Superseded by T HR SC 07111 ST v1.0, 04/09/2019

For queries regarding this document
standards@asa.transport.nsw.gov.au
www.asa.transport.nsw.gov.au

Technical Note

TN 011 : 2014

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Subject: Interpretation guide to SPG 0711.1 version 1.8

SPG 0711.1 *Roles, Responsibilities and Authorities* version 1.8 issued on 1 August 2012 shall be read in conjunction with the interpretations outlined in the section 1 below and those listed in Table 1 of section 2:

1. Interpretation guide for SPG 0711.1

This Technical Note provides guidance on interpreting the document number SPG 0711.1 that was originally published by RailCorp and has now been republished by the Asset Standards Authority. Where responsibilities for specific activities have changed this document indicates who now has the responsibility.

1.1 Engineering authority concept effective 1 July 2013

Since the Asset Standards Authority (ASA) commenced full operations from 1 July 2013, the concept of engineering authority has changed. Many elements of authority have been transferred to Authorised Engineering Organisations (AEOs) in line with their relevant scope of authorisation.

Information to inform organisations that intend to offer engineering services to Transport for NSW (TfNSW) is contained in the management standards:

- TS 10500 AEO authorisation governance framework, and
- TS 10501 AEO guide to authorisation.

Therefore the traditional elements for engineering authority described in SPG 0711.1, particularly sections 1.5, 1.7, 1.7.1 and 6.1, have been redefined as shown below:

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1.2 In relation to SPG 0711.1 - section 1.5

The commissioning engineer shall be engaged by an AEO, with the relevant scope of authorisation, and shall act in the interest of TfNSW in providing a safe and reliable signalling system in accordance with ASA requirements. They shall not be influenced by project constraints or commercial implications. Where a deviation from ASA requirements becomes necessary, including deviation from inspection and testing requirements, then the commissioning engineer shall consult with the ASA Lead Engineer Signals and Control Systems, or delegated person and if required, further submit a formal 'Concession' request.

The signalling commissioning AEO shall provide assurance for the functions for which the commissioning engineer is accountable.

This requirement does not negate the ASA requirement that individuals shall not test and certify their own installation work. Section 5.2 of SPG 0711.1 still applies for the independence requirements of personnel involved in testing and commissioning.

1.3 In relation to SPG 0711.1 - section 1.7

The ASA shall retain the authority for the following elements:

- the production or amendment of ASA signalling standards and procedures, including configuration specifications and approval of technical maintenance plans
- type-approval of new or altered signalling equipment or systems that include supporting systems and products which form part of signalling infrastructure. This includes electrical, electronic, mechanical and pneumatic components
- the approval of the framework for signalling training and competency processes, including licensing and authorisation processes, which permit personnel to work on TfNSW signalling infrastructure. Guidance on this is provided in the management standard TS 10503 AEO guide to engineering competence management

An AEO, in line with their level of proficiency, is authorised to perform the following:

- approve the issue of any new signal design or modification to a previously issued signal design
- produce supplementary signalling documentation that complies with ASA requirements and specifications including signalling permit to work, training, competency, licensing and authorisation requirements
- issue signalling engineering instructions.

1.4 In relation to SPG 0711.1 - section 1.7.1

Signalling design AEO – The relevant AEO has the authority for producing signal design, including reviewing, performing verification and approval in accordance with ASA's mandatory requirements and the AEO's supplementary requirements for signal design.

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The AEO shall identify the designated approving officer to the ASA.

Signalling maintenance AEO – The relevant AEO has the authority to work in accordance with the AEO's signalling safeworking procedures, to provide integrity and reliability of the signalling system within its respective area of control. The AEO's signalling safeworking procedures shall comply with ASA mandatory requirements and specifications.

Signalling commissioning AEO – The relevant AEO has the authority to work in accordance with the ASA specifications for inspection and testing of signalling works to assure integrity and reliability of the signalling system for the new or altered work.

Additionally, the commissioning engineer has the authority to approve minor specific design variations such as the location and type of cable routes and air lines, signal installation methods and similar signalling infrastructure generally defined in a detail site survey plan. In these cases, the commissioning engineer shall administer controls to mitigate risks that result from the variation from the signalling standards.

Examples of minor specific design variations include the following:

- where a cable route is required to be installed closer to the track than prescribed in the signalling standards, due to limited clearances, then the risk of persons being struck by a train whilst accessing or working in or around the pit can be mitigated by using demarcation fencing
- where a particular signal installation method differs from the standard design, then the installation method shall be in accordance with an appropriate structural engineering design. The altered signal sighting, if any, shall be further approved by the signal sighting committee.

Authority for specific site determinations is provided to relevant signalling personnel who possess the applicable competency, licence or authority as provided in SPG 0711 and other standards.

Examples include:

- agreement or acceptance of signal sighting
- approval of detailed site survey plans containing specific information about cable and air line routes, including under-line crossings, under-road crossings, pits and chambers, joints, manifolds and route markers
- approval of equipment housings for type, capacity and location
- minor allocation of cable cores, fuses and terminals
- approval of minor mechanical drawings such as apparatus labelling, tooling, etc

In all cases, the above determinations shall be made with due consideration to the ASA signalling construction standards and type approvals.

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1.5 In relation to SPG 0711.1 - section 6.1

The ASA Lead Engineer Signals and Control Systems shall approve the following for new equipment and systems:

- the type approval and design
- the principals for integration, interfaces and standards
- the inspection and testing tasks and/or pass/fail criteria required
- the maintenance requirements, plans and manuals
- the training criteria and competencies required
- the signalling licence or authorisation level required

The relevant AEO's nominated approver, is the person who holds signalling design authority for authorising configuration and design changes to the existing or new signalling system in accordance with the ASA signalling requirements. They shall provide safety assurance through the following activities to ensure the timely issue of checked and approved designs with no significant errors or omissions and also to validate the installed design;

- system design to functional requirements and to signalling design standards by appropriately qualified and experienced signal engineers
- verification of design by independent appropriately qualified and experienced signal design engineers
- design integrity tests of installed systems to standard interlocking and control principles by appropriately qualified and experienced signal design engineers

Where new or altered works are to interface with existing signalling, the relevant AEO's nominated approver and the commissioning engineer shall together satisfy themselves of the accuracy of the existing design drawings, in consultation with the signalling maintenance AEO.

The relevant AEO is also responsible for ensuring the new and altered signalling designs and drawings are updated, and the updated maintenance copies are promptly issued to relevant areas, including the virtual plan room (VPR) and maintenance areas.

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2. Document Interpretation

Refer to table 1 for the remainder of interpretations for SPG 0711.1.

Table 1 Interpretation to SPG 0711.1

Location	Reference role or title	Applied interpretation	Comment
1.2 – para 1, line 1	RailCorp (SMS)	TfNSW SMS	
1.2 – para 1	RailCorp (Standards)	ASA	Insert – As published on the ASA web site
1.2 – dp19	RailCorp	AEO	
1.2 – dp20	RailCorp	Delete RailCorp and Division from dp	
1.6 – heading, para 1	RailCorp	Delete reference	
1.6 – para 4	RailCorp	RailCorp	This in the doc name
1.8 – para 1	RailCorp	TfNSW	Replace RailCorp with TfNSW
2.2 – last sentence	the infrastructure division	AEO (Sydney Trains)	Insert AEO (Sydney rains) before infrastructure
3 – para 2	RailCorp	The AEO's and their sub contractors	
5.1 – para 1	Regional	AEO (Sydney Trains)	
6.2 – heading, para 1	Principal Engineer Signal Design	Insert AEO before "Principal Engineer Signal Design"	Or equivalent title within the AEO
6.2 – para 1	RailCorp	RailCorp	Insert – As published on the ASA Web site
6.3 – para 1, 1(dp2)	RailCorp	AEO	
6.3 – para 1(dp6)	RailCorp	ASA	
6.4 – para 1(x2)	RailCorp	RailCorp	Insert – As published on the ASA Web site
6.5 – para 1(dp3)	RailCorp	RailCorp	Insert – As published on the ASA Web site
6.6 – para 2	RailCorp	RailCorp	Insert – As published on the ASA Web site
6.6.2 – Table, Planning (x3)	District	Sydney Trains	
6.6.2 – Table, Installation	District	AEO (Sydney Trains)	Liaise with Sydney Trains and the AEO responsible for approving the signal design
6.6.2 – Table, Commissioning	RailCorp	ASA	
6.6.2 – Table, Commissioning	District and Infrastructure Division Maintenance Engineer	AEO (Sydney Trains)	
6.7 – para 1	RailCorp	RailCorp	Insert – As published on the ASA Web site
6.7.4	RailCorp	RailCorp	Insert – As published on the ASA Web site

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Location	Reference role or title	Applied interpretation	Comment
6.8 – heading, paras 2, 2(dps4&6), Signalling (dp5)	Infrastructure Division and Region(al)	AEO (Sydney Trains)	
6.9.1 – para 1	RailCorp Infrastructure	RailCorp	Insert – As published on the ASA Web site
6.9.1 – para 5	RailCorp	Remains RailCorp	Licence still valid as these are badged with RailCorp as issued. These will change to TfNSW over time
6.9.2 – para 1(dp3)	RailCorp	RailCorp	Insert – As published on the ASA Web site
6.9.2 – Signalling Works.. (dp1)	RailCorp	RailCorp	Insert – As published on the ASA Web site
6.9.2 – Commissioning (dp1)	RailCorp	RailCorp	Insert – As published on the ASA Web site
6.9.4	RailCorp	RailCorp	Insert – As published on the ASA Web site
General	RailCorp network	Is correct	All assets still belong to RailCorp until new entity is established

The above interpretations have been issued to contextualise the contents of SPG 0711.1 version 1.8 to the organisational context post July 1 2013.

Further generic interpretation guidance, which are published on the ASA website are provided in the documents listed in Table 2:

Table 2 Interpretation guides

Reference No	Title	Version	Issue date
TS 10762	Legacy RailCorp standards interpretation – management overview	1.0	20/06/2013
TS 10760	Guide to interpretation of organisational role and process references in RailCorp standards	1.0	17/06/2013
TS 10760 - SMS	Interpretation guide RailCorp SMS references within RailCorp engineering standards	1.0	17/06/2013

Authorisation

	Technical content prepared by	Checked and approved by	Interdisciplinary coordination checked by	Authorised for release
Signature				
Name	Paul Zammit	Peter McGregor	David Spiteri	Graham Bradshaw
Position	Principal Engineer Signals Assurance	Lead Engineer Signals & Control Systems	Chief Engineer Rail	Principal Manager Network Standards & Services

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Engineering Specification
Signals
Inspection and Testing of Signalling

SPG 0711.1

ROLES, RESPONSIBILITIES AND AUTHORITIES

Version 1.8

Issued August 2012

Owner:	Chief Engineer Signals & Control Systems		
Approved by:	Warwick Allison Chief Engineer Signals & Control Systems	Authorised by:	Paul Zammit Principal Engineer Signal Assurance

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Engineering Specification

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Document control

Version	Date	Summary of change
1.1	24 April 2007	Update reference documents and minor changes re interface coordination plans, exceptions for signal electricians undertaking specific I & T. Minor wording clarifications
1.2	12 June 2007	Amend reference documents. Roles and Responsibilities related to work packages transferred from 0711.2. PWA changed to PWIA Modified Table 6.8.5, Test and certify of control table, aspect and track circuits testing
1.3	July 2008	Amend references in 1.2 and add definitions in 1.3 and clarify 5.2.
1.4	21 October 2008	CES requested update to 1.2 References. Minor wording changes.
1.5	August 2010	Minor updates to Section 6.5 and Table 6.5.2 updating the responsibilities of the Commissioning Engineer; Application of TMA 400 format
1.6	November 2011	Major update and changes to Table 1
1.7	6 March 2012	Updated sections 1.1 to 1.8 to better reflect current requirements in regards to Authorisations and Engineering Authority
1.8	August 2012	Update to Section 6 to incorporate Testing Authorisations

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1 General

1.1 Purpose

The purpose of this specification is to prescribe the roles, responsibilities and authorities associated with inspection, testing and certifying of new and altered signalling infrastructure works.

1.2 References

This specification shall be read in conjunction with RailCorp's Safety Management System, and also in conjunction with RailCorp Signal Engineering Standards (available of the RailCorp Intranet or Internet), including Equipment and Construction Specifications and in particular, the documents listed below:

- SPG 0711.2 *Plans, Programs, Documentation and Packages*
- SPG 0711.3 *Inspection and Testing Principles*
- SPG 0711.4 *Inspection and Testing Procedures*
- SPG 0711.5 *Typical Inspections and Tests for Signalling Apparatus*
- SPG 0711.6 *Interface Requirements and Procedures for Alterations*
- SPG 0711.7 *Standard Forms*
- SPG 0711.8 *Typical Signal Support Procedures for Trackworks*
- SPG 0711.9 *Like for Like Renewal Procedures*
- SPG 0711.10 *Procedures for Design Integrity Testing and Function Testing to Control Tables*
- SPG 0703 *Signalling Documentation and Drawings*
- TMG J000 *Signalling Safeworking Procedures Manual J*
- ESG 0007 *Glossary of Signalling Terms*
- TMGA 1412 *Process for Signalling Personnel – Authorisations & Licensing*
- SC00 021002 SP *Reassessment of Signalling Infrastructure Workers*
- TMGA 1415 *Signal Engineers, Contract Personnel – Authorisation Status and Licensing Boards*
- TMGA 1416 *Log Book Procedures*
- TMG A1419 *Authority to Work on Railcorp Signalling Infrastructure - Permit to Work*
- Signal Engineering Instructions and Guidelines
- RailCorp Project Management Documents (RPMM) Rail Asset Enhancement
- RailCorp Infrastructure Maintenance Division Documents

Australian Standards

- AS 4292.1 *Railway Safety Management Part 1: General Requirements*
- AS 4292.2 *Railway Safety Management Part 2: Track, Civil and Electrical Infrastructure*
- AS 4292.4 *Railway Safety Management Part 4: Signalling and Telecommunications Systems & Equipment*
- AS/NZS 4360 *Risk Management*

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1.3 Definitions

Signalling definitions are contained in Signalling Practices and Configuration Standard ESG 007 *Glossary of Signalling Terms*.

1.4 Tasks and Responsibilities to be Retained

The position titles and grades used in this document are current at the time of publishing. Where changes to establishments or structures alter the position titles or grades stated in this document, then the specific tasks and responsibilities prescribed herein shall be mapped and assigned to appropriate positions within the changed establishment so not to lose the intended principles.

1.5 Test and Commissioning Team

The Test and Commission team shall act as a representative of the Chief Engineer Signals & Control Systems and not as a representative of the installation contractor. This does not negate the standard requirement that individuals shall not test and certify their own installation work.

Also reference section 5.2 of this document for the *independence* requirements of personnel involved in test and commissioning.

1.6 Authorisation & Permission to Work on RailCorp Signalling Infrastructure

All work performed on RailCorp signalling infrastructure including installation work, inspection and testing, certification, and maintenance work shall be done by persons competent, authorised, and where necessary licensed to do so.

All personnel shall comply with the training and competency requirements described in TMG A1412 which outlines the process for assessment, the issue of certificates of competency, and lists the activities and limitations for each authorisation and licence level.

Additionally, persons shall adhere to the requirements for licensing and authorisation as described in the Signalling Safeworking Procedures TMG J001 *Introduction to Signalling Safeworking Procedures* and TMG J010 *Risks and Controls Associated with Testing and Certifying Equipment Worked On or Altered during Maintenance.* These chapters along with the other relevant parts of the Signalling Safeworking Procedures and the specifications for Inspection and Testing of Signalling Works (including this specification) provide certain delegation of Engineering Authority for specific accountabilities relating to design, installation, testing and certification, maintenance including specific safety critical determinations associated with signalling infrastructure.

Notwithstanding the above requirements, all persons who perform work on the signalling infrastructure shall obtain a Permit to Work authority in accordance with TMG A1419 *Authority to Work on Railcorp Signalling Infrastructure - Permit to Work* prior to commencing such work.

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1.7 Engineering Authority

Engineering Authority for the Signalling Discipline is principally held by the RailCorp Chief Engineer Signals & Control Systems.

Engineering Authority exists for the following elements:

- Production or amendment of any signalling standard and procedure, including configuration specifications, technical maintenance plans and engineering instructions.
- Approval to issue any new signal design or modification to an issued signal design.
- Type approval of new or altered signalling equipment or system that include supporting systems and products which form part of signalling infrastructure (these include electrical, electronic, mechanical and pneumatic components).
- Approval of signalling training and competency processes, including licensing and authorisation processes, which permit personnel to work on RailCorp signalling infrastructure.

1.7.1 Delegated Authority

Delegation of Engineering Authority of certain tasks is detailed and authorised in various documents including this specification.

Engineering Authority for production of signal design, including reviewing and verification shall be approved by the RailCorp Chief Engineer Signals and Control Systems in accordance with EPA 241 *Engineering Authority for Design*. New or altered signalling designs shall only be implemented utilising approved documented means or within the terms and conditions of an approved trial issued by the Chief Engineer Signals and Control Systems.

Maintenance Signal Engineers have delegated authority to work in accordance with the *Signalling Safeworking Procedures* to provide integrity and reliability of the signalling system within their respective area of control.

Commissioning & Test Engineers have delegated authority to work in accordance with the specifications for *Inspection and Testing of Signalling Works* to provide integrity and reliability of the signalling system for the new or altered work.

Additionally, Commissioning Engineers have delegated authority to approve minor specific design variations such as the location and type of cable routes and air lines, signal installation methods and similar signalling infrastructure generally defined in a detail site survey plan. In these cases, the Commissioning Engineer shall administer controls to mitigate risks resultant of the variation from the signalling standards.

Examples include:

- Where a cable route, due to limited clearances, is required to be installed closer to the track than prescribed in the signalling standards, then the risk of persons being struck by a train whilst accessing or working in or around the pit can be mitigated by use of demarcation fencing.
- Where a particular signal installation method differs from the standard design, then the installation method can be in accordance with an appropriate structural engineering design. The altered signal sighting (if any) shall be further approved by a signal sighting committee.

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Delegation of specific engineering design authority for site determinations is granted by the Chief Engineer Signals & Control Systems to relevant signalling personnel holding the applicable competency, licence or authority as provided in this and other standards.

Examples include:

- Agreement/acceptance of signal sighting.
- Approval of detailed site survey plans containing specific information about cable and air line routes including under-line crossings, under-road crossings, pits and chambers, joints, manifolds and route markers.
- Approval of type, capacity and location of equipment housings.
- Minor allocation of cable cores, fuses and terminals.
- Approval of minor mechanical drawings, for instance, apparatus labelling, tooling, etc.

The above determinations shall be made with due consideration to signalling construction standards and type approval.

1.8 Providing Safety Assurance

This specification informs signalling personnel of the roles, responsibilities and authorities associated with the quality of installation, inspection and testing, and commissioning work necessary for the safety assurance of new and altered signalling on RailCorp infrastructure.

Inspection and testing shall be read as including verification and validation tasks.

The Commissioning Engineer shall be responsible to ensure that all of the inspection and testing tasks defined within the signalling specifications are carried out and recorded as prescribed.

The Commissioning Engineer is the person responsible for the implementation of an effective, proven, auditable process for verification and validation of the safety integrity of the signalling system, and for compliance of signalling standards for the new or altered signalling when commissioned.

Inspection and tests shall be recorded in an Inspection and Testing Plan and in Installation and Commissioning Work Packages.

The verification and validation process shall include:

- Clear definition and communication of responsibilities
- Detailed and comprehensive planning, risk assessment and programming
- Application of proven inspection and testing practices by licensed, fit and competent personnel
- Use of appropriate, calibrated test equipment
- Monitoring and control of progress
- Detailed recording of results

The total verification and validation process shall be fully documented and strictly followed.

The application of inspection, testing and certification of the completed work as set out in this specification will not in itself provide sufficient assurance, as much of the installation will be “hidden” from many commissioning certification inspections and tests. It is therefore imperative that installation work is carried out by suitably competent, and where necessary licensed, personnel and that the

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installation practices and workmanship be appropriately supervised, inspected, tested and recorded during the installation. These inspection and tests shall be planned and implemented in an Inspection and Testing Plan and Installation Work Package.

2 Interfaces & Relationships

2.1 Interfaces with Train Control and Telecommunications Systems

Train control and telecommunications systems are the responsibility of the Communications and Control Systems. The signalling Commissioning engineer shall ensure that prior to commissioning new and altered signalling works that interfaces to a train control or telecommunications system that all functional interfaces are duly certified as inspected, tested, fit for purpose and reliability collaboratively between all groups. Further at commissioning, the train control or telecommunications system group shall provide certification documentation certifying that the system has been inspected, tested, fit for purpose and reliability.

Where the Communications and Control systems are brought into use at a later date using a previously commissioned signalling interface – the Communications and Control Systems Group shall be responsible to independently certify and bring the train control or telecommunications system into use. In these instances, the train control or telecommunications group shall appoint an experienced, signalling accredited, licensed Signal engineer in the role of Commissioning engineer.

2.2 Interface Coordination

This Specification sets out the requirements applicable for new and altered signalling works implemented by an internal group separate from the asset owner. This relationship creates a functional interface between the parties that is addressed throughout the inspection and testing Specifications. Should the asset owner require to internally implement works and thereby eliminate this functional interface then the Infrastructure division shall ensure that an effective Interface Coordination Plan be used for internal interface coordination.

3 Achieving Signalling Safety

Signalling inspection and testing, and certification thereof, to current standards by licensed and competent designers, constructors and maintainers is the method of achieving safety assurance of the signalling system.

Signalling inspection and testing is complicated by the spatial spread of signalling interlocking and control functions, the time spread of construction of a signalling project, staging of the works into existing systems and interaction with functional, operational and technical areas of RailCorp and third parties. It is therefore imperative that all stages of the inspection and testing process are planned and systematically implemented and documented by responsible signalling personnel who place the highest priority on the achievement of system safety.

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4 Safeworking, Network Rules and Procedures

It is essential that the Network Rules and Procedures be observed. Testing arrangements must not interfere with or endanger the correct operation of signalling equipment in service.

In particular, testing must not result in false clearance of a signal indication in the face of a train nor allow any set of points to be released after a train has accepted a proceed authority that indicates the points are closed and locked.

Qualified workers shall be provided as protection officers/handsignallers for signals, points and level crossings booked out of use as stipulated in the Network Rules and Procedures.

Network Forms shall be duly completed for notification of signalling apparatus taken out of use or restored to use and for certification of new or altered works brought into use.

Details of all removals and new and altered works that results in a change to any physical or operational interface with signallers or train drivers shall be published in the Weekly Notice with at least one weeks notice prior to the implementation of the changes.

It is desirable that all field activities associated with the de-commissioning, changing-over and testing work and commissioning, be carried out in an environment where rail traffic is excluded. If rail traffic cannot be excluded or will operate in the close proximity, the engineer shall confer with the worksite protection officer to ensure that safety assessments are conducted for the planned work to include any operational risks or hazards associated with the conduct of the signalling work and testing. Planning shall include suitable arrangements for excluding rail traffic when risks cannot be eliminated. For example, any period where points are required to be unlocked for testing purposes and during the removal of signal “X” boards.

There shall be clear understanding and agreement documented between all involved parties of the safeworking systems to be employed during the period from the shut down of the old system to the commissioning of the new system.

Signalling equipment installed but not yet commissioned or decommissioned but not yet removed is to be secured against interference.

5 General Responsibilities for Inspection and Testing New and Altered Works

It is the duty of each person performing safety-related work to carry out the work and documentation carefully and competently to the required Standards and in accordance with applicable Specifications and/or approved drawings, and to check their work for completion and quality.

Persons conducting certification inspection and testing are to report each time they detect safety related errors or omissions in the work, equipment or documentation to the Commissioning engineer.

The Commissioning engineer is to investigate, advise and appropriately instruct the responsible person / supplier regarding any errors and defects detected and

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agree on the remedy to be applied. For supplied equipment advice is to be given and remedies agreed with the persons with engineering authority in the matter.

Only type-approved equipment and configurations shall be commissioned.

Basic principles include:

- Each new or altered piece of signalling apparatus shall be inspected, tested and certified.
- Appropriately experienced and licensed personnel shall conduct independent inspection and testing of the work.
- Construction of new and altered signalling shall be conducted in accordance with the relevant Standards, Procedures and Instructions by suitably experienced licensed Signal engineers, Site managers, Team leaders, Work group leaders, Signal electrical / mechanical personnel.

5.1 Interface Planning

The Commissioning engineer and the Regional signalling representative are responsible to ensure that all authorised new and altered signalling works proceed pursuant to a Project Work Interface Agreement and Interface Coordination Plan.

Specification SPG 0711.6 *Interface Requirements and Procedures for Alterations* sets out the required procedures for:

- Alterations and new interfaces
- Authority for alterations to existing installation
- Approval to commence alterations
- Interface Coordination Plan
    - (a) Detailed Site Assessment (Site Integrity Agreement)
    - (b) Precautions to be agreed

5.2 Independence of Certification, Inspection and Testing

The principle of independent inspection and testing of new and altered work is that no safety critical outcome should rely solely on one person doing and also certifying their own work. The independent person conducting the inspection, testing and certification work is responsible for the safety of the work.

In essence, any person who has installed vital equipment or circuits for new and altered work shall not carry out the certification inspection and tests of the particular items or circuit elements that they have installed.

At a project engineering level there are integrity advantages in having more rather than less familiarity with the physical and functional characteristics of the project. For example the Project engineer in the role of Commissioning engineer has the direct knowledge of the project, its interfaces and history necessary to ensure comprehensive inspection and testing planning, coordination and implementation.

In deciding the appropriate degree of independence a balanced judgement by experienced signal engineers is necessary depending on the nature and complexity of the project however the major determinant would be the licensing to the required level, competence and experience of the person performing the

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certification inspection and testing. The lack of availability of suitable personnel shall not justify any lowering or absence of the required independence.

6 Personnel Responsibilities and Authorities.

6.1 Chief Engineer Signals & Control Systems

The Chief Engineer Signals & Control Systems is the person who holds engineering signalling design authority for authorising and approving configuration and design changes to the existing or new signalling system in accordance with the RailCorp Engineering Principles, Standards, Specifications, Manuals, Instructions and Guidelines. The Chief Engineer Signals may delegate various engineering design authorities and responsibilities provided that they are documented and clearly communicated.

The Chief Engineer Signals & Control Systems shall nominate for new equipment and systems:

- The Type Approval and Design,
- The principals for integration, interfaces and standards,
- The inspection and testing tasks and/or pass/fail criteria required,
- The maintenance requirements, plans and manuals,
- The training criteria.

The Chief Engineer Signals & Control Systems is also responsible for ensuring signalling design drawings are maintained updated and that updated copies are issued promptly to relevant maintenance personnel.

The Chief Engineer Signals & Control Systems shall provide safety assurance through the following activities to ensure the timely issue of checked and approved designs with no significant errors or omissions and also to validate the installed design;

- System design to functional requirements and to signalling design standards by appropriately qualified and experienced signal design engineers.
- Verification of design by independent appropriately qualified and experienced signal design engineers.
- Design integrity tests of installed systems to standard interlocking and control principles by appropriately qualified and experienced signal design engineers.

Where new or altered works are to interface with existing signalling the Chief engineer signals (or delegate) and the Commissioning engineer shall together satisfy themselves of the accuracy of the existing design drawings, in consultation with the Regional signalling representative.

6.2 Principal Engineer Signal Design

The Principal Engineer Signal Design shall exercise the delegated responsibilities and engineering signalling design authority for authorising and approving configuration and design changes to the existing or new signalling system in accordance with the RailCorp Engineering Principles, Standards, Specifications, Manuals, Instructions and Guidelines.

Superseded by T HR SC 07111 ST v1.0, 04/09/2019

6.3 Project Manager

The Project Manager responsibilities are fully described in the RailCorp Project Management Methodology documents. In respect of the Inspection, Test and Commissioning Process, the Project Manager is responsible for ensuring:

- Provision of management support for the Inspection, Testing and Commissioning process,
- Project management documentation (eg. Project Management Plan, Project Safety Management Plan to comply with RailCorp requirements) is produced to allow the Commissioning Engineer and team to focus on Signalling documentation.
- Provision of a Signal Project Engineer
- Provision of a Commissioning Engineer,
- Provision of sufficient numbers of licensed, competent personnel to carry out all Inspection and Testing activities.
- Audit of the Inspection, Testing and Commissioning activities to ensure compliance to RailCorp requirements
- Archival of inspection and testing documents and packages.

6.4 Signalling Project Engineer

The Signalling Project Engineer must have an appropriate working knowledge of RailCorp Signalling Installation Standards and practice. They are responsible for ensuring the quality of the new and altered works; and that they are planned, resourced with suitably competent staff, installed and inspected to the design, current RailCorp Standards, and to schedule.

The Signal Project Engineer is responsible for tasks as detailed in table at 6.6.2

6.5 Signalling Tester In Charge

The Signalling Tester in Charge is authorised as per TMG A1412 and is responsible for planning and directing defined inspection and testing activities on new or altered signalling works. The role is defined after consultation with the Commissioning Engineer. General responsibilities include:

- Determining the extent of testing and the tests required for all systems, included in the issued signalling designs,
- The production of the Inspection and Testing Plans and packages,
- Ensuring that the Inspection and Testing of the entire signalling system has been completed and documented in accordance with RailCorp Standards.

This is in order that the Commissioning Engineer has sufficient evidence to sign off the safety assurance of completed signalling works and certify that the signalling 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.

This Authorisation does not allow the holder to book signalling in and out of use unless appropriately licensed.

The Signalling Tester In Charge is responsible for tasks as defined in table at 6.6.2:

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6.6 Commissioning Engineer

The responsibility for the certification of the safety of signalling works to be commissioned ultimately lies with the Licensed Signal Engineer who signs the works as "brought into use." Regardless of the nature of the signalling works, the signal engineer ultimately responsible for the inspection, testing and certification of the project from concept till completion and bringing the signalling works into use is to be designated as "Commissioning Engineer."

By bringing the signalling works into use the Commissioning Engineer is certifying that he has the assurance that the new or altered signalling system has been installed, inspected and tested in accordance with the approved design, RailCorp Standards, Specifications, Manuals, Procedures, Guidelines, Signal Engineering Instructions, and any other relevant documents.

If appointment to the project occurs after the commencement of the project then the Commissioning Engineer shall review the installation, inspection and testing documentation produced and, if necessary, have the authority to order retesting, examination or uncovering of any portions of the installation where there is doubt, insufficient documentation or lack of evidence of inspection and testing activities carried out to that point. All preceding installation, inspection and testing records shall be endorsed by the Signal Engineer to whom the certification personnel reported. That person shall be considered as having the same responsibility as the Commissioning Engineer up to that point in time.

The Commissioning Engineer is responsible for determining that commissioning of work can proceed. If the work will not be commissioned as planned, the Commissioning Engineer shall ensure that any signalling risks associated with the commissioning not proceeding are mitigated. (For example non commissioned signalling equipment is secure etc.)

The Commissioning Engineer shall not allow the certification testing to be jeopardised by compression into too small a time-scale that over-extends testing personnel.

The Commissioning Engineer may conduct, or delegate Design Integrity testing for Minor signalling works to a design integrity test plan provided and approved by signal design.

6.6.1 Division of Roles and Responsibilities for Project and Commissioning Engineers.

Depending on the size of the project and the nominated individuals workload, any or all of these roles can be combined, subject to appropriate authorisations and licenses.

Where a project is planned to have Signalling Project Engineer, Signalling Tester In Charge and Commissioning Engineers the typical responsibilities shall be in accordance with table at 6.6.2. The final agreement on responsibilities between Commissioning Engineer, Signal Project Engineer and Signal Tester in Charge the project shall be documented and signed off using table at 6.6.2 as a pro-forma.

The roles of Signalling Tester In Charge, Project Engineer and Commissioning Engineer shall continue until all signalling works are complete and the Final Certificate is issued.

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6.6.2 Signal Project Engineer, Signal Tester in Charge and Commissioning Engineer – Typical division of Responsibilities

NOTE: Where activities are transferred between the CE/STIC/SPE, this table is to be printed, updated, initialled and placed in the Inspection and Test plan

ACTIVITY	SPE	STIC	CE
PLANNING			
Signalling Installation: Manage or delegate all aspects.	**SPE**		
Project Specific Practice: Ascertain and brief work groups.	**SPE**		
Signal Design, Working drawings: Registration and control of design documents, including modifications and amendments. Ensure latest approved versions are used for installation activities.	**SPE**		
Installation Work Package: Preparation and Implementation of Work instructions for installation activities.	**SPE**		
Project Safety Agreement: Produce and obtain agreement of the District representatives.	**SPE**		
Statutory Approvals: Prepare as required.	**SPE**		
Operational Notices: Ensure preparation of Weekly Notice, Safe Notices, Special Train Notices as required	**SPE**		
Site Access and Possession requirements: Agree with the District Signal Maintenance representative.	**SPE**		
Project Planning Meetings Conduct and record.	**SPE**		
Interface Coordination Plan: Produce in conjunction with the Commissioning Engineer and the District signal representative.		**STIC**	
Extent of Inspection and Testing: Determine and prepare the Inspection and Testing Plan (Strategy, Outline and Detailed Plans)		**STIC**	
Track Possessions: Determine and arrange provision for Inspection and Testing and Commissioning activities. NB. May include rail traffic management and coordination and provision of test locomotives.		**STIC**	

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ACTIVITY	SPE	STIC	CE
Arrange Inspection and Testing resources: Provide and ensure they are appropriately licensed or authorised.		STIC	
Commissioning Program: Prepare, monitor and update			CE
INSTALLATION			
Interface Management: Liaise with the District Signal Maintenance representative and Signal Design for installation matters.	SPE		
Set out and Construction Ensure signalling installation: is in accordance with Design, Standards and Type Approvals and provide evidence as per agreed Installation Work Package	SPE		
Installation QA records and Equipment/material test certificates Ensure they are complete and stored appropriately.	SPE		
Test Copies (Pinks) and Commissioning Copies (Yellows) of the Signal Design: Confirm as updated and issue to the Signal Tester In Charge.	SPE		
Safe Access Arrangements to Existing Signalling Equipment: Control during project activities to ensure that activities do not interfere with the integrity of the existing infrastructure.	SPE		
Review and Authorise Installation Work Package,			CE
Permits To Work: Issue for the project as per TMG A1419			CE
INSPECTION AND TESTING			
Signalling System Inspection & Testing Program: Prepare, monitor and update.		STIC	
Site Installation QA documentation: Ensure that this is complete and retained.		STIC	
Inspection and Testing Activities: Manage the implementation and ensure they are carried out by suitably Authorised or Licensed staff.		STIC	

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ACTIVITY	SPE	STIC	CE
Control of Design: Ensure that the latest version of all design, working drawings and modifications is used during the Inspection and Testing activities.		**STIC**	
Manage Test equipment: Ensure calibrated and maintain records.		**STIC**	
Inspection & Testing and Commissioning Planning Meetings: Conducts and minutes regular meetings with Inspection and Testing, Commissioning and site personnel.		**STIC**	
Commissioning Work Package: Prepare		**STIC**	
Signal Design Integrity Test plans: Ensures these are produced, coordinated and authorised by appropriate personnel.		**STIC**	
Test Plans for Other Systems: (ie. Control systems) Ensures these are produced, coordinated and authorised by appropriate personnel for other systems connected to the signalling system.		**STIC**	
Review and Authorise Inspection & Testing Plans,			**CE**
Monitors and audits Inspection and Testing activities.			**CE**
Inspection and Test, Commissioning Records: Ensure these are completed. Includes test certificates and equipment test certificates.			**CE**
COMMISSIONING			
Review and Authorise: Commissioning Work Package/s.			**CE**
Commissioning Works: Responsible for the overall control and implementation.			**CE**
Signalling Personnel: Ensures Correctly Authorised/Licensed with relevant competency for allocated commissioning activities			**CE**
Design Certification: Responsible for certifying Site drawings and working drawings produced for installation e.g. Rack layouts, cable plans.(Refer 1.7.1)			**CE**
Planning of any permitted "Other Party" works: Controls and coordinates these during the Commissioning period.			**CE**

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ACTIVITY	SPE	STIC	CE
Other Infrastructure that Directly Interfaces with the Signalling system: Agrees certification required. (e.g. Train Control & Telecommunication systems, Electrical power or traction, Trackworks,)			CE
Other Discipline Works: Responsible for ensuring these are certified prior to booking the signalling infrastructure into use.			CE
Control of Temporary Circuit Bridging Straps: Responsible for ensuring these are controlled, applied and removed in accordance with RailCorp Safeworking procedures; and that they are numbered and made in accordance with RailCorp standards.			CE
Design Modifications: Control and certify modifications issued during the commissioning period.			CE
Pre-commissioning meeting: Arrange with District representative and the Team leaders of the commissioning work teams.			CE
Network Rules and Procedures: Commission the new and altered works into use in accordance with these.			CE
Commissioning Certificate: Responsible for completion, this authorises the Booking into use.			CE
Infrastructure integrity Certification: Complete in accordance with Infrastructure Division requirements			CE
Infrastructure Certification by "Others:" Obtain and ensure complete for systems that directly interface with the Signalling system. May include: Train Control & Telecommunication systems, Electrical power or traction, Trackworks, Civil or others.			CE
Interim Maintenance Copies: Provision to maintenance of circuit books, plans and drawings. Track history cards, updated asset change data and any other required documentation.			CE
Incomplete Commissioning Activities: Determine what may be transferred Post commissioning Work instructions.			CE
Completion of the Signalling Works: Responsible for ensuring that both on and off site Inspection, Testing, Commissioning of activities have been completed and Certified.			CE

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ACTIVITY	SPE	STIC	CE
Certified Office Copies (COC's) Mark up the issued design and working drawings and documents for sign off by Commissioning Engineer.		**STIC**	
Certified Office Copies (COC's) Ensure field alterations marked up on Circuit Books, Site drawings and working drawings produced for installation (e.g. Rack layouts, cable plans.) Sign-off and return issued drawings and documents to design Authority.			**CE**
Minor Works Package (Where applicable): Preparation of, Implementation by, Commissioning and Handover of Signalling Works using this.			**CE**
Support Package (Where used for project works**):** Prepare	**SPE**		
Support Package (Where used for project works**):** Review and Authorise prior to being approved by Maintenance Engineer			**CE**
HANDOVER			
Handover Package Compile and issue.		**STIC**	
Post Commissioning Activities: Delegate to relevant parties.			**CE**
Post Commissioning Reviews: Conducts lessons learnt at Project Completion and feed back to the Project manager.	**SPE**		
Defects Rectification: Ensure this is completed.	**SPE**		
Practical and Final completion: Complete process	**SPE**		
Archive: Project Inspection and Test and Commissioning documentation.			**CE**
Post-Commissioning Inspection: Conducts front of train inspection of the newly commissioned installation for signal sighting.			**CE**

6.7 Testers

Testers shall be authorised in accordance TMG A1412 and are responsible for carrying out independent inspection, testing and certification as required by the RailCorp Infrastructure Engineering Specifications and Signalling Safeworking Procedures under the control and direction of the Commissioning Engineer or Signal Tester In Charge.

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Testers shall:

- Verify that the installation and equipment conforms to the approved Design and Site drawings.
- Comply with the procedures and practices detailed in the Standards for the Inspection, Testing and Certification of New and altered works.
- Following consultation and agreement with the Commissioning Engineer, exercise the authority to require re-testing of portions of the work where doubt arises as to the performance of testing assistants, integrity / security / interference or issues
- Verify that the installation complies with the applicable Equipment and Construction specifications regarding the installation quality, personnel access, safety and reliability.
- Challenge and bring to the attention of the Commissioning engineer any unclear, unusual or unsatisfactory feature of the vital design or installation and any potential risk to the reliability and integrity of the signalling.
- Form independent test team/s consisting of suitably authorised or licensed personnel,
- Ensure Test assistant's knowledge of the communication protocols to be used and ensure the appropriate familiarity with the particular apparatus and testing procedures.

The Authorisations that have been created to allow non licensed staff to carry out testing activities on the RailCorp network are fully defined in TMG A1412 and the section below is a summary:

6.7.1 Testing Assistants (TMG A1412 Section 4.5)

Test assistants shall assist the lead Tester in carrying out defined inspection and testing activities on new or altered signalling works. Persons assisting in certification testing shall diligently carry out the instructions of the Lead Tester and assist in ensuring the tests are correct and comprehensive.

6.7.2 Circuit tester (TMG A1412 4.6.1)

This Authorisation entitles the holder to carry out inspection and testing of new or altered signalling works to confirm that the installed equipment and wiring conform to the approved design and applicable standards. The work is carried out following standard procedures, and in accordance with an Inspection and Test Plan provided by others. It includes leading a small team, inspection of equipment type and configuration, tests to prove wiring complies with approved design, insulation tests to prove integrity of the wiring, and checks to prove the absence of additional, undocumented wiring.

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.

6.7.3 Circuit Function Tester (TMG A1412 4.6.2)

This Authorisation entitles the holder to carry out inspection and testing of new or altered signalling works to confirm that the installed signalling control functions work in accordance with the approved design and applicable standards.

The work is carried out following standard procedures, in accordance with an Inspection and Test Plan provided by others, and after tests to confirm that the work has been installed and wired in accordance with the approved design. The

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work includes leading a small team, performing tests to confirm that contacts, subsystems and complete circuits function in accordance with the approved design and applicable standards, and recording of observations and test readings.

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

6.7.4 Equipment Tester (TMG A1412 Section 4.7)

Holders of this authorisation are deemed competent to Set to work, Test and Certify Signalling Equipment in accordance with RailCorp Standards

6.8 Regional Representative

The Infrastructure Division is primarily responsible for infrastructure integrity; this includes permission for access and provision of track possessions, Project Work Interface Agreements, Interface Coordination Plans and review or overview of the delivery of new and altered works delivered by other divisions and 3rd parties.

For each project / job the Region shall nominate a signal representative responsible for the following:

- Approval, development process and maintenance of interface coordination planning throughout the project lifecycle,
- Collaborate for the provision of the necessary track possessions and access in accordance with the, Project Work Interface Agreement, Interface Coordination Plan and the Works Program,
- Arrange for the provision and issue of the approved design and manage the control of documentation throughout the project life cycle,
- Manage configuration control process to provide and maintain accurate status of the approved configuration of equipment on the region,
- Manage configuration management (update documentation and databases) to ensure records accurately reflect existing assets,
- In order to authorise commissioning of the works, the Regional signal representative shall remain satisfied that the works are principally to the agreed requirements, by regular liaison with the project manager throughout the project and by approval-in-principle of the installation and commissioning work packages.

Signalling Works - Installation Phase

- Collaborate with the Commissioning engineer to develop and authorise the Project Work Interface Agreement for the new and altered work. Maintain the Interface Coordination Plan for the duration of the works (*SPG 0711.6* Clause 1.6),
- Collaborate with the Project team to provide possession access in accordance with the Works Program. Manage detail possession planning to ensure that optimal use by the project,
- Change manage (when required) the possession arrangements in consultation with the Project team to take advantage of new opportunities or mitigate negative effects,
- Approve in principle the Installation (or Minor) Work Package,

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- Collaborate the implementation of the work with the Regional signalling personnel for the provision of the new or altered Signalling works. This is achieved by:
- Holding regular meetings with the signalling maintenance personnel to inform, advise progress and resolve issues,
- Initiating and managing the configuration management process for the works including Technical Maintenance Plans,
- Arrange appropriate maintenance personnel involvement in the new and altered works to provide adequate familiarity with the scope of works, equipment / systems being constructed, the location/s affected by the work and any identification / marking in use to distinguish them,
- Manage the Asset and Configuration control processes.

Commissioning – Preparation Phase

- Coordinate possession detail planning to ensure that other works are excluded when not compatible with the commissioning process,
- Arrange for the publishing of SAFE Notices and Circulars,
- Arrange for test locomotives as required by the Commissioning engineer,
- Approve in principle the Commissioning Work Package/s.

Commissioning – Implementation Phase

- Change manage (when required) the possession management in consultation with the Commissioning engineer to mitigate risks to the commissioning process,
- Arrange appropriate maintenance personnel involvement in the new and altered works to provide adequate familiarity with the equipment/systems being “brought into use”, the location/s for storage of Interim design and spare equipment,
- Arrange attendance for follow up activities, eg points adjustments due to track settlement, track circuit adjustments and stand-by.

Commissioning – Evaluation Phase

Manage the distribution of Interim design prior to the first peak,

Attend the Post Commissioning Meeting,

Close out any applicable Configuration Control processes.

6.9 Construction Personnel

6.9.1 Team Manager

Team manager shall be responsible for the management of personnel and equipment including; Resource planning, depots, vehicles, OH&S, briefing, rostering, training, PPE, briefing Team leaders and provision of access to and/or copies of RailCorp Infrastructure Engineering Standards, Specifications, Procedures, Instructions and Divisional Instructions.

The Team manager shall oversee the personnel “Experience and Assessment Log Books” to verify the correct use and identify experience requirements.

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The team manager shall allocate personnel resources primarily to fulfil the job requirement for licensing, experience and knowledge of the equipment and systems involved. Further, shall allocate personnel to facilitate the maintenance of experience on all types of equipment and systems. Where a "Statement of Competency" nominates that "work under supervision" is required, in collaboration with site management arrange to allocate to the areas where the required experience may be gained.

The Team manager is responsible to ensure the provision of adequate personnel requirements, whilst ensuring independence of verification personnel.

The Team manager may carry out Signalling duties in accordance with their RailCorp licence.

6.9.2 Site Manager

Appointed on specific projects is responsible to safely resource, procure and implement the construction of the new and altered project infrastructure whilst ensuring the integrity of the existing infrastructure to design and specification. The site manager shall be responsible to manage the completion of the installation and commissioning inspection and testing plan/s and work instructions for the preparation, implementation and evaluation of the works as directed by the Project/commissioning engineer.

- The site manager shall direct and manage a multi-disciplinary work team (or teams/contractors) engaged in the construction of the project to ensure safety, time, resource and budgetary constraints under the direction of the Commissioning engineer including: Develop in consultation with the Commissioning engineer, review, agree and assign and monitor delegated responsibilities in line with the responsibility assignment matrix (R.A.M.),
- Supervise, direct and conduct installation inspection and testing activities within the limitations of their licence,
- Ensuring the works are constructed in accordance with the relevant RailCorp practices and procedures, Signal Construction Standards, Instructions and Guidelines,
- Ensuring the works are constructed in accordance with the approved design,
- Ensuring the works are implemented in accordance with the requirements of the Signalling Safeworking Procedures Manual (TMG J),
- Ensuring the works are implemented in accordance with the Network Rules and Procedures,
- Ensuring that the works are implemented in accordance with the Project Work Interface Agreement and Interface Coordination Plan,
- Ensuring the works are constructed, documented and inspected and tested in accordance with the approved Installation Work Package,
- Ensuring the construction work is conducted by personnel who have the relevant experience and licensing whilst ensuring independence of verification personnel,
- Ensuring the construction work is conducted and documented to comply with approved quality processes including rectification work, timely procurement, storage and preservation of materials, works program and costs,
- Arranging for sufficient personnel, whilst ensuring independence of verification personnel,

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- Responsible for the performance, signing and returning of work instruction/s.

Signalling Works - Installation Phase

Responsible to support the Commissioning engineer and perform the delegated tasks as directed:

- Safely manage the construction of the works to RailCorp Standards, Manuals, Instructions, cost and time, including plant, personnel, equipment and material resources,
- Team leader as nominated on Installation Work Instructions,
- Arrange for, set up and test construction site communications systems, prepare registers for recording details of issue.

Commissioning – Preparation Implementation and Evaluation Phases

Responsible to support the Commissioning engineer and perform the delegated tasks as directed:

- Safely manage the implementation, commissioning and evaluation of the works to RailCorp Standards, Manuals, Instructions, cost and time, including plant, personnel, equipment and material resources,
- Manage the construction activities, plant, personnel and material resources,
- Implement and or conduct as Team leader - Work instructions as nominated by the Commissioning engineer,
- Arrange for, set up, pre-test and manage commissioning communications systems, prepare registers for recording details of issue,
- Manage the provision and suitable registration of commissioning spares, and equipment eg. Spare signalling apparatus, torches and batteries, emergency wet weather gear and tarpaulins,
- Manage the completion of site clean up:
- Removal of any equipment housings, redundant wiring, cable routes and air lines,
- Removal and disposal of remaining redundant equipment / foundations, stockpiles.

Minor Signalling Works

- Roles and responsibilities shall generally be as for major signalling works, and:
- Document and report in the “Minor Signalling Works - Installation, Inspection, Testing and Commissioning Log” (Minor Works Log) all defects, defective materials, incidents and items requiring further action related to the performance of the installation, inspection, testing and commissioning of the works. Regularly (weekly) present the log to the Commissioning engineer for review and sign off.

6.9.3 Team Leader

The Team Leader is responsible to implement the Installation and Commissioning Inspection and Testing Plan/s, Work instructions for the preparation, implementation and evaluation of the works as directed by the Project/commissioning engineer.

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Where a project structure does not include a site manager, the Team manager shall nominate a Team leader whose responsibilities shall include those nominated herein for a site manager.

The Team Leader is responsible to ensure the implementation of the following activities or delegate and effectively communicate to the various team leaders and work groups:

- Review, agree and assign delegated responsibilities in line with the responsibility assignment matrix (R.A.M.),
- Apply policies and procedures to ensure the highest standards of OH&S, Safeworking, Environmental and Quality principles are practiced and maintained in the workplace,
- Implement the construction of the works to specification by leading multi-discipline work team/s or contractors, supervise, and conduct installation inspection and testing activities within the limitations of their licence,
- Organise and direct personnel and materials in the construction of the works,
- Organise and direct plant for the construction of the works,
- Supervise quality and specification compliance during the construction of the works,
- Perform, sign and return work instruction/s,
- The day to day resolution of general matters.

6.9.4 Work Group Leader

Work Group Leaders are responsible to implement RailCorp Policies, Standards, Specifications, Instructions, Practices, and Procedures including Installation and Commissioning Inspection and Testing Plan/s, Work packages and Work instructions for the preparation, implementation and evaluation of the works as directed by the Commissioning engineer, Site manager and or the Team leader. Work Group Leaders shall construct the works to Specification and lead work team/s and/or Contractors, supervise and conduct installation inspection and testing activities within the limitations of their licence as stipulated herein.

6.9.5 Minimum Licensing or Authorisation requirements for suitably experienced personnel implementing New and Altered Works

CERTIFICATION INSPECTION AND TEST ACTIVITY	ASSIST IN TEST OR SET TO WORK	INSPECT, TEST AND CERTIFY
Documentation Check	Signal Electrician Circuit Tester	Licensed Signal Engineer Circuit Tester
Correlation Checking **	Signal Electrician Signal Electrical Installer	Signal Electrician Circuit Tester
Apparatus Inspection	Signal Electrician Signal Electrical Installer Assistant Tester	Licensed Signal Engineer Circuit Tester
Wire Count	Signal Electrician Signal Electrical Installer Assistant Tester	Licensed Signal Engineer Circuit Tester
Null Count	Signal Electrician Signal Electrical Installer Assistant Tester	Licensed Signal Engineer Circuit Tester
Insulation Test	Signal Electrician	Signal Electrician

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CERTIFICATION INSPECTION AND TEST ACTIVITY	ASSIST IN TEST OR SET TO WORK	INSPECT, TEST AND CERTIFY
	Signal Electrical Installer Assistant Tester	Circuit Tester
Bell Continuity Test	Signal Electrician Signal Electrical Installer Assistant Tester	Licensed Signal Engineer Circuit Tester
Hand Trace	Signal Electrician Signal Electrical Installer	Signal Electrician Circuit Tester
Apparatus Function Test	Signal Electrician Assistant Tester	Licensed Signal Engineer Circuit Tester with appropriate authority for type of equipment
Contact Proving Test	Signal Electrician Assistant Tester	Licensed Signal Engineer Circuit Function Tester
Circuit Function Test	Signal Electrician Assistant Tester	Licensed Signal Engineer Circuit Function Tester
Circuit Strap and Function Test	Signal Electrician Assistant Tester	Licensed Signal Engineer Circuit Function Tester
Function Test to Control Tables*	Signal Electrician Assistant Tester	Licensed Signal Engineer. Person with appropriate engineering authority
Through Circuit Test	Signal Electrician Assistant Tester	Licensed Signal Engineer Circuit Function Tester
Through System Test	Signal Electrician Assistant Tester	Licensed Signal Engineer Circuit Function Tester
Track Circuit Shunt / Drop / Polarity Tests	Signal Electrician Assistant Tester	Licensed Signal Engineer with appropriate authority for type of equipment Authorised person with appropriate authority for type of equipment
Power Supply Polarity Test	Signal Electrician Signal Electrical Installer	Licensed Signal Engineer Circuit Function Tester
Power Supply Isolation Test	Signal Electrician Signal Electrical Installer	Licensed Signal Engineer Circuit Function Tester
Aspect Sequence Test **	Signal Electrician Assistant Tester	Licensed Signal Engineer Person with appropriate engineering authority
Mechanical Interlocking Test	Signal Electrician Interlocking Fitter	Licensed Signal Engineer for up to and including 8 levers, or, licensed Signal Engineer with Interlocking Certificate for greater than 8 levers
Points Correspondence Test	Signal Electrician Assistant Tester	Licensed Signal Engineer Circuit Function Tester
Points Out of Correspondence Test	Signal Electrician Assistant Tester	Licensed Signal Engineer Circuit Function Tester
Facing Point Lock Test	Signal Electrician Assistant Signal Sectioner Signal Mechanical Installer	Licensed Signal Engineer
Closed Switch Detection Test	Signal Electrician Assistant Signal Sectioner Signalling Mechanical Installer	Licensed Signal Engineer
Open Switch Detection and Switch Opening Test	Signal Electrician Assistant Signal Sectioner Signalling Mechanical Installer	Licensed Signal Engineer
Track Insulation Plan (Bonding)		Licensed Signal Engineer Authorised person with appropriate authority for type

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CERTIFICATION INSPECTION AND TEST ACTIVITY	ASSIST IN TEST OR SET TO WORK	INSPECT, TEST AND CERTIFY
Signalling Plan (Track Plan/Working Sketch)		Licensed Signal Engineer
* where no design integrity test is required		
** In high risk scenarios a Licensed person shall be used in preference to an Authorised person		

Table 1 - Minimum Licensing or Authorisation requirements for suitably experienced personnel implementing New and Altered Works

6.10 Typical Project Responsibility Assignment Matrix (R.A.M.)

The following R.A.M's are typical for a project. Each project shall review and assign responsibilities in line with the particular project scope, organisational structure, skills and licensing of the allocated project personnel. The project matrix shall be updated to reflect any changes occurring within the project lifecycle. All permanent or temporary stakeholders shall be notified of their responsibilities and updated to any changes. Roles and responsibilities associated with construction site safety shall be detailed in a "Site Safety Management Plan" for the works.

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Responsibility Assignment Matrix: RailCorp Infrastructure Division

Renewals / Major Projects
Description: *Construction of New & Altered Signalling*
Project:

File No:
Date:
Project phase: *Preparation*

Document No:
Revision No: ***Version 1, 14/08/2006***

WBS	Activity - Task	Project Management/Construction Group										Infrastructure Division			Regulatory Authorities			Community			RailCorp Other		
	Key position:	PM	TTM	CE	TE	SM	SMS	SDM	WGL	CS	TM	AE	ME	RR	W Cov	EPA					Track	Elec	Civil
1	Scope Documentation & Budget	A	C	R	C	S	C	C	C		C	I	I	SO							C	C	C
2	Signalling Works Program	A	I	R	C	S	C	C	S	S	C	I	I	C	I	I		C			C	C	C
3	Configuration Change Request	S		S		S		S	S			R	I	A							C	C	C
4	Site Safety Management Plan	SO		A	I	R	I	I	S	S	C	I	I	C							I	I	I
5	Project Works Authority	A	I	S	I	S		S	I	I	C	SO	SO	R							C	C	C
6	Interface Plan	A	I	C	C	C		C	C	I	C	C	C	R							C	C	C
7	Design Coordination	I		C	C	C		S	C			R		A							C	C	C
8	Signal Sighting / D.S.S's	A	I	R	S	S		S	S	S		I	C	SO							C	C	C
9	Possession Utilisation	C	I	A	C	R	S	C	S	S	C	C	C	C							C	C	C
10	Inspection & Testing Plan	A	I	R	C	S		C	S	S	C	C	C	SO									
11	Installation Work Package	A	I	R	C	S		C	S	S	C	C	C	SO									
12	Construction Program	C		A	C	R	S	C	S	S	C	I	I	SO							C	C	C
13	Scope - Variation Mgmt	R		C	C	C	I	C	I	I		C	C	A									
14	Communications Planning	A	I	R	I	I	I	I	I	I	I	I	I	I	I	I		I			I	I	I
15	Procurement	I		A	C	R		C	C	I	S												
16	Compliance & Audit	R	C	S	S	S		S	S	S	S	I	I	A									

Personnel legend

PM - Program/Project Manager	TTM - Snr Tech Team Mgr	CE - Commissioning Engineer	TE - Testing Engineer
SM - Site Manager / Team Leader	SMS - Service Manager Signals	SDM - Signal Design Mgr	WGL - Work Group Leader/s
CS - Construction Staff	AE - Asset Engineer	ME - Maintenance Engineer	RR - Regional Representative
W Cov - Work Cover	EPA - Enviro Proction Auth	TM - Team Manager	

Responsibilities Legend: R - Responsible; A - Accountabl; C - Consult; S - Support; I - Inform; SO - Sign off

NOTE Team Leaders responsibilities shall be those of the Site Manager where no Site Manager is attached to the project

Superseded by T HR SC 07111 ST v1.0, 04/09/2019

Responsibility Assignment Matrix: RailCorp Infrastructure Division

Renewals / Major Projects
Description: *Construction of New & Altered Signalling*
Project:

File No:
Date:
Project phase: *Implementation*

Document No:
Revision No: ***Version 1, 14/08/2006***

WBS	Activity -Task	Project Management/Construction Group										Infrastructure Division			Regulatory Authorities			Community			RailCorp Other		
	Key position:	PM	TTM	PE	TE	SM	SMS	SD	WGL	CS	TM	AE	ME	RR	W Cov	EPA					Track	Elec	Civil
1	Communications Plan	A	I	R	I	I	I	I	I	I	I	I	I	I	I	I					I	I	I
2	Services Locations / Protection			R		I			I	I				A									
3	Design Document Control	I		R	I	I		C	I	I		A	I	I									
4	Site Document Control	I		A	I	R		C	I	I		I	I	SO									
5	Construction	I		A	S	R	S	S	S	S	S			I									
6	Staff Allocation-Construct	I		C	I	A	R		I		S												
7	Cost & Schedule Management	I		A	C	R	I	C	S	I				I									
8	Scope - Variation Mgmt	I		A	I	R		C	I	I		I	I	SO									
9	Installation Work Package	I	I	A	S	R			S	S	C	I	I	SO									
10	Develop Commissioning W.P.	I	I	A	R	S		C	S	S	C	I	I	SO									
11	Compliance & Audit	I	C	A	S	R		S	S	S	S	I	I	I									
12																							
13																							
14																							
15																							
16																							

Personnel legend

PM - Program / Project Manager
SM - Site Manager / Team Leader
CS - Construction Staff
W Cov - Work Cover
TTM - Sur Tech Team Mgr
SMS - Service Manager Signals
AE - Asset Engineer
EPA - Enviro Proction Auth
PE - Project / Commissioning Engineer
SDM - Signal Design Mgr
ME - Maintenance Engineer
TM - Team Manager
TE - Testing Engineer
WGL - Work Group Leader/s
RR - Regional Representative

Responsibilities legend

R - Responsible A - Accountable C - Consult S - Support I - Inform SO - Sign off

NOTE: Team Leaders responsibilities shall be those for the Site Manager where no Site Manager is attached to the Project

Superseded by T HR SC 07111 ST v1.0, 04/09/2019

Responsibility Assignment Matrix: RailCorp Infrastructure Division

Renewals / Major Projects File No:
Description: *Construction of New & Altered Signalling* Date:
Project: Project phase: *Evaluation*

Document No:
Revision No: ***Version 1, 14/08/06***

WBS	Activity - Task	Project Management/Construction Group										Infrastructure Division			Regulatory Authorities			Community			RailCorp Other		
	Key position:	PM	TTM	PE	TE	SM	SMS	SDM	WGL	CS	TM	AE	ME	RR	W Cov	EPA					Track	Elec	Civil
1	Scope - Variation Mgmt	I		A	C	R		C	I	I	I	I	I	SO									
2	MIMS Asset Update Information	I		C	S	S		C				A	R	C									
3	Teams II, MIMS Service Schedule	I		C	S	S		C				A	R	C									
4	Delivery of C.O.C's	I	I	R	S	C		C				I	I	A									
5	Delivery of As-Built D.S.S's	I	I	R	S	S			S	C		I	I	A									
6	Handover Package	I	I	R	S	S			S			I	I	A									
7	Practical Completion Certificate	I	I	R	S	S			C			I	I	A									
8	Final Certificate	I	I	R	S	S			C			I	I	A									
9	Compliance & Audit	I	C	A	S	R		S	S	S	S	I	I	I									
10																							
11																							
12																							
13																							
14																							
15																							
16																							

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