

Sydney Trains



Engineering System Integrity
Engineering Manual
Signalling and Control Systems

MN S 41418

Signalling Safeworking Incident Investigation

Version 3.0

Date in Force: 28 September 2023

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Document control

Version	Date	Author	Summary of change
1.0	1 August 2015	Mark Albrecht	First issue as Sydney Trains document. Previously TMG G1418
1.1	22 July 2016	Mohammed Khan	Updated position titles, added Sections 1 & 2, added form MN S 41418 FM01
2.0	24 February 2022	Mohammed Khan	Scheduled 3 year review, change of document Title and contents to align with operational practices
3.0	28 September 2023	Mohammed Khan	Update for Sydney Trains Fair Decision Framework application

Summary of changes from previous version

Summary of change	Section
Update to include application of the Sydney Trains Fair Decision Framework	All

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1 Reference documents

- *IA A 09001 Signals, Telecommunications and Control Systems*
- *MN S 40000 Signalling Safeworking Procedures*
- *MN S 41412 Process for Signalling and Control Systems Personnel - Authorisations & Licensing*
- *PR S 40004 Failures*
- *PR S 41419 Authority to Work on Sydney Trains Signalling Infrastructure – Permit to Work*
- *PR S 47110 Inspection and Testing of Signalling*
- *RG S 41415 Signalling Personnel – Licensing and Authorisation Status*
- [Sydney Trains Fair Decision Framework](#)
- [Applying the Fair Decision Framework in Workplace Investigations Guide](#)
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2 Forms

- *MN S 41412 FM13 to FM29 Certificate of Competency*
- *MN S 41418 FM01 Signalling Competency Review/Reinstatement Plan*
- *PR S 40004 FM02 Investigating Signal Engineer's Signalling Incident Technical Report*
- [Sydney Trains Fair Decision Framework Online Form](#)

3 Terms and definitions

The following defined terms are specific to this document:

CoC	Certificate of Competency
Control systems engineer	A Sydney Trains control systems engineer (ADI02)
Non-compliance	The act of not following or applying a standard, rule or procedure
Signal engineer	A Sydney Trains licensed signal engineer (ADI01)
Signalling person or signalling personnel	Licensed or authorised signalling personnel as listed in RG S 41415
Signalling safeworking incident	Any incident or failure which has resulted from signals or control systems maintenance, construction, project or support works due to non-compliance with signalling safeworking procedures, instructions, equipment manuals or inspection, testing and commissioning procedures

Please refer to the [Fair Decision Framework Key Definitions Guide](#) for further definitions and guidance on key words and phrases used in the Fair Decision Framework.

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4 Signalling safeworking incident investigation

4.1 Introduction

Licensed and authorised signalling personnel engaged in maintenance, construction, project or support works on the Sydney Trains Network that affect operational signalling apparatus and systems are required to comply with essential requirements, standard practices, instructions, signalling safeworking procedures, equipment manuals and procedures for inspection, testing and commissioning of new and altered signalling. Non-compliance may have a negative impact on the reliability and integrity of the Sydney Trains network signalling system.

Signalling incidents occurring due to non-compliance with signalling safeworking procedures, instructions, equipment manuals or inspection, testing and commissioning procedures will be here on referred to as signalling safeworking incidents.

This engineering publication provides a standard process for investigating signalling safeworking incidents in conjunction with the application of the Sydney Trains Fair Decision Framework.

4.2 Purpose

This document provides a consistent process and uniform approach for the signal engineer to investigate signalling safeworking incidents where non-compliance may have occurred.

The document also provides guidance to assist the investigating signal engineer in reviewing signalling competency in conjunction with applying the Sydney Trains Fair Decision Framework when dealing with signalling safeworking incidents.

4.3 Scope

This document is to be used in conjunction with the Sydney Trains Fair Decision Framework and *SMS-17-OP-3101 Investigate, Report on and Analyse Safety Incidents*.

4.4 Application

For the purpose of this Signalling Safeworking Incident Investigation guideline, the term 'signalling' shall encompass any work associated with both signals and control systems.

The principles and actions in this guideline apply to signals and control systems equipment. Wherever there is a reference to a signal engineer the actions as applicable will also apply to the control systems engineer for control systems equipment only. Likewise, reference to licensed signalling personnel applies to control systems technicians for control systems equipment.

Refer to IA A 09001 *Signals, Telecommunications and Control Systems* for interface boundaries for signalling system assets.

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5 Assessment of signalling safeworking incidents

5.1 Investigation process for signalling safeworking incidents

When an incident occurs on the signalling system as a result of maintenance, construction, project or support works, the signal engineer responsible for the works is to conduct the preliminary investigation in accordance with *PR S 40004 Failures*.

The investigating signal engineer should gather evidence through all available means: incident review with personnel and witnesses; certification documents; work packages and other sources such as photos, videos, logs, etc. The signal engineer investigating the incident shall apply the Fair Decision Framework to determine if there was a system failure and/or failure caused by personnel conduct. Throughout the investigation process, the investigating signal engineer is to take an unbiased approach, consider how the established systems and processes could have contributed to the actions taken and develop fair and reasonable recommendations.

The investigation may reveal non-compliance with essential requirements, standard practices, instructions, equipment manuals, signalling safeworking procedures or inspection, testing and commissioning procedures has occurred.

NOTE:

Where an incident has been assessed as requiring a technical investigation, e.g. infrastructure or equipment failure, the Fair Decision Framework does not apply. (Refer also to PR S 40004.)

Where it becomes clear that an incident has occurred due to a non-compliance, the investigating signal engineer shall notify the Principal Engineer Signalling Integrity (PESI) within 24 hours of completing the initial investigation. A copy of the initial report is to be sent to Signalling Integrity along with the notification via the team email address (signallingcontrolsystemsintegrity@transport.nsw.gov.au).

Where, in accordance with PR S 40004, a preliminary report is provided pending the submission of a comprehensive report, the preliminary report as a minimum should detail:

- background information of the incident including details of work
- evidence and preliminary findings
- responsible parties (organisation names and position titles to be used).

5.1.1 System failure

Where it is identified that a system failure contributed to the incident, the investigating signal engineer should identify the underlying cause(s) of the incident using the Fair Decision Framework Form. This can include failure of a process, procedure issue, standards issue or design issue. This is to be included in the report with recommendations to address the identified issue.

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5.1.2 Personnel behaviour

Where it has been determined through completing the Fair Decision Framework Form and assessment that unacceptable behaviour or individual at-risk behaviour or human error has contributed to the incident, then a competency review shall be conducted by the investigating signal engineer with the signalling personnel within 5 working days of the individual(s) resuming their duties. Refer to section 6.

The review shall take into account if the individual has contributed to any other signalling safeworking incidents, generally being limited to the past 3 years. However, previous signalling incidents with a severe safety impact shall be assessed for relevance to the incident being investigated. The incident history information can be obtained from the Signalling Integrity team.

The investigating signal engineer is to consider the individual's history when assessing the competency levels of the individual. The agreed recommendation, timeframes, corrective actions and training plan is to be documented utilising the *MN S 41418 FM01 Signalling Competency Review/Reinstatement Plan* form. This documents the associated competency level reduction or removal or complete withdrawal of competency on the Certificate of Competency (CoC) to enable the competency level(s) to be restored. These documents are to be issued to the individual with copies sent to the Engineering Competency Manager and Signalling Integrity within the next business day for retention on the individual's file.

Where it has been determined by the investigating signal engineer that a signalling safeworking incident has occurred due to a person's behaviour impacting compliance with essential requirements, standard practices, instructions, equipment manuals, signalling safeworking procedures or inspection, testing, and commissioning procedures, and the person is a non-Sydney Trains signalling employee, then the Engineering Competency and the Signalling Integrity teams shall apply the Sydney Trains Fair Decision Framework and conduct a competency review where the assessment determines that unacceptable behaviour or individual at-risk behaviour or human error has contributed to the incident.

5.2 Reporting and records

Upon completion of the investigation, the investigating signal engineer is to produce a comprehensive report with findings and recommendations using the *PR S 40004 FM02 Investigating Signal Engineer's Signalling Incident Technical Report* form. A copy of the report, including the *MN S 41418 FM01 Signalling Competency Review/Reinstatement Plan* and the individual's Certificate of Competency (as applicable), is to be forwarded to Signalling Integrity for assessment within 3 weeks of the incident occurring.

Signalling Integrity and Engineering Competency teams will determine if any further action is required and arrange for archiving documents, findings and recommendations to the individual's file.

RG S 41415 Signalling Personnel – Licensing and Authorisation Status will be updated to reflect changes to Certificates of Competency.

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6 Signalling competency review

6.1 Signalling incidents caused by personnel behaviour

When investigating signalling safeworking incidents, in particular the events that pertain to the actions or behaviours of people, it is paramount to consider the behavioural elements that may have contributed to the outcome.

It shall be determined if the incident was a result of an individual action or workplace system before concluding the course of action to complete the investigation.

If the initial investigation reveals that personnel behaviour may have contributed to the outcome, the investigating signal engineer shall review the incident with the person(s) involved and apply the Sydney Trains Fair Decision Framework methodology to determine the individual's behaviour.

The online Fair Decision Framework Form is to be used to record the assessment which is located on the [SEQR SharePoint site](#).

If it has been determined that unacceptable behaviour or individual at-risk behaviour or human error has contributed to the incident, then a review of signalling competency is to be carried out within 5 working days of the individual(s) resuming their duties. The next section provides guidance for the review of signalling competency for these behavioural categories.

6.2 Guidance for signalling competency review

This section provides guidance for the review of signalling competency where it has been determined in consultation with the signalling person(s) that unacceptable behaviour or individual at-risk behaviour or human error has contributed to the incident. Refer to the applicable behavioural category below for the process to review signalling competency.

6.2.1 Unacceptable behaviour

This is managed by the following process:

- A consultative competency review shall take place with the signalling person and the non-compliances identified from the signalling standards, safeworking procedures and the inspection, testing and commissioning procedures.
- The associated competency is reduced during the process.
- If the individual has a history of non-compliances, then a review of the individual's history shall take place and:
 - The associated competency is removed or the complete certificate of competency is withdrawn for signalling incidents with a severe safety impact during the process.
- Coaching/mentoring and training shall be organised as required.
- The signalling person will then, with the assistance of signalling standards, safeworking procedures and the inspection, testing and commissioning procedures, identify the non-compliances that have been made in writing, quoting the standard, procedure or rule.
- Once this has been completed, another consultative competency review shall take place and the non-compliance reviewed to ensure that the individual has understood the non-compliance and has an understanding of the standards, procedures, and rules that were not followed, and the risks associated with this type of behaviour.

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Once these steps have been completed, the associated competency that was removed or reduced, or the complete certificate of competency that was withdrawn, may be reinstated.

6.2.2 Individual at-risk behaviour

This is managed by the following process:

- A consultative competency review shall take place with the signalling person and the non-compliances identified from the signalling standards, safeworking procedures and the inspection, testing and commissioning procedures.
- The associated competency is reviewed for consideration for removal or reduction during the process.
- Coaching/mentoring and training shall be organised as required.

Once these steps have been completed, the competency that was removed or reduced may be reinstated.

6.2.3 Human error

This is managed by the following process:

- A consultative competency review shall take place with the signalling person and the non-compliances identified from the signalling standards, safeworking procedures and the inspection, testing and commissioning procedures.
- Coaching/mentoring and training shall be organised as required.
- If the individual has a history of non-compliances, then a review of the individual's history shall take place and:
 - the associated competency is reviewed for consideration for removal or reduction during the process
 - coaching/mentoring and training shall be organised as required
 - once these steps have been completed, the competency that was removed or reduced may be reinstated.

6.3 Reduction, removal or withdrawal and reinstatement of signalling competency

Where a competency review has resulted in a temporary removal or reduction of an associated competency, or the withdrawal of the complete certificate of competency, the investigating signal engineer shall notify the Engineering Competency Manager and Signalling Integrity in written form by the next business day and in accordance with section 5.2.

Upon reinstatement of the person's associated competency or complete certificate of competency, the Engineering Competency Manager and Signalling Integrity shall again be notified in writing by the investigating signal engineer. The notification shall include any supporting information, documentation, and a copy of the issued CoC.

RG S 41415 will be updated to reflect changes to the CoC.

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