Personnel for a Sydney Trains License to Practice

Control Systems Engineer

Candidate **Date**

Control Systems Safeworking Procedures	Not Yet Competent	Competent
Signalling Safeworking	☐	☐
Assist in the Investigation & Management of:		
• Derailments, SPADS & Irregularities/Wrong Side Failures	☐	☐
• Failures (NCF & Repeat Failures)	☐	☐
Circuit Testing & Certification of Control Systems Equipment	☐	☐
Like for Like Renewals Of Control Systems Equipment	☐	☐
Roles & Responsibilities:		
• Control Systems Maintenance Activities	☐	☐
• Control Systems Construction Activities	☐	☐

The above candidate has successfully completed assessment for the Sydney Trains License to Practice as a Control Systems Engineer	☐ No	☐ Yes

Examination Board

A (S) Level Examiner **Signature**

B (S or CS) Level Examiner **Signature**

B (S or CS) Level Examiner **Signature**

Observer (if applicable) **Signature**

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Sample of Verified Work Experience Record

Name	**Fred Smith**	
Classification	**Signal Electrician**	
Date of Application	**29 August 2018**	
Date	**Detailed Description of Task** (e.g. Track Circuit Maintenance SS01)	**Supervisor Verification** Name, position, signature, comments and date.
12 Dec 2015	**Task:** Like for Like replacement of Pine Road Level Crossing Boom Mechanism **Equipment:** Westinghouse Boom Mechanism **Competencies:** Disconnect Operational Signalling Infrastructure Replace, Inspect, Test & Certify Signalling Apparatus where treated as Like for Like Renewal Changeover of Wires & Cables in accordance with PR S 40011, 40012 & SPG 0711.9	John Jackson Signal Engineer X Fred correctly performed the works in accordance with the necessary standards and procedures 1 Jan 2016
1 March 2016	**Task:** Like for Like replacement M12.8 Trainstop **Equipment:** JAH Trainstop **Competencies:** Disconnect Operational Signalling Infrastructure Replace, Inspect, Test & Certify Signalling Apparatus where treated as Like for Like Renewal Change over of Wires & Cables in accordance with PR S 40011, 40012 & SPG 0711.9	Akmal Hakim Signal Team Leader X Top worker, job done well. Recommend increasing listed competencies.
15 June 2017	**Task:** Like for Like replacement of 123A Points Cronulla **Equipment:** Electric Clawlock Points (M84 machine) **Competencies:** Disconnect Operational Signalling Infrastructure Replace, Inspect, Test & Certify Signalling Apparatus where treated as Like for Like Renewal Change over of Wires & Cables in accordance with PR S 40011, 40012 & SPG 0711.9	Britney Steinhart Tester In Charge Observed Fred perform Like for Like replacement of 123 A and B points. Works properly performed in accordance with the relevant like-for-like change form. Recommend increase of Fred's proficiency levels for the three competencies listed to the left.
16 June 2017	**Task:** Like for Like replacement of 123B Points Cronulla **Equipment:** Electric Clawlock Points (M84 machine) **Competencies:** Disconnect Operational Signalling Infrastructure Replace, Inspect, Test & Certify Signalling Apparatus where treated as Like for Like Renewal Change over of Wires & Cables in accordance with PR S 40011, 40012 & SPG 0711.9	Britney Steinhart Tester In Charge Observed Fred perform Like for Like replacement of 123 A and B points. Works properly performed in accordance with the relevant like-for-like change form. Recommend increase of Fred's proficiency levels for the three competencies listed to the left.