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national rail
safety regulator

Implementation of the NSW Government's response

to the Final Report of the Special Commission of Inquiry into the Waterfall Rail Accident

Reporting period: April 2017 – March 2018

Report 38

safe railways for Australia

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11 September 2018

The Hon. Andrew Constance MP
Minister for Transport and Infrastructure
GPO Box 5341
SYDNEY NSW 2001

Dear Minister

I am pleased to provide the fifth annual report on the implementation of the NSW Government's response to the recommendations contained within the *Final Report of the Special Commission of Inquiry into the Waterfall Rail Accident*.

As you are aware on 10 March 2017, the Office of the National Rail Safety Regulator (ONRSR) assumed responsibility for overseeing the implementation and public reporting of the Waterfall recommendations. This role was previously undertaken by the Independent Transport Safety Regulator (ITSR) under a service level agreement to the ONRSR.

This report reflects implementation progress from 1 April 2017 to 31 March 2018. At the close of this period, there are two open recommendations; Automatic Train Protection and the Digital Train Radio System. ONRSR reports publicly on open recommendations.

Recommendations that have been closed subject to implementation of an approved program or plan are monitored as part of ONRSR's ongoing regulatory activities to ensure these are fully implemented.

Further information about the history and progress of the implementation of all recommendations can be found on the ONRSR website. This information includes:

> copies of previous ITSR reports

> a document containing all 177 recommendations

> a summary of the 6 recommendations that have been closed subject to the implementation of an approved program or plan.

Yours sincerely

Sue McCarrey
Chief Executive
National Rail Safety Regulator

safe railways **for Australia**

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Introduction

On 10 March 2017, the Office of National Rail Safety Regulator (ONRSR) assumed responsibility for overseeing the implementation of the NSW Government's response to the recommendations contained within the *Final Report of the Special Commission of Inquiry into the Waterfall Rail Accident*.

This role was previously undertaken by the Independent Transport Safety Regulator (ITSR) and includes verifying that recommendations have been effectively implemented or that an approved program or plan is in place for implementation.

Following the publication of the 33rd quarterly report in April 2013, the former Minister for Transport accepted ITSR's recommendation to change the frequency of public reporting from quarterly to annually given that the majority of recommendations were either closed or subject to a long term implementation plan. This report is the fifth annual report covering the period from 1 April 2017 to 31 March 2018 (Report number 38).

ONRSR will provide the Minister with subsequent reports on an annual basis for the same reporting period (i.e. 1 April to 31 March) for tabling in the NSW Parliament. These will detail the status of the two remaining recommendations and public reporting will continue until completion of their implementation. All reports are published on the ONRSR's website.

To enable the ONRSR to keep abreast of progress on the two open recommendations, ONRSR requires updates on a four monthly basis from Transport for NSW. These assist in the formulation of the annual reports.

Summary of progress

At the end of the reporting period for 1 April 2017 to 31 March 2018, the status of the 177 recommendations (including 127 recommendations and 50 sub-elements) was as follows:

•   2 remain open

•   6 are closed subject to the implementation of an approved program or plan

•   163 are closed and verified as fully implemented

•   1 is closed because it is no longer applicable

•   5 are rejected by the government and these were closed.

The methodology and taxonomy for the classification system used for the Waterfall recommendations are in Appendix 1 and 2 respectively.

The two open recommendations, which are outlined in further detail in Appendix 3, are:

•   *32: RailCorp should progressively implement, within a reasonable time, level 2 automatic train protection (ATP). ATP systems provide automatic enforcement (slowing/braking) of authority (speed/location) if a train is behaving in an unauthorised way. Implementation will involve significant infrastructure change and is the subject of a major project.*

Cabinet approved full funding for TfNSW's ATP projects final business case in April 2016. The scope of works for the ATP project includes ATP fitment to 100% of the electrified network (excluding stabling yards), and ATP fitment to Sydney Trains' electrified fleet (OSCAR, Tangara, Millennium, V sets (excluding those that will be replaced by new rollingstock), C sets, K sets and Waratahs).

TfNSW conducted a quantitative risk assessment (QRA) of Sydney Trains' fleet to be fitted with ATP equipment in December 2016. The QRA supported the removal of the older S sets from the scope of the ATP project due to their planned fleet retirement and subsequent replacement with new ATP fitted rollingstock.

In February 2017, ONRSR accepted TfNSW's safety arguments that the costs associated with fitting the S sets with ATP equipment prior to their scheduled retirement would be grossly disproportionate to the safety benefits derived. Therefore, ONRSR considers that TfNSW is managing the safety risk so far as is reasonably practicable with the removal of the older S sets from the project scope.

Fitment of ATP equipment to the OSCAR train fleet is complete, subject to a configuration upgrade to be concluded in September 2019. Dynamic testing of the Tangara prototype (fitted with ATP) on the network was successfully completed in July 2016 and the approvals process commenced with installation part of the Tangara Technical Upgrade (TTU) project. The Waratah ATP system design works have been completed and prototype installation commenced in March 2018. The C set and K set fleets have completed system and installation design. The M Set design and prototype is complete and the V set fleet is currently in the design phase.

ATP trackside equipment will operate in conjunction with existing signalling and infrastructure. This rollout will incorporate ETCS Level 1 limited supervision in the majority of locations with additional protection at high risk locations. Network surveys have been completed and current progress includes-
- System integration testing
- Detailed design
- Installation and testing

- *38: There must be compatibility of communications systems throughout the rail network. It is essential that all train drivers, train controllers, signallers, train guards and supervisors of trackside work gangs in NSW be able to communicate using the same technology.*

The target implementation date of 31 December 2016 for completion of the DTRS project which includes completion of the DTRS fixed network and fit out of the train cabs (on all Sydney Trains and NSW Trains) was achieved as planned.

In April 2016, TfNSW and Sydney Trains provided the required safety assurance documentation to the ONRSR to demonstrate that the previous deficiencies associated with the audio quality and performance of the DTRS had been rectified; and that the DTRS is safe to operate. Following ONRSR's approval, on 21 April 2016, Sydney Trains introduced the first dual fitted DTRS / MetroNet equipped Tangara train into passenger service between Bondi Junction, Waterfall and Cronulla (i.e. initial operating sector). Further dual fitted Tangara trains were progressively introduced during May 2016.

Following the provision of key safety assurance documentation and supporting evidence to ONRSR, the roll-out of DTRS single fit operations (DTRS radio only) across Sydney Trains' entire electrified network commenced in September 2016. The remaining electric passenger fleet (i.e. OSCAR, V, C, K, S Waratah and Millennium sets) was completed on 22 December 2016 and has been operating successfully since the commencement of the roll-out in September 2016.

During the roll-out, each time a DTRS radio was fitted to a set type for the first time, it was trialled for a period in operation, its performance recorded and this then formed the basis of an Addendum to the Safety Assurance Report for each set type. ONRSR assessed the 'First of Type' Safety Assurance Report Addendum for each fleet type prior to Sydney Trains commencing DTRS single fit operations on its electrified network.

ONRSR received TfNSW's submission for this recommendation to be closed given that the delivery of the DTRS has now been implemented. ONRSR commenced its verification activities to ensure that the intent of the Special Commission of Inquiry's recommendation had been met. This includes seamless interoperability with the existing GSM-R radios (ICE Radios) installed in freight, interstate passenger and regional trains that also travel on the Australian Rail Track Corporation (ARTC) network. In the past this interoperability (in line with recommendation 46 of the SCOI) was achieved via the inter-operation of the train control centres.

It is expected that this recommendation will be closed out in early 2019.

Progress on recommendations

Automatic Train Protection (ATP) Background

In March 2016, ITSR accepted TfNSW's proposal for the Advanced Train Control Migration System (AMS) to be considered as an *"acceptable alternative response"* to the Special Commission of Inquiry's recommendation for ATP. During early 2017, TfNSW advised ONRSR that the AMS project had been renamed the ATP project. This change has not impacted the scope and key milestones for the project.

ATP involves fitting all suburban trains with equipment that supports European Train Control Systems (ETCS) Level 2 technology, but reducing the infrastructure works required (e.g. signalling interlocking modifications). The result is an ATP system that prevents trains exceeding their maximum allowable speed; prevents trains speeding at high risk locations, and provides a modern train stop function.

The ATP strategy provides an accelerated safety benefit by enabling 100% of the Sydney electrified network to be fitted with ATP equipment. Coverage of the electrified fleet expanded to include ATP fitment to Millennium, Waratah, V sets, C sets and K sets, plus the OSCAR and Tangara fleets, and an ETCS Level 2 Pilot Trial between Arncliffe and Hurstville (successfully completed in Q4, 2015).

ITSR's acceptance of TfNSW's proposed alternate response was based on a quantitative risk assessment report; the AMS strategy being completed by December 2019 and the inclusion of an "Early Deployment Scheme" which will deliver in the Berowra to Hamilton area, controlled trialling of ATP protection for passenger trains in November 2018. This will be in preparation for the scheduled milestone of "First Revenue Service" in March 2019. The implementation of an ETCS Level 2 system remains in TfNSW's future strategies for the electrified rail network.

Status

In April 2016, Cabinet approved full funding for TfNSW's ATP projects final business case. The scope of the works for the ATP project comprises:

- ATP fitment to 100% of the electrified network (excluding stabling yards).

- ATP fitment to Sydney Trains' electrified fleet: OSCAR, Tangara, Millennium, V sets (excluding some that will be replaced by new rollingstock), C sets, K sets and Waratahs.

- Extend ATP to provide the cumulative equivalent level of safety as the original ATP strategy through the addition of controls to mitigate for those locations where the risk is high:

  - Turnouts,

  - Deficient overlaps,

  - Level crossings with interlocked signals, and
  - Catchpoints protecting signals.

- Provide ETCS Level 2 compliant onboard equipment which supports the interface between the Digital Train Radio System and a future ETCS Level 2 system.

In December 2017, the ATP project initiated a schedule review to account for a number of delaying factors. Some rework was required to address concept design issues, and competing priorities for crew allocation to projects impacted testing completion date.

The resulting schedule maintains the first revenue service in March 2019

With the exception of the Tangara rolling stock, completion of the ATP project encompassing all trackside infrastructure, business integration and implementation on the other fleets is forecast for December 2020. At present TfNSW anticipates completion of the Tangara fleet in May 2021. The comprehensive implementation of the ATP capability for the Sydney electrified network remains dependent on the individual fleet upgrade programs. The table below outlines current forecast dates.

ETCS Level 2 Pilot Trial		
Key Milestones	**Scheduled Installation Completion Date**	**Forecast Installation Completion Date (As at 31 March 2018)**
Level 2 Pilot Trial	**September 2015**	**Completed**
Rollingstock ATP Fitment		
Key Milestones	**Scheduled Installation Completion Date**	**Forecast Installation Completion Date (As at 31 March 2018)**
OSCAR (H sets)	**June 2017**	Completed*
V sets	**December 2017**	July 2019
Tangara (T sets)	**June 2018**	May 2021
Millennium (M sets)	**July 2018**	August 2019
C sets	**September 2018**	June 2019
K sets	**September 2018**	May 2020
Waratah (A sets)	**December 2019**	January 2020
Trackside ATP Fitment		
Key Milestones	**Scheduled Installation Completion Date**	**Forecast Installation Completion Date (As at 31 March 2018)**
ATP Early Deployment Scheme	**November 2018**	November 2018
ATP First Revenue Service	**March 2019**	March 2019
Project Completion – 100% ATP (Areas 1 to 9)	**December 2019**	March 2020
ATP Testing		
System Integration Testing	**December 2017**	July 2018
ATP Full Deployment		
Full deployment	**December 2019**	May 2021

Rollingstock ATP fitment

Following the contract awarded to purchase new rollingstock (i.e. Sydney Growth Trains fleet) in December 2016, TfNSW conducted a quantitative risk assessment (QRA) of Sydney Trains' fleet to be fitted with ATP equipment. The QRA supported the removal of the older S sets from the scope of the ATP project as this fleet is planned to be retired from passenger service and will be replaced with new ATP fitted rollingstock.

In February 2017, ONRSR accepted TfNSW's safety arguments that the costs associated with fitting the S sets with ATP equipment prior to their scheduled retirement would be grossly disproportionate to the safety benefits derived. Therefore, ONRSR considers that TfNSW is managing the safety risk so far as is reasonably practicable with the removal of the older S sets from the project scope.

As at 31 March 2018, TfNSW achieved the following progress with the onboard ATP installation activities:

- Fitting of 100% of the 55 four-car OSCAR set with ATP equipment was completed in July 2017. These trains are being operated in 'by-pass' mode which enables the ATP equipment to be 'bypassed' and the train continue to operate to existing network rules until the trackside construction is completed. These sets will require upgrading to the latest configuration of ATP (requiring new driver screens and software upgrade).

- 10 of the 25 eight-car V sets are included in the scope of the ATP project for ATP installation. The remainder of the V set fleet will not be fitted with ATP equipment as they will be retired and replaced by the New Intercity Fleet (NIF) during the projects lifetime. A survey of the rolling stock was undertaken during the second half of 2016 to assess and confirm designs provided for existing layouts and equipment. Installation designs for this fleet are progressing and installation is expected to commence in Q1 2019.

- Dynamic testing of the Tangara prototypes on the network was successfully completed in July 2016 and the approvals process commenced. Installation of ATP equipment on the Tangara train fleet will be carried out under the Tangara Technology Upgrade program to minimise the time this rolling stock is out of service. T-sets fitment program will be reviewed once prototype is approved.

- Installation designs for Millennium sets are complete and a prototype set is now fitted with ATP awaiting dynamic testing. A contract for installation to the fleet has been awarded with installation expected to commence in the first quarter of 2019.

  - Installation designs are complete and prototype installation for the C set and K set fleets is scheduled for the second quarter of 2018 with fleet rollout planned for 2019.

  - A contract has been awarded for the design and installation of the ATP system for the A sets (Waratah fleet) and designs have been completed. Prototype installation commenced in March 2018, with fleet rollout scheduled to take place throughout 2019.

Trackside ATP Fitment

TfNSW commenced the trackside site survey and concept design works in April 2016 as planned. TfNSW in early 2017, engaged further resources to support the delivery of the projects key milestones.

The Trackside site survey and concept design was completed in March 2018.

Data design, signalling design and construction contracts, for the System Integration Testing (SIT) area from Gosford to Wyong, were awarded in Q4 2016.

The first of four Detailed Design and Construct (D & C) contracts was awarded in July 2017, and enabling works have resulted in the installation of balise site survey markers. The second contract was awarded in March 2018 and the remaining two D & C contracts are scheduled to be awarded by August 2018.

The first of five Data Design contracts was awarded in August 2017, with the remainder to be awarded by September 2018.

In order to further mitigate the risks associated to the first deployment area, a smaller area (Cockle Creek to Wickham Interchange) has been defined by TfNSW for first revenue service. This is to allow a greater focus on the operational integration activities. It will then be broadened to the initially defined Berowra to Hamilton section a few months later.

Technical Development

During the reporting period, the project has delivered the following key activities:

- Delivery of final on-board software application
- Release of Asset Standards Authority signalling control systems standards to support Authorised Engineering Organisations (AEOs) in designing ATP for the network
- Completed Tangara type-approval testing
- Review of the concept design for all areas of deployment
- Release of trackside tools enabling ATP data production by AEOs and Sydney Trains system design reviews of Waratah and Sydney Growth Trains ATP fitment
- Completion of Generic System Functional tests (GSFT)
- Risk assessment workshops and report for high risk turnouts for areas of development 1 to 8
- Driver training simulator track database design review
- Successful submission of Configuration Control Board Gate 3 & 4 for System integration Test (SIT) approval
- Completion of lab testing environment activities for SIT
- Approval for removal of Carlingford Line (as Parramatta Light Rail received approval) and Sydenham – Bankstown Line from ATP scope (as Metro Line works would begin)

Operational Integration

The packages of work including plans for Operational Readiness, Maintenance Strategy, and Training curriculum were all endorsed by Sydney Trains and NSW TrainLink by September 2017.

Since the Simulator contract award in Q1 2017, the rollout of simulators was completed in December 2017. This essential equipment is now being utilised in readiness for the driver training program which is scheduled with operating agencies in the coming months.

As of March 2017, operational integration has completed 36% of program activities, while 8% of activities are currently in progress and the remaining 56% of program activities are scheduled to commence from July 2018.

Full deployment

With the exception of the Tangara fleet, the forecast completion date for the delivery of TfNSW's ATP project is December 2020 and full deployment is expected in May 2021 with the anticipated completion of the Tangara fleet upgrade.

Recommendation 38

Digital Train Radio System (DTRS) Background

This recommendation requires implementation of TfNSW's new digital train radio system (DTRS) and the development of a national communications standard by the Rail Industry Safety and Standards Board (RISSB).

The DTRS currently being designed will enhance communication between trains and network control in an emergency as well as enable communication between other staff for rail operations on the Sydney Trains' network.

It should be noted that all rail safety workers are currently able to communicate with each other but not using the same technology.

The Australasian Railway Association, in consultation with operators and the then state based rail safety regulators, developed a national approach on communications systems. This was to ensure that agreed functionality and compatibility requirements were included in the national railway communications standard developed by RISSB. In December 2010, RISSB published the Railway Communications Standard – AS7660 for implementation.

Status

The target implementation date of 31 December 2016 for completion of the DTRS project which includes completion of the DTRS fixed network and fit out of the train cabs (on all Sydney Trains and NSW Trains) was achieved as planned.

In April 2016, TfNSW and Sydney Trains provided the required safety assurance documentation to the ONRSR to demonstrate that the previous deficiencies associated with the audio quality and performance of the DTRS had been rectified; and that the DTRS is safe to operate. Following ONRSR's approval, on 21 April 2016, Sydney Trains introduced the first dual fitted DTRS / MetroNet equipped Tangara train into passenger service between Bondi Junction, Waterfall and Cronulla (i.e. initial operating sector).

During May 2016, Sydney Trains progressively introduced further dual fitted Tangara trains into passenger service in the initial operating sector.

Following the provision of key safety assurance documentation and supporting evidence to ONRSR, the roll-out of DTRS single fit operations (DTRS radio only) across Sydney Trains' entire electrified network, and the remaining electric passenger fleet (i.e. OSCAR, V, C, K, S, Waratah and Millennium sets), commenced in September 2016 and was completed on 22 December 2016.

Fixed Network Construction
The completion of the DTRS fixed network was achieved in May 2016.

The DTRS fixed network comprises:
*   A dual Core Network configured for specific Sydney Trains' operations;
*   266 trackside and tunnel base transponder systems that facilitate transmissions; and
*   A dispatch system for Network Control Officers (Signallers and Train Controllers).

The DTRS fixed network supports:
*   The interconnection of on-train equipment including train radios for drivers and guards; and
*   Capability for use of hand portable radios for supervisors of trackside work gangs and other users.

Installation of cab radios
Following the provision of key safety assurance documentation and supporting evidence to ONRSR, the roll-out of DTRS single fit operations (DTRS radio only) across Sydney Trains' entire electrified network, and the remaining electric passenger fleet (i.e. OSCAR, V, C, K, S, Waratah and Millennium sets), commenced in September 2016.

During the roll-out, each time a DTRS radio was fitted to a set type for the first time, it was trialled for a period in operation, its performance recorded and this then formed the basis of an Addendum to the Safety Assurance Report for each set type. ONRSR assessed the 'First of Type' Safety Assurance Report Addendum for each fleet type prior to Sydney Trains commencing DTRS single fit operations on its electrified network.

The DTRS has been operating successfully since the commencement of the roll-out in September 2016 and the final set to be fitted with DTRS was introduced into passenger service in December 2016.

Design

The design process covering fleet and infrastructure has been completed. 'As Built' drawings have been submitted for all of the 266 sites to the Sydney Trains' Plan Room.

Installation designs were completed for the remaining train fleets; Waratah and Millennium and fit-out of these fleets commenced in October 2016.

'First of Type' train tests were completed for all train fleets and final 'As Built' drawings were submitted to the Plan Room in early 2017.

Operational Readiness

Following commencement of the transition to DTRS, TfNSW managed a user acceptance program that monitored key performance indicators of the DTRS. The user acceptance program extended to asset management during operation and maintenance, including:
- Equipment parts performance;
- Proactive application of maintenance schedules;
- Environmental preparedness; and
- User feedback.

The user acceptance program also included an assessment of the effectiveness of training that was provided to train drivers, guards, signallers and maintenance staff.

TfNSW supervised the development of preventative and reactive maintenance procedures by its contractor, including the development of relevant operation and maintenance manuals for use by Sydney Trains.

These maintenance procedures integrate with an agreement obligating TfNSW's contractor to support and maintain the DTRS throughout its useful life.

Currently freight trains operate on the NTCS (Telstra 3G) system when in the electrified network. A NTCS REC when initiated by a freight train will call Sydney Freight Liaison who relays the emergency to the relevant Sydney Trains signaler and ARTC Network Control Centre in Junee.

Interfacing with DTRS will enhance this level of interoperability by allowing diesel trains to contact signallers directly and participate in group and emergency calls when in the Sydney Trains network and also the shared corridors. A DTRS REC includes the relevant Sydney Trains signaller and all other DTRS equipped trains in the cell coverage area. When DTRS is integrated into ICE radio the activation of a REC on the DTRS (either from an electric or ICE equipped train) will include the signaller for the area and all electric and diesel trains within the cell coverage area. The setup time for REC is less than 3 seconds.

Over the period, delays were encountered in development of the ICE radio DTRS software functionality to integrate with the fixed DTRS network. A process of debugging and testing of the software during 2017 resulted in a product which is fully deployed on the diesel passenger fleet. Interoperability of ICE Radios on the NSW Trains diesel fleet was achieved in August 2017.

During the factory acceptance testing conducted in August to October 2017, a problem was identified in the course of the routine regression testing which related to the issuing of multiple electronic authorities. The software was rectified by the manufacturer and was retested and confirmed as completed in December 2017.

The software upgrade to allow full interoperability with Freight and Heritage fleet was successfully tested in March 2018 with users and union representatives. It is now in revenue service on the ARTC, Sydney Trains and Country Regional networks.

Extensive testing of the final software has been undertaken with the ARTC and the Country Regional rail networks and the software to support DTRS operation on ICE radios is ready for deployment across the diesel train fleet.

Transition arrangements:

In June 2018, an update to the Sydney Trains' Network Access agreement will be released requiring DTRS functionality as a condition of access to the Sydney Trains rail network. This will require freight and heritage operators to achieve compliance during a subsequent transition period until 1 January 2019. After that date, all trains entering the Sydney Trains rail network will require DTRS network access, and this is the targeted completion date by TfNSW for this Recommendation.

Training material is available to operators in the form of a training manual and an interactive software tool which are downloadable via the NTCS business as usual portal and this is being communicated to affected operators during the access agreement consultation.

To implement DTRS on ICE radio, only a software upgrade is required and as such a rapid deployment can be expected. The process for freight and heritage operators to obtain the software upgrade is consistent with the business as usual practices for maintenance upgrades. Uptake of the new software will be monitored by TfNSW via remote diagnostic tools where the ICE radio software can be interrogated and the version reported. Initially this will be undertaken monthly, and then weekly between September and the mandatory date of 1 January 2019.

The lack of the software upgrade may impact the ARTC and the Country Regional networks after 1 January 2019. These rail networks have been engaged by TfNSW to support the rollout process and monitor trains departing their network destined for the Sydney Trains network in the weeks prior to 1 January. From 1 January onwards, TfNSW will be requesting these adjacent networks to not despatch a train from their networks destined for the Sydney Trains network if the train is not fitted with the DTRS enabled software version.

Monitoring and updating on the progress against the transition arrangements will be undertaken monthly by TfNSW for the duration of the transition period to 1 January 2019.

Methodology

This section outlines the processes ONRSR has instituted to develop and monitor the implementation plan for the NSW Government's response to the *Final Report of the Special Commission of Inquiry into the Waterfall Rail Accident* (SCOI final report).

Implementation plan

ONRSR has reviewed the SCOI final report and determined action required to implement each recommendation in line with the government's response and which company or agency has responsibility for that action. These expectations then formed the basis for determining whether the response put forward by a company or agency is appropriate to meet the recommendation and/or satisfy the safety objective of the recommendation. Responsible agencies have assigned indicative timeframes for each safety action and ONRSR will review the appropriateness of each. Timeframes agreed with responsible companies or agencies have, to the greatest extent possible, been made realistic and achievable. Details of the implementation plan for outstanding issues and progress against it may be found in Appendix 3.

Classification system for recommendations

In order to provide a graduated view of progress against the implementation plan, ONRSR has maintained the classification system developed by ITSR to indicate the relative status of each recommendation. The taxonomy for the classification system has been drawn from accepted international practice and is listed in Appendix 2.

The process for assigning status to a recommendation is as follows:

Step 1   The government's response to the SCOI final report determined which recommendations were accepted. ITSR (now ONRSR) has articulated its expectations in regards to all remaining recommendations.

Step 2   All accepted recommendations are assigned the status *open – await response*. These recommendations are then referred by ONRSR to the relevant company or agency to prepare a response to the recommendation(s) and submit it to ONRSR.

Step 3   ONRSR reviews the response and determines whether it is acceptable or not. If it is acceptable then the status of the recommendation is assigned either *open – acceptable response* or *open – acceptable alternative response*. A recommendation would be assigned an *open – acceptable alternative response* status when the intent of a recommendation will be met but will be implemented by alternative means. If the response is not acceptable then the recommendation is assigned the status of *open – response rejected by ONRSR*. In this case, the company or agency is informed of the decision and requested to re-submit a revised response taking into account ONRSR's concerns. This process continues until the response to the recommendation is accepted by ONRSR.

Step 4   ONRSR monitors progress of all accepted responses to ensure a company or agency is meeting agreed implementation timeframes. This is done through both desktop reviews of reports received by agencies and in-field inspections to verify progress claimed.

Step 5   Once a company or agency has completed a required action it will submit to ONRSR a claim for closure of the recommendation. This application indicates that the company or agency believes it has completed the required action. The status of the recommendation is changed to *open – company claims closure*.

Step 6   In most cases, ONRSR will verify closure through an in-field compliance inspection or audit. Once verification has taken place the recommendation status is changed to indicate it is *closed – action verified*.

Notes:

1   Some recommendations may be verified by examination of documentation submitted by the agency that claims closure rather than through an in-field inspection. In these cases, recommendation status is indicated by *closed – action not verified*.

2   Some recommendations may be verified *closed – subject to the implementation of an approved program or plan*. In these cases, ONRSR agrees to closure if the chief executive of the organisation has approved the program or plan and ONRSR is of the view that it meets the government's response to the recommendation. This categorisation is used generally when implementation may take place over a prolonged period of time and/or capital expenditure is involved.

This process will continue until all recommendations are closed.

Appendix 2
Taxonomy for classification system

Status		Definition
Open	Await response	This status is automatically assigned to an accepted recommendation. Affected parties will be asked to submit their response for implementing the recommendation to ONRSR.
Open	Response received	ONRSR has received a response from an affected party and this response is under review by ONRSR. It has not yet been accepted by ONRSR.
Open	Acceptable response	ONRSR agrees that the planned action, when completed, meets the recommendation.
Open	Acceptable alternative response	ONRSR agrees that alternative action, when completed, satisfies the objective of the recommendation.
Open	Response rejected by ONRSR	ONRSR does not agree that the planned or alternate action meets the recommendation. The company or agency is advised of the rejection and requested to provide a revised response.
Open	Company claims closure	The company or agency claims that the planned or alternate action has been completed. The action has not yet been verified by ONRSR. ONRSR has not yet agreed that the item is closed.
Closed	Recommendation rejected	ONRSR has determined through further analysis and review that the recommendation is not appropriate (i.e. will not achieve the desired safety outcomes) and has rejected the recommendation. It is therefore closed.
Closed	No longer applicable	The recommendation has been overtaken by events and action is no longer required. For example, a new technology has eliminated the reason for the recommendation, it has been superseded by other recommendations issued, or the operator affected has gone out of business.
Closed	Action verified	Completion of the planned or alternate action has been verified by ONRSR through a compliance inspection or audit.
Closed	Action not verified	ONRSR accepts that the planned or alternate action has been completed following a review of documentation submitted. Field verification is not necessary.
Closed	Subject to the implementation of the approved program or plan	A long term implementation plan has been approved. ONRSR will monitor reported progress against the plan to ensure compliance with delivery schedule.

Implementation plan: outstanding recommendations

The following section provides information only for recommendations that were closed in the last reporting period or remain to be implemented. Those recommendations closed in previous reporting periods do not appear. A complete list of all recommendations is available on ONRSR's website.

The government response and ITSR's expectation are the formal responses to the SCOI final report announced in February 2005. Following ITSR's transition to ONRSR in March 2017, the expectations of the rail safety regulator remain unchanged.

Recommendation 32

RailCorp should progressively implement, within a reasonable time, level 2 automatic train protection (ATP).

Agency	Status	ITSR assessment	Target date
ITSR	Open	Acceptable response	31/5/2021[+]

Government response (February 2005)

Requires further detailed review. The government supports the implementation of additional train protection systems. Implementation of level 2 ATP as detailed in the recommendation would involve the replacement of all line-side signalling on the RailCorp network with on-train control systems. In addition every intra- and inter-state train accessing the network would also need to be equipped with level 2 ATP technology.

RailCorp has already retained consultants to undertake evaluation and risk assessment regarding implementation of additional automatic train protection systems on the RailCorp network. RailCorp will work with the Australian Rail Track Corporation (ARTC) – which operates the interstate network – to develop, in conjunction with ITSR and interstate rail regulators, a national standard for an automatic train protection system.

RailCorp will also undertake a comprehensive review which will include a risk assessment, technical feasibility and cost benefit analysis of introducing level 1 ATP as well as level 2 ATP, as recommended by the Commission. Consistent with recommendation 34, any future options will need to be assessed by independent verification of acceptable risk.

ONRSR (previously ITSR) expectation

A detailed technical review of available options.

This project was originally led by RailCorp until June 2012. On 1 July 2012, responsibility for the delivery of the ATP program was transferred to Transport for NSW (TfNSW). The major outcome of the project is to be implementation of ATP including a trial of level 2 ETCS.

In March 2016, ITSR accepted TfNSW's proposal for the Advanced Train Control Migration System to be considered as an *"acceptable alternative response"* to the Special Commission of Inquiry's recommendation 32 for ATP. Accordingly, ITSR deemed that the status of recommendation 32 be classified as *open – acceptable alternative response*. ONRSR is maintaining this classification.

In 2017, TfNSW renamed the project to ATP which has not impacted on the delivery of the project.

Recommendation 38

There must be compatibility of communications systems throughout the rail network. It is essential that all train drivers, train controllers, signallers, train guards and supervisors of trackside work gangs in New South Wales be able to communicate using the same technology.

Agency	Status	ITSR assessment	Target date
ITSR	Open	Acceptable response	31/12/2016*

Government response (February 2005)

Supported and being implemented. The National Standing Committee on Transport endorsed the Australasian Railway Association (ARA) working with operators and regulators, including RailCorp and ITSR, to develop a national approach on communications systems, which has agreed minimum functionality requirements for train radio systems.

RailCorp plans to implement a digital train radio system. An objective of this system is for it to be interoperable with existing analogue radio systems. Because of the technical complexities associated with achieving inter-operability, this has been a longer-term initiative and the first stage of its implementation will commence in 2005.

ONRSR (previously ITSR) expectation

ONRSR to ensure functionality and compatibility requirements are included in the national standard developed by the ARA.

This project was originally led by RailCorp until June 2012. On 1 July 2012, responsibility for the delivery of the DTRS project was transferred to Transport for NSW (TfNSW).

ONRSR to ensure TfNSW / ARTC radio functionality for next generation technology meets compatibility requirements.

All rail safety workers are currently able to communicate with each other but not using the same technology.

Accordingly, ONRSR has deemed that the status of recommendation 38 continue to be classified as *open – acceptable response.*

It is anticipated that this recommendation will be closed during the 2018 / 19 reporting period.

* This is an indicative timeframe which has been agreed to by the agency responsible and ONRSR.
+ This indicates a slippage with a revised date.
 # This indicates closure – subject to the implementation of an approved program or plan.