

Engineering Procedure  
Signalling and Control Systems

PR S 41419

# Authority to Work on Sydney Trains Signalling Infrastructure - Permit to Work

Version 1.0

Date in Force: 20 May 2019

Procedure

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## Document control

Version	Date	Author/ Prin. Eng.	Summary of change
1.0	20 May 2019	E Pace	First issue as a Sydney Trains Document. Previously TMG A1419, significant edits to format. Added checklist from withdrawn Permit to Work Guideline (TMG G1419).

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## 1 Introduction

A Signalling Permit to Work is the authority to perform signalling work on Sydney Trains maintained Infrastructure. It ensures that appropriately competent persons are allocated to signalling activities taking into account site specific circumstances and conditions.

## 2 Scope

This procedure applies to all persons required to work on signalling infrastructure including construction, maintenance, renewals, and signal support works.

To perform work on Sydney Trains maintained signalling infrastructure the following are required.

1. Listing in the current *RG S 41415 Signalling Personnel - Licensing and Authorisation Status*
2. Assessed competent per *MN S 41412 Process for Signals and Control Systems Personnel - Authorisations & Licensing* as evidenced by a Certificate of Competency
3. Hold a valid Rail Safety Worker Card (Gold Card) or Rail Industry Worker (RIW) Card
4. A Permit to Work issued in accordance with this procedure.

The issue of a Permit to Work is the process of matching the elements in an individual's Certificate of Competency with the requirements for a given signalling activity.

A Permit to Work is issued on the basis of either of the following:

- a Project Area
- a Maintenance Area
- Signal Support Works
- Concept and feasibility planning activities

## 3 Reference documents

<b>MN S 41412</b>	Process for Signals and Control Systems Personnel - Authorisations & Licensing
<b>RG S 41415</b>	Signalling Personnel - Licensing and Authorisation Status
<b>MN S 41418</b>	Signalling Safeworking Breaches

## 4 Terms and definitions

The following definitions apply in this document:

<b>Certificate of Competency (CoC)</b>	Summarises the holder's level of assessed proficiency and capacity to manage risks associated within the Sydney Trains domain.
<b>Maintenance Area</b>	As defined by the Sydney Trains Signals Engineering Manager.
<b>Permit to Work</b>	The authority to perform signalling activities that a person is permitted to undertake in a particular location or project, and the equipment types upon which those activities may be performed.
<b>Project Area</b>	The area defined by the scope of work or the contract documents.
<b>Rail Safety Worker Card (Gold Card)</b>	Is an Identification card for Sydney Trains employees that is issued by TfNSW listing all Safeworking and Technical competencies that the person has gained. Note: this card is currently being phased out by TfNSW to be replaced by the RIW Card.
<b>Rail Industry Worker Card</b>	Similar to the Rail Safety Worker Card, the RIW card is a national competency management system for rail workers.
<b>Issuing Officer</b>	The Issuing Officer is the licensed Signal Engineer or Control Systems Engineer responsible for issuing a Permit to Work. They may be an Asset Engineer, Maintenance Engineer, Project Engineer or a Commissioning Engineer or other nominated person.
<b>Work</b>	Signalling and non-signalling activities including access to and inspection of signal locations, cable routes and equipment.

## 5 Requirements for Issue of a Permit To Work

All work on Sydney Trains Signals and Control Systems maintained infrastructure shall be performed by a competent person meeting the requirements of MN S 41412. Refer to Figure 1 Process Flow.

The Permit to Work procedure applies to all roles for project, renewal, signal support, and maintenance work alike.

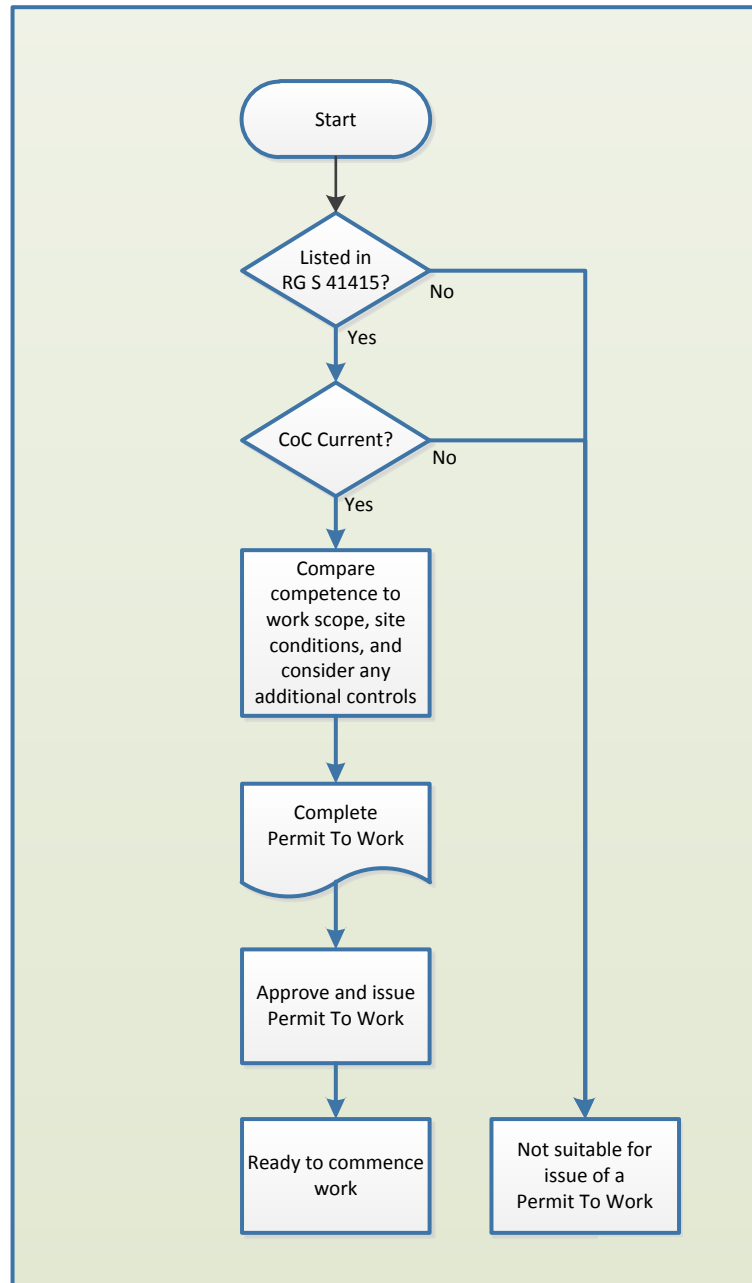


Figure 1 – Issuing a Permit To Work Process Flow

## 5.1 Identify Work Scope

The work scope shall include:

1. The task
2. The type of equipment
3. Reference to the Site Integrity Agreement/Local Maintenance Instructions that include:
  - a. The environment
  - b. The constraints

Examples of a Work Scope are:

- For Major Works - Site Integrity Agreement, Installation Work Package, Inspection and Test Plan, Commissioning Work Package
- For Minor Signalling Works – Minor Works Package
- For Signal Support Works - Signalling Support Work Package.
- For a commissioning – the work instruction/s that will be issued to the person.
- For Maintainers – Work Orders, Technical Maintenance Plans (TMP's) and “Like for Like” Renewals Work Package

## 5.2 Items to consider for assessment

When the Issuing Officer reviews the applicant for the issue of a Permit to Work, the following issues shall be considered:

- Current listing in RG S 41415, Signalling Personnel – Licensing and Authorisation Status
- Current Certificate of Competency
- Competency mapping between the CoC and the work scope (see section 5.1)
- Any current restrictions on the person e.g. investigation following an incident under MN S 41418 Signalling Safeworking Breaches.
- Additional factors need to be considered for the requirements to carry out the work. To maintain signalling integrity the site specific factors such as location complexities, sensitivities and relevant Signal Engineering Instructions must be considered. Use page 2 of the Permit to Work form to analyse the additional risks.
- The controls for the additional risks need to be identified and described in the Restrictions and Conditions on page 1 of the Permit to Work.

### 5.3 Completion of the Permit to Work

Permits to Work may be issued by the following personnel.

- Signals Engineering Manager, who may delegate to Regional/Maintenance Signal Engineers
- Asset Manager Signals and Control Systems who may delegate to Signal Asset Engineers
- Testing and Commissioning Manager who may delegate to Commissioning/Project Engineers
- Professional Head Signalling and Control Systems who may delegate to Principal Engineer Signalling Integrity and other nominated persons.

The authority to issue a permit to work is restricted to licenced signalling personnel only. Should the incumbents of the positions listed above not be licensed then refer to the Professional Head Signalling and Control Systems for alternate arrangements.

Where delegated as above, the delegations are not permitted to further delegate their authority to another person.

Nominated persons are responsible for issuing a Permit to Work to Commissioning Engineers, Project Engineers and other authorised/licenced persons. This authority may be delegated to a Commissioning Engineer by the nominated person, to further issue Permits to Work to suitably Licensed / Authorised persons for that specific project.

The authorities and limits of any delegation shall be clearly stated on the Permit to Work of the delegate.

The issuing officer should clarify any supervision restrictions or requirements for those persons whose proficiency levels require direct or indirect supervision for any competencies relevant to the works covered by the permit to work.

Both the Issuing Officer and the permit holder shall both sign the Permit to Work PR S 41419 FM01.

### 5.4 Permit to Work for Commissioning

A simplified process may apply to persons brought in to participate in a commissioning, which involves large numbers of personnel for a very limited duration.

Persons shall be assessed and allocated commissioning duties on the basis of their Certificates of Competency and authorisations (as published in RG S 41415) with a scope of work defined in the Work Instructions they are issued.

In lieu of individual Permit to Work forms, the Commissioning Engineer shall maintain a Permit to Work Register which shall be included in the Commissioning Work Package. (Ref MN S 47117). See Appendix B of this procedure for example.

## 6 Maintenance of Permit to Work Records

It is the responsibility of the Issuing Officer to preserve a copy of each Permit to Work. Copies of Permits to Work shall be stored in a form that is accessible for inspection.



## 7 Duties of Permit To Work Holder

The person issued a Permit to Work shall:

- Work in accordance with the Permit to Work
- Take responsibility for completing their work to the required specifications and standards
- Keep a copy in their logbook of all Permits to Work that they have been issued.

## 8 Validity of Permit to Work

A Permit to Work shall remain valid for the duration of the activity, project (up to and including final completion) or role for which it has been issued, subject to there being no changes to the Certificate of Competency and Scope of Work to which the Permit to Work applies.

A new Permit to Work shall be required whenever the holder is issued a new Certificate of Competency or if a holder's Certificate of Competency date changes (i.e. CoC updated or renewed).

A new Permit to Work shall be required when changes to the infrastructure or work activities result in changes to the scope of work.



An individual may hold more than one concurrent Permit to Work when engaged in differing types of activity; e.g. a maintenance signal electrician working on a major commissioning shall hold one Permit to Work covering their day-to-day maintenance role, and a separate Permit to Work covering the commissioning works to which they are assigned. Holding a maintenance Permit to Work is not sufficient to perform major renewals or project works even in the same maintenance area.

## 9 Checklist of site specific factors that may affect operational signalling or local procedures

Description	Potential Outcomes	Examples of Restrictions &/or Conditions
<b>Tripped Earth Leakage Detector's or Earth Leakages</b>	Earth leakages already exist	Details on how to deal with this agreed in Interface Coordination Plan and documented in Permit to Work 1. Check ELDs prior to work commencing and if tripped then report to Maintenance for further advice and action 2. Busbars may be checked for earth leakage prior to work however this will be agreed by the Commissioning Engineer
<b>Traction Return</b>	Staff could be injured or cause a track failure if bonding work is carried out incorrectly.	Staff briefed and details added on when and how bonding is to be carried out referenced in the Permit to Work
<b>Exposed Terminals</b>	Staff exposed to hazardous voltages and electric shock	Part of Safe Work Method Statement but specific controls can be noted in Permit to Work
<b>Difficult to access Signalling equipment</b>	Staff come into contact with equipment or become trapped	Part of Safe Work Method Statement but specific controls can be noted in Permit to Work
<b>Frequency of train services</b>	Frequent train services has an effect on the ability to carry out work and also magnifies the effect of any signal failure	Staff briefed by Commissioning Engineer on details from Interface Coordination plan and details referenced in Permit to Work
<b>Shelf Relays</b>	Hazards exist associated with the exposed terminals and also age of the equipment that can be susceptible to disturbance	Controls to minimise disturbance and ensure staff awareness referenced on the Permit to Work
<b>Other works in the same or adjacent location</b>	Confusion would arise when correlating the existing diagrams to the circuits.	Staff briefed by Commissioning Engineer and details referenced in Permit to Work
<b>Vulcanised Indian Rubber wire (or similar)</b>	This wire can have low integrity insulation which can be exacerbated if disturbed and cause reliability or safety issues	Brief details of the controls from the Interface Coordination Plan and document in Permit to Work
<b>Signalling equipment with obsolescence issues</b>	Equipment damaged during works cannot be replaced	Details of agreement with maintenance staff to be referenced in Permit to Work

Description	Potential Outcomes	Examples of Restrictions &/or Conditions
<b>Degraded Signalling equipment</b>	Work could cause reliability of safety failures that impact train running	Details noted in the Permit To Work. i.e. Limit access to this equipment to suitable staff at a suitable time – possession, out of peak, etc.
<b>Inadvertent signal failure caused during works</b>	Confusion over who rectifies this	Details of agreement between Commissioning Engineer and Maintenance Engineer referenced in the Permit to Work
<b>Contaminated rail (seldom used lines)</b>	New track circuiting may not operate reliably	Staff briefed by the Commissioning Engineer and details referenced in the Permit to Work
<b>Accuracy of existing documentation (CB, Signalling Plans, etc.)</b>	Confusion would arise when correlating existing diagrams to the circuits	Discrepancies resolved in conjunction with Signal Design and Maintenance Staff (Could be other jobs completed and not to 'As built" status). Methodology referenced in Permit to Work.
<b>Numerous interim maintenance copies in use</b>	Confusion would arise when correlating the existing diagrams to the circuits	Report to Commissioning Engineer/Maintenance Engineer for further advice and action if not already noted in Permit to Work
<b>Insulation test records</b>	Cable have substandard insulation. If work takes place near these reliability or safety failures may occur	Details noted in the Permit to Work. i.e. Limit access to this equipment to suitable staff at a suitable time – possession, out of peak, etc.
<b>Temporary wire registers</b>	Confusion would arise when correlating existing diagrams to the circuits	Staff briefed by Commissioning Engineer and details referenced in Permit to Work
<b>Relevant Signal Engineering Instructions</b>	Work will result in a hazard occurring that has happened elsewhere	Engineering Instructions details to be referenced in Permit to Work
<b>Local engineering instructions</b>	Site specific requirements/practices	Detailed in the District Register and to be referenced in the Permit To Work
<b>Unique signalling equipment</b>	Staff are unfamiliar with any constraints or issues that apply	Permit to Work to reference conditions under which this equipment can be worked on (i.e. training/ specialist staff supervision)
<b>Equipment booked out of use</b>	Modifications may be scheduled to take place on equipment that is booked out of use and may be inadvertently booked back into use	Staff briefed by Commissioning Engineer and details referenced in Permit to Work
<b>Currency of required competencies</b>	Higher probability pf causing a reliability or a signalling safety incident	Determine the level of additional supervision than may be required.

## Appendix A Sample Signalling Permit to Work PR S 41419 FM01

 		<b>PR S 41419 FM01</b> <b>Permit to Work</b>	
Name: _____			
<b>Scope of Work / Activity</b>	<b>Area</b>		
	<b>Role</b>		
	<b>Valid From</b>	<b>Valid To</b>	
	<b>Listed in RG S 41415 version no.</b>		
<b>Restrictions &amp; Conditions (use NIL for unrestricted)</b>	<b>Date of Certificate of Competency</b>		
SAMPLE			
Approved by: _____  Signature: _____ Date: _____	Accepted by: _____  Signature: _____ Date: _____		
This permit is issued in accordance with Sydney Trains procedure PR S 41419 "Authority to Work on Sydney Trains Signalling Infrastructure – Permit to Work".			
© Sydney Trains Date in Force: 16 May 2019		UNCONTROLLED WHEN PRINTED	
		Page 1 of 2 Version 4.0	

Sydney Trains Engineering Form – Signalling and Control Systems  
 Permit to Work

PR S 41419 FM01

**Instructions for use**

The table below provides some site specific factors to consider when comparing a person's current competence for different types of equipment and systems to a particular area of deployment. Tick the boxes that apply.

<b>Checklist of Site Specific Factors that may affect Operational Signalling or Local Procedures</b>			
<input type="checkbox"/> Tripped ELD's or Earth Leakages	<input type="checkbox"/> VIR Wiring	<input type="checkbox"/> Accuracy of existing Documentation	<input type="checkbox"/> Currency of required Competencies
<input type="checkbox"/> Traction Return	<input type="checkbox"/> Obsolete Equipment Issues	<input type="checkbox"/> Numerous IMC(yellow) CB's	<input type="checkbox"/> Equipment Booked O/O/O
<input type="checkbox"/> Exposed Terminals	<input type="checkbox"/> Degraded Signalling Equipment	<input type="checkbox"/> Insulation Test Records	<input type="checkbox"/>
<input type="checkbox"/> Difficult to Access Signalling equipment	<input type="checkbox"/> Management of Signal Failures	<input type="checkbox"/> Temporary Wire Register	<input type="checkbox"/>
<input type="checkbox"/> Frequency of Train Services	<input type="checkbox"/> Seldom Used Lines	<input type="checkbox"/> Contaminated Rail Register	<input type="checkbox"/>
<input type="checkbox"/> Shelf Relays	<input type="checkbox"/>	<input type="checkbox"/> Signal Engineering Instructions	<input type="checkbox"/>
<input type="checkbox"/> Other Works in the same area	<input type="checkbox"/>	<input type="checkbox"/> Local Engineering Instructions	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Guidance Notes**

Items that are described in the Restrictions and Conditions section on the front of the Permit to Work form may be managed by:

- Provision of additional staff to help resolve issues that require prompt attention and/or
- Closer supervision of the work in a known location with low integrity. Eg. VIR wiring and shelf relays and/or
- Allocation of specific staff able to manage the listed conditions and/or limit work to specific times based on the Site Integrity Agreement

## Appendix B Example of Permit to Work Register for Use at Commissionings

### Permit to Work Register

Name	Certificate of Competency Checked - List Expiry Date	Team Number	Work Instruction Number(s)	Notes