

Special rail safety assessment report

Rail licence holder	:	New Zealand Railways Corporation (KiwiRail Network (KRN))
Rail licence number	:	ORA-05-03-01
Address	:	P O Box 593 Wellington 6140
Assessment type	:	Special rail safety assessment
Assessment scope	:	<p>A special safety assessment of KRN's processes around the management of the track formation and surrounding geological infrastructure.</p> <p>This is to include:</p> <ul style="list-style-type: none">• The engineering related management of the infrastructure.• The operational aspects of managing that infrastructure in times of adverse weather and other contributing events.• The level of compliance with KRN's safety system and whether enhancements can be made to the safety system to further improve KRN's compliance with the Railways Act 2005. <p>The assessment is not extended to covering the operational aspects carried out by KiwiRail Ltd (KRL) in running its freight and passenger train services as this assessment is concentrating on the initial causal effect associated with the three landslide occurrences identified.</p>
Assessment standard	:	Railways Act 2005
Assessment date(s)	:	22-25 November 2010
Safety assessor(s)	:	Tracy Evans-Tracy John Freeman Merv Harvey Graeme Hudson
Report prepared by (assessor/s)	:	Tracy Evans-Tracy
Signature	:	
Report issued by (NZTA)	:	John Freeman
Signature	:	
Findings response due	:	25 February 2011

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Section 1

Assessment against Railways Act 2005 requirements

1.1 Document history

Issue	Author(s)	Issue date
1. Initial report	Tracy Evans-Tracy	1/12/2010
2. Consultation by the assessor	KiwiRail Network	6/12/2010
3. Final report	[NZTA]	
4. Response to report	KiwiRail Network	
5. Assessor review	[Assessor]	
6. NZTA close-out	[NZTA]	

1.2 Executive summary

This report relates to a special safety assessment undertaken by the NZ Transport Agency (NZTA) to verify compliance with the requirements of the Railways Act 2005 (Act), the rail licence holder's safety case, and its rail safety management system.

The assessment was carried out by a team led by Tracy Evans-Tracy, an assessor appointed by the NZTA. Standard rail safety assessment techniques were applied, in conjunction with the NZTA *Rail Safety Licensing and Safety Assessment Guidelines*, to ensure the special safety assessment complied with the criteria set down by the NZTA.

Through its monitoring of KiwiRail Ltd (KRL) and the part of New Zealand Railways Corporation trading as KiwiRail Network (KRN), as licence holders, the NZTA was made aware of a number of infrastructure related safety occurrences associated with the National Rail System (NRS) that occurred during September and October 2010. Of particular concern are landslips and subsidence, some of which resulted in trains colliding with the slips, putting people at risk and causing significant damage to property.

As a result NZTA determined it necessary to conduct a special assessment of KRN's processes around the management of the track formation and surrounding geological infrastructure.

The assessment scope included:

- The engineering related management of the infrastructure.
- The operational aspects of managing that infrastructure in times of adverse weather and other contributing events.
- The level of compliance with KiwiRail's safety system and whether enhancements can be made to the safety system to further improve KRN's compliance with the ACT.

The special assessment was not extended to covering the operational aspects carried out by KRL in running its freight and passenger train services as this assessment is concentrating on the initial causal effect associated with these occurrences.

The assessment found that KRN have actively undertaken a risk assessment process for slope stability for the Wellington Region and this project is planned to be rolled out to other relevant parts of the network over the next two to five years. In addition, as part of planned project works, a program of works to reduce the risk of land slides is being undertaken December 2010 - February 2011 in the Wellington Metro Area.

With respect to managing the infrastructure in times of adverse weather, KRN reviewed and improved the safe guarding processes around severe weather warnings and their subsequent risk assessment following the Maymorn incident. However, the assessment found compliance issues with the relevant KRN processes and further improvement opportunities exist. Nevertheless these issues had no direct impact on the landslip incidents occurring.

Other compliance issues concern: authority and responsibilities, document control, incident investigation and auditing.

Please refer to section 5 at the end of this report for a detailed guide to the report structure.

Due to the close time frame of this special assessment in conjunction with KRN's next ordinary assessment in March 2011, the conditions and recommendations of this assessment can be reviewed at the next ordinary assessment.

1.3 General Observations

The auditing methodology used during this special assessment was a trace audit starting after the Maymorn Incident where a Passenger Train, collided with a slip and derailed. The assessment focused on KRN's changed processes as a result of this incident. In particular:

- the slope stability risk assessment process and 'weather proofing' of the network infrastructure, and
- the process for managing and conducting a risk assessment as a result of receiving severe weather warnings from the MetService

The trace audit followed the Rail Safety processes in place up to and including the following recent occurrences:

- Early in the morning of 25 September 2010 a freight train collided with a substantial slip in the Manawatu Gorge with the locomotive riding up the slip and derailed. The nature of this event could have resulted in a worse outcome for the loco crew if the slip had been falling as the train hit it. Early that same morning a freight train derailed North of Taumarunui after colliding with a slip.
- On the afternoon of 30 September 2010 a North bound Tranz Metro service collided with a slip North of Plimmerton in the Wellington Metropolitan area. The train derailed off the tracks to the right putting it foul of the adjacent mainline which then resulted in a South bound service colliding with the derailed train. A number of other slips and subsidence occurred in the Wellington metro area around that time when wet weather prevailed.
- Significant slips occurred South of Kaikoura after the Christchurch earthquake and while significant in a property damage sense they fortunately did not have trains collide with them and therefore did not put people associated with rail operations at immediate risk.

KRN have made progress in conducting slope stability risk assessments for the Wellington Region. Works to reduce the slope stability risk on some high risk sites is already being undertaken and further funding is being sought from the rail provider funder. As mentioned previously the risk assessment project is planned to be rolled out to risk areas of the core network over the next two to five years and it is recommended that the rollout be based on known risk sites rather than a pure line by line approach. In addition this assessment recommends improvements to the risk assessment methodology process for slope stability.

The severe weather warning (SWW) process as detailed in the ONTRACK Semi Permanent Bulletin No. 624 dated 1 September 2009, Rule 6b - Reporting Unusual Weather Conditions, was reviewed for the North of Plimmerton incident which occurred 30 September 2010. The assessment found that Rule 6b was not implemented in its entirety and the recording process to be conducted by the Network Control Manager on the Severe Weather Warning Aide Memoire form dated 01 November 2010 is insufficient to fulfil the process requirements. KRN has advised the assessor that it will reconsider both the Aide Memoire and if appropriate the Bulletin. In addition, awareness training for all parties concerned is required on: the risk assessment process to be undertaken upon receipt of severe weather warnings from the MetService, the information to be obtained during the risk assessment, and the understanding of that information. As the Plimmerton incident was an outcome of a landslip the above findings would not have had a direct impact on the incident occurring. Severe weather warnings were not a factor in the other incidents discussed above, though they involved land slips.

This special assessment noted that for the North of Plimmerton accident which occurred 30 September 2010 as described above a Slope Rating Calculation sheet for this site (NIMT 26.739km to 27.063km) was completed on 17 November 2009. The Qualitative Level of Risk assessed was Medium. This site was rated no 23 in the Top 50 sites in the Wellington Metro Area as detailed in Figure 3 of the Preliminary Draft Slope Risk Ranking Report dated September 2010.

This accident reinforces the need for an approach (such as that adopted by KRN) to slope stability risk reduction incorporating a combination of strategies:

- assessing the levels of risk,
- undertaking risk reduction works,
- installing slope monitoring devices,
- effective safe guarding operations and processes, and
- effective incident/emergency management plans and training.

Other processes that became areas of concern during the assessment were:

- Clarity of information and document control issues with respect to risk management and the SWW process.
- The effective delegation and implementation of the Risk and Safety Manager key responsibilities.
- Timely internal auditing of changed processes to ensure their effectiveness in risk reduction.
- The undertaking of incident investigation reporting.

1.4 Compliance with the approved safety case and safety system

With the exception of the conditions noted in this report, KRN was found to be in compliance with its approved Safety Case with respect to the scope of this special assessment.

In total there are 8 Conditions (non-compliances) and 14 recommendations noted in this report which KRN needs to address. These are noted in detail later in this report, but are summarised in the table below:

Status of conditions and recommendations from current assessment		
Reference/subject	Status	Rating
Structural Engineering and Slope Stability Risk Management		
10/11 R2 Slope Stability Risk Ranking	Open	
10/11 R2 Structures Project Plan for Slope Stability Initiatives	Open	
10/11 R3 Slope Stability Risk Ranking and Slope Monitor Priorities	Open	
10/11 C1 Engineering Risk Register - update with latest treatment option initiatives	Open	L
Track Engineering		
10/11R4 Track Geometry and Video Car	Open	
Rail Operating Standards and Codes		
10/11 C2 Rule 6b Reporting Unusual Weather Conditions - Training	Open	M
10/11 R5 Rule 6b Reporting Unusual Weather Conditions - Training	Open	
10/11 R6 Training and Documented Guide of Major Landslide Features	Open	
10/11 C3 Risk and Safety Manager Responsibilities	Open	M
10/11 C4 Rule 6b and Risk Assessment Process Document Control		M
10/11 R7 Rule 6b Reporting Unusual Weather Conditions - Risk Assessment	Open	
10/11 R8 NRSS 4 and ONTRACK RSSM Update Timeliness	Open	
10/11 R9 Zero Harm Pledge	Open	
Network Control		
10/11 C5 Rule 6b Reporting Unusual Weather Conditions Implementation	Open	H
10/11 C6 Severe Weather Warning Aide Memoire Form	Open	M
10/11 R10 Severe Weather Warning Aide Memoire Form Update	Open	
Internal Audit		
10/11 C7 Audit Changed Processes	Open	M
Occurrence Management		
10/11 C8 Incident Investigations	Open	M
10/11 R11 ATRS report - 30 Sep 2010, North of Plimmerton Incident	Open	
10/11 R12 Emergency Rail Protection Plan Wellington	Open	
Crisis Management		
10/11 R13 Specific Incident Based Emergency Plans	Open	
10/11 R14 Local Emergency Plans	Open	

1.5 Assessment Programme

TET = Tracy Evans-Tracy, JF = John Freeman, MH = Merv Harvey, GH = Graeme Hudson

<u>Assessor</u>	<u>Topic</u>	<u>People Interviewed</u>
22/11/2010 Monday		
TET, JF, MH, GH	<p>Opening Meeting; Senior Executive Management, GM Network Overview of: Recent significant landslip (& other geological) occurrences. Effect on operations of occurrences. Processes for managing adverse weather conditions. Safeguarding operations - link between NCC, KRN field staff and rail operations. Assessment of stability of geological infrastructure. Risk assessment. Infrastructure improvement programmes, weatherproofing of network. Findings of, and response to, TAIC investigations 06-108 Johnsonville Line & 09-103 Maymorn; actions taken so far. Findings of, and response to, internal investigations. Authority and Responsibilities Crisis Management</p>	<p>Rick Van Barneveld Phil McQueen Karen Watson</p>
23/11/2010 Tuesday		
TET, MH	<p>Engineering overview of: Recent significant landslip (& other geological) occurrences. Assessment of stability of geological infrastructure. Risk assessment. Infrastructure improvement programmes, weatherproofing of network. Safeguarding operations - link between NCC, KRN field staff and rail operations.</p> <p>Findings of, and response to, internal investigations. Findings of, and response to, TAIC investigations 06-108 Johnsonville Line & 09-103 Maymorn Any requirement for rules, standards or code updates.</p>	<p>Peter Steel</p>
TET, JF,	<p>Track Engineering detail of: Recent significant landslip (& other geological) occurrences. Safeguarding operations - link between NCC, KRN field staff and rail operations. Risk assessment. Lineside clearances, vegetation, culverts and drains, inspections. Input to infrastructure improvement programmes, weatherproofing of network. Findings of, and response to, TAIC investigations 06-108 Johnsonville Line & 09-103 Maymorn</p>	<p>Mark Gullery</p>

	Any requirement for rules, standards or code updates.	
TET, JF,	Rail Operating Standards detail of: Recent significant landslip (& other geological) occurrences. Responsibilities and authority defined under existing rules, standards and codes. Safeguarding operations - link between NCC, KRN field staff and rail operations. Risk assessment. Findings of, and response to, internal investigations. Findings of, and response to, TAIC investigations 06-108 Johnsonville Line & 09-103 Maymorn Crisis Management Any requirement for rules, standards or code updates. Actions taken so far. Audits undertaken	Ian Cotton
24/11/2010	Wednesday	
TET, MH	Structures Engineering detail of: Recent significant landslip (& other geological) occurrences. Slope stability Risk assessment. Input to infrastructure improvement programmes, weatherproofing of network. Geotechnical survey/analysis, if any. Lineside clearances, culverts and drains, inspections. Findings of, and response to, internal investigations. Findings of, and response to, TAIC investigations 06-108 Johnsonville Line & 09-103 Maymorn	Peter Steel Richard Justice
TET, GH	Manager Network Operations detail of: Recent significant landslip (& other geological) occurrences. Effect on operations of occurrences. Processes for managing adverse weather conditions including bulletins in effect. Forecasting system review. Responsibilities defined under existing rules, standards and codes. Safeguarding operations - link between NCC, KRN field staff and rail operations. Which events were weather warnings received for? Response to the warnings - action taken and timeliness, who and how notified, acknowledgements. Risk assessment. Findings of, and response to, internal investigations. Findings of, and response to, TAIC investigations 06-108 J'ville Line & 09-103 Maymorn Any requirement for rules, standards or code updates. Actions taken so far	Carl Mills
25/11/2010	Thursday	
TET, GH	Regional Manager/Area Manager detail of:	Walter Rushbrook

	Recent significant landslip (& other geological) occurrences. Effect on operations of occurrences. Processes for managing adverse weather conditions including bulletins in effect. Responsibilities defined under existing rules, standards and codes. Safeguarding operations - link between NCC, KRN field staff and rail operations. Which events were weather warning notifications received for? Response to the warnings - action taken and timeliness, who and how notified, acknowledgements. Risk assessment. Findings of, and response to, internal investigations. Findings of, and response to, TAIC investigations 06-108 J'ville Line & 09-103 Maymorn Crisis Management Any requirement for rules, standards or code updates. Actions taken so far	Simon Hall
TET, JF, MH, GH	Assessment team review of observation for reporting	nil
30/11/2010	Tuesday	
TET	Safety and Risk Manager detail of: Responsibilities defined under existing rules, standards and codes. Recent significant landslip (& other geological) occurrences. Auditing Internal investigation management. actions taken so far	Robin Nicole
6/12/2010	Monday	
TET, JF, MH	Closing Meeting Present report and review of findings	Rick Van Barneveld Phil McQueen Peter Steel Karen Paterson Karen Watson

1.6 Documents Reviewed

The following documents were reviewed as part of the special assessment:

- ONTRACK Safety Case, Issue 1 dated 4 April 2008
- ONTRACK Rail Safety System Manual (RSSM), Issue 3 dated 4 April 2008
- National Rail System Standard (NRSS) 2 Safety Management, Issue 2 dated 11 June 2007
- NRSS 4 Risk Management, Issue 2 dated 11 June 2007
- NRSS 5 Occurrence Management, Issue 2 dated 23 May 2010
- NRSS 9 Audit, Issue 2 11 June 2007
- ONTRACK Semi Permanent Bulletin No. 624 dated 1 September 2009, Rule 6b - Special Precautions for Safe Operations, Reporting Unusual Weather Conditions
- ONTRACK Rail Operating Procedure (ROP) Section 11 Emergency Procedures, Issue 1 dated 30 June 2008

- ONTRACK Semi Permanent Bulletin No. 187 dated 20 February 2009, ROP Section 11 Emergency Procedures
- ONTRACK ROP Section 10, General Operating Instructions Issue 1 dated 25 November 2008
- Geotechnical Assessment Report, Derailment due to Landslide at Tunnel 1, WL37.23km dated August 2009
- Preliminary Draft Slope Risk Ranking Report dated September 2010
- Slope Rating Calculation sheet dated 17 November 2009 for site NIMT 26.739km to 27.063km
- Engineering Risk Register (not dated - current at time of the assessment)
- ONTRACK Asset Management Plan 2009/10, Version 3 dated 24 February 2010, Table 7.4 KRN (ONTRACK) capital expenditure
- Severe Weather Warning Aide Memoire form dated 01 November 2010
- Telecom NZ Ltd ETxt Sent Messages confirmation report for 29 September 2010 at 16.25 hours
- Speed Restriction Database (live)
- Wet Weather Inspection, Work Order R 1011449, dated 29 September 2010, 1500-1600 hours.
- Essential Feature List, NIMT line dated 26 October 2010
- MLD1 report dated 11 Oct 2010 for incident 25 Sep 2010, Manawatu Gorge
- MLD1 report dated 6 October 2010 for incident 25 Sep 2010, North of Taumarunui
- Site Information dated 8 October 2010 for incident 25 Sep 2010, North of Taumarunui
- Drivers report dated 1 October 2010 for incident 25 Sep 2010, North of Taumarunui
- Document Q371 KiwiRail Network Incident Management Plan, Issue 6 dated July 2010
- Transport Accident Investigation Commission (TAIC) Final Report Rail Inquiry 09-103, Passenger Train 1608, collision with slip and derailment, Tunnel 1, Wairarapa Line, Maymorn, 23 July 2009 (incorporating investigation 08-106, collision with slip and derailment on the Johnsonville Line, dated September 2010)

Section 2

Conditions and recommendations identified in current safety assessment

2.1 Structural Engineering and Slope Stability Risk Management

Reference: 10/11 R1 Subject title: Slope Stability Risk Ranking	
Observation	<p>The KRN Geotechnical Assessment Report, Derailment due to Landslide at Tunnel 1, WL37.23km dated August 2009 summarises that, 'there may be a significant length of track within the Wellington commuter network which is at risk from landslides initiating under high/extreme rainfall or seismic events. The risks posed to the railway network are unlikely to be significantly higher than those posed to private property and public infrastructure throughout the Wellington Region.' The report also identifies that 'with the current level of information, it is not possible to quantify the levels of risk and risk reduction works that may be required.' Thus the report proposes 'that a site ranking system is developed to identify critical slopes within the Wellington Commuter Network.</p> <p>As a direct and indirect result of the above, the following initiatives are currently being undertaken or investigated by Structures Engineering to 'weather proof' the network infrastructure with respect to slope stability:</p> <ol style="list-style-type: none">1. A slope stability risk ranking assessment for the Wellington Region currently being undertaken and is planned to be rolled out to risk areas of the core network over the next two to five years.2. Obtaining funding from The Greater Wellington Regional Council (GWRC), as the Wellington Metro Rail funder, to install slope monitors and conduct slope instability risk reduction works at sites of high slope stability risk in the Wellington Metro Area. The meeting between KRN and GWRC to discuss this was to be held 25 November 2010.3. As part of planned project works, a program of works to reduce the slope stability risk on some high risk sites is being undertaken December 2010-February 2011 in the Wellington Metro Area. As detailed in the Preliminary Draft Slope Risk Ranking Report

	<p>dated September 2010, 'these works will comprise a combination of:</p> <ul style="list-style-type: none"> • anchored rock fall netting, • anchored sprayed concrete walls where tight clearances exist adjacent to the track, • toe fences to prevent fretted material from the rock slopes near track level accumulating in cess drains, and • reconstruction and/or replacement of the existing fences at Beanpole and Little Beanpole.'
<p>Action recommended</p>	<p>With respect to the above slope stability initiatives the following is recommended:</p> <ol style="list-style-type: none"> 1. The Preliminary Draft Slope Risk Ranking Report dated September 2010 details a risk rating system based on Geotechnical Engineering practices for assessment. An additional risk assessment should be completed following the engineering risk assessment to include a risk factor for track usage levels and type i.e. metro areas, double tracks, track usage levels. 2. Section 5 of the Preliminary Draft Slope Risk Ranking Report details the 'Wider Network Implementation' plan for the systematic assessment and rating of slopes in the wider network over the next several years. This implementation plan should be reviewed to ensure the implementation strategy is based on risk. i.e. the prioritising of high risk sites, where previous slips have occurred, tunnels and metro areas. 3. The Slope Stability Risk Management Reference Sheet (Slope Hazard Proforma) included in the Preliminary Draft Slope Risk Ranking Report details the risk matrix used, the measures of likelihood and measures of consequence. A Risk Level Action Plan should be included to provide guidance as to the actions required when the Qualitative Level of Risk is determined, i.e. the actions required when an Extreme level of risk is the outcome of the risk assessment and so forth for each risk level. The action plan should include timeframes for action, responsibilities and immediate control measures as appropriate. 4. Figure 3 included in the Preliminary Draft Slope Risk Ranking Report is a graph of the Ranked Slopes - Top 50 Sites in the Wellington Metro Area. The key for the 'blue' coloured sites indicates that these sites are where either minor works are required, or the current level

	<p>of risk is acceptable. As the graph is concerning the Top 50 sites assessed and are thus the sites with the higher risk it is recommended the validity for the categorising of the blue coloured sites be reviewed.</p> <p>5. The Slope Risk Ranking process needs to be formally documented to ensure all personnel undertaking a ranking assessment undertake it in the same manner to ensure the validity and consistency of the rankings.</p> <p>6. It is recommended that NZTA receive an update on the outcomes and subsequent action following KRN's meeting with GWRC regarding funding for slope monitors and slope risk reduction works.</p>
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

Reference: 10/11 R2	
Subject title: Structures Project Plan for Slope Stability Initiatives	
Observation	Currently there is no formal KRN Structures global project plan, or like document, to govern the above mentioned 'slope stability' initiatives discussed above in R1.
Action recommended	A formal global slope stability project plan, or like document, should be established to manage and monitor the slope stability initiatives discussed above.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

Reference: 10/11 R3	
Subject title: Slope Stability Risk Ranking and Slope Monitor Priorities	
Observation	The funding for the slope stability initiatives is from the current ONTRACK Asset Management Plan 2009/10 version 3 dated 24 February 2010, Table 7.4 KRN (ONTRACK) capital expenditure, Structures Assets - Post WRRP; other structures including seawalls, tunnels, culverts and weatherproofing account code . In addition \$3.5 million funded by KRN has been allocated to undertake the works for the slope stability initiative No. 3 above.
Action recommended	The slope stability risk ranking assessment and the installation of slope monitors should be reviewed and prioritised as appropriate by KRN and other rail funders.
Status	Open

<i>Response</i>	
Assessor comment (date)	
Status	

Reference: 10/11 C1		Non-compliance grading: L
Subject title: Engineering Risk Register – update with latest treatment option initiatives		
Observation	The Engineering Risk Register (current) does not include the slope stability initiatives in the Treatment Options for weather proofing risks to the network.	
Action required	The Engineering Risk Register requires to be updated as per NRSS4 Risk Management, Issue 2 dated 11 June 2007, Part 5 Monitor and Review.	
Condition status	Open	
<i>Response</i>	<ol style="list-style-type: none"> 1. <i>Root cause</i> 2. <i>Corrective action</i> 3. <i>Preventative action</i> 4. <i>Evidence</i> 	
Assessor comment (date)		
Condition status		

2.2 Track Engineering

Reference: 10/11 R4	
Subject title: Track Geometry and Video Car	
Observation	An initiative currently being reviewed by the Track Engineer is the Acquisition of a Track Geometry and Video Car to improve the information obtained by track engineers on the structural soundness of the track foundations and general environment.
Action recommended	It is recommended that the NZTA be informed of the progress towards this initiative and if purchased the subsequent processes that will be developed as a result.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

2.3 Rail Operating Standards and Codes

Reference: 10/11 C2		Non-compliance grading: M
Subject title: Rule 6b Reporting Unusual Weather Conditions - Training		
Observation	<p>Since the Maymorn incident involving a passenger train hitting a slip and derailling, Rule 6b, Reporting Unusual Weather Conditions, has been reviewed and changes made to clarify the responsibilities and the process for managing and conducting a risk assessment as a result of receiving severe weather warnings from the MetService. The changes were approved in the Semi Permanent Bulletin No. 624, Rule 6b dated 1 September 2009 and issued by electronic fax and included in the New Bulletin and Effects Summary. No special briefing was conducted as a result of the changes but the Manager Network Operation sent an email dated 3 September 2009 to Regional Managers notifying them of the change to Rule 6b with the Semi Permanent Bulletin No. 624 attached. The email requested Regional Managers to, 'brief your Area Managers (and relieving Managers) in updated Rule 6, and in turn ensure all field staff understand their authority and obligations.' On the 25 Nov 2010 the Central Regional Manager and the Wellington Area Manager appeared unfamiliar with the Semi Permanent Bulletin No. 624 and the Area Manager referenced the superseded Rule 6b in his Rule Book. They did confirm that discussion of Bulletins occur during the Monday Meeting Conference calls, however, there is no evidence of the discussion concerning the Semi Permanent Bulletin No. 624, as no minutes are taken of the conference calls and no diary notes.</p>	
Action required	<p>Training is required when significant process changes and responsibilities occur to rules, codes and SOPs. Awareness training must be undertaken for all Network Control Managers, Area Managers (and relieving Managers) and Track Inspectors with respect to Semi Permanent Bulletin No. 624, Rule 6b dated 1 September 2009.</p>	
Condition status	Open	
Response	<ol style="list-style-type: none"> 1. Root cause 2. Corrective action 3. Preventative action 4. Evidence 	
Assessor comment (date)		
Condition status		

Reference: 10/11 R5		Non-compliance grading: M
Subject title: Rule 6b Reporting Unusual Weather Conditions - Training		
Observation	As discussed in 10/11 C2	
Action recommended	The above mentioned training in 10/11 C2 should include:	

	<ul style="list-style-type: none"> the risk assessment process to be undertaken upon receipt of severe weather warnings from the MetService, the information to be obtained during the risk assessment, and the understanding of that information. <p>This training could also be conducted in conjunction with awareness training of features that might be noticed before major landslides and flooding (as recommended below in 10/11 R6).</p>
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

Reference: 10/11 R6	
Subject title: Training and Documented Guide of Major Landslide Features	
Observation	As per 10/11 C2
Action recommended	Area Managers and Track Inspectors should be provided awareness training and a documented guide of features that might be noticed before major landslides and flooding, to base their risk assessment upon when they receive severe weather warnings and conduct track weather inspections. It is acknowledged that this undertaking would be a minimal risk reduction measure for slope instability as Area Managers and Track Inspectors are not experienced geotechnical engineers. Even experienced geotechnical engineers cannot accurately predict landslides.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

Reference: 10/11 C3	
Non-compliance grading: M	
Subject title: Risk and Safety Manager Responsibilities	
Observation	<p>The ONTRACK RSSM, Issue 3 dated 4 April 2008, Appendix A - Key Rail Safety Responsibilities, details the responsibilities for the Risk and Safety Manager (Chief Officer, Risk Assurance and HSE). KRN sent a letter to NZTA on 25 August 2009 as Notification of Interim Change of ONTRACK RSSM Key Responsibilities, in particular for the Risk and Safety Manager. In discussion with the Management Team during the assessment it became evident that the key responsibilities for the Risk and Safety Manager as defined in the RSSM and the above mentioned letter are different to that in practice. For some responsibilities defined in the RSSM it is unclear in practice the Manager with the responsibility, i.e.</p> <ul style="list-style-type: none"> 'Overview of the accident/incident investigation process and follow-up as it affects rail activity. Ensuring sufficient audits are carried out to

	validate compliance with the Rail Safety System.’
Action required	The Key Rail Safety Responsibilities for the Risk and Safety Manager must be reviewed and the responsibilities and accountability for each key responsibility clearly delegated to the relevant manager and appropriate training provided.
Condition status	Open
<i>Response</i>	<ol style="list-style-type: none"> 1. Root cause 2. Corrective action 3. Preventative action 4. Evidence
Assessor comment (date)	
Condition status	

Reference: 10/11 C4	
Non-compliance grading: M	
Subject title: Rule 6b and Risk Assessment Process Document Control	
Observation	<p>In reviewing documents for the assessment the following document control issues were found:</p> <ul style="list-style-type: none"> • Severe weather warning procedures are detailed in ONTRACK ROP Section 10, General Operating Instructions, Issue 1 dated 25 November 2008, Part 6.3.2, 6.3.4 and 6.3.5. These references should, at a minimum, be cross referenced in Semi Permanent Bulletin No. 624, Rule 6b dated 1 September 2009, Special Precautions for Safe Operations, Reporting Unusual Weather Conditions. • ONTRACK ROP Section 11 Emergency Procedures, Issue 1 dated 30 June 2008, Part 35, is a duplicate procedure of the superseded Rule 6b and has not been withdrawn following the issuing of Semi Permanent Bulletin No. 624 dated 1 September 2009, Special Precautions for Safe Operations, Reporting Unusual Weather Conditions, and should be. • ONTRACK RSSM, Issue 3 dated 4 April 2008 and NRSS 4 Risk Management, Issue 2 dated 11 June 2007, have different Risk Screening 5x5 Matrix's. For general risk assessment purposes these matrix's should be the same. The risk management process should allow for a special purpose specific risk screening matrix to be developed as is the case for slope stability risk assessments.
Action required	The above mentioned document control issues must be addressed as discussed above.
Condition status	Open
<i>Response</i>	1. Root cause

	<p>2. <i>Corrective action</i></p> <p>3. <i>Preventative action</i></p> <p>4. <i>Evidence</i></p>
Assessor comment (date)	
Condition status	

Reference: 10/11 R7	
Subject title: Rule 6b Reporting Unusual Weather Conditions - Risk Assessment	
Observation	The Semi Permanent Bulletin No. 624 dated 1 September 2009, Rule 6b - Reporting Unusual Weather Conditions, requires Area Managers to undertake a risk assessment. The Bulletin does not provide a process for undertaking this risk assessment or cross reference NRSS 4 Risk Management.
Action recommended	It is recommended that the Semi Permanent Bulletin No. 624 provide a risk assessment process for Area Managers in assessing the risks of Severe and Adverse weather conditions.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

Reference: 10/11 R8	
Subject title: NRSS 4 and ONTRACK RSSM Update Timeliness	
Observation	The following documents are under review by the relevant parties. <ul style="list-style-type: none"> • NRSS 4 Risk Management, Issue 2 dated 11 June 2007. • ONTRACK RSSM, Issue 3 dated 4 April 2008. The KRN Rail Operating Standards and Projects Manager provided an indicative completion time of 31 March 2011 for this document. Its review is currently overdue for submission to NZTA.
Action recommended	The undertaking to review documents should be time bound with set times established for the different stages of review.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

Reference: 10/11 R9

Subject title: Zero Harm Pledge	
Observation	The Chief Executive of the KiwiRail group has undertaken a Zero Harm Pledge on behalf of the group.
Action recommended	The Zero Harm Pledge should be included in the ONTRACK RSSM for all personnel to understand the organisation's executive management's commitment to safety, and thus factored in to their risk assessments.
Status	Open
Response	
Assessor comment (date)	
Status	

2.4 Network Control

Reference: 10/11 C5	
Non-compliance grading: H	
Subject title: Rule 6b Reporting Unusual Weather Conditions Implementation	
Observation	<p>The Network Control Manager was instrumental in the review and development of ONTRACK Semi Permanent Bulletin No. 624 dated 1 September 2009, Special Precautions for Safe Operations, Reporting Unusual Weather Conditions. As part of this assessment the process detailed in the bulletin was reviewed with the Manager Network Operations and the Wellington Area Manager for the incident which occurred on 30 September 2010, North of Plimmerton involving a Tranz Metro train which derailed as a result of colliding with a slip. As a result the derailment put the train foul of the adjacent mainline resulting in a collision with the south bound service.</p> <p>The evidence available to demonstrate compliance with the Bulletin is as follows:</p> <ul style="list-style-type: none"> • The SWW Aide Memoire form for SWW received over the period 27 September 2010 to 1 October 2010 records one notification to the Wellington Area Manager at 16.25 hours on 29 September 2010, and a Telecom NZ Ltd email sent messages report verifies this. The text message read, 'heavy rain warning from Wgtn to Wdville .Wgtn to Taihape & Wngi to Stfd from 0900hrs Thursday upto 15hrs NCM.' It was noted by the Area Manager that the terminology used in the text message was not in line with Rule 6b which details warning types to be: <ul style="list-style-type: none"> ○ Level 1 Severe Weather Warning ○ Level 2 Adverse Weather Restriction • The bulletin dated 1 September 2009 required acknowledgements to be received from the Area Managers. The SWW Aide Memoire form at the time of the incident did not have a column for entering acknowledgements and therefore there is no record of an acknowledgement from the Area

	<p>Manager and no evidence available to confirm an acknowledgement was sent. .</p> <ul style="list-style-type: none"> • Further SWW were received from the MetService involving the Wellington Region however there were no further texts or emails to the Area Manager from the NCM recorded on the SWW Aide Memoire form. • The speed restriction database records an entry of SWW, 'heavy rain for up to 15 hours,' for the NIMT line at 2100 hours on 29 September 2010. This entry was lifted on 3 October 2010 at 0330hours. • A pre-planned Wet Weather Inspection, Work Order R1011449, for the NIMT line from Kaiwharawhara to Otaki was undertaken on 29 September 2010 from 1500 -1600 hours with the comment of 'pooling at Muri'. No report for this inspection was initially received thus the Area Manager contacted the Track Inspector and verbally received the report and completed the Track Inspection record form. The form is not signed by either party. • Essential Feature List, for the NIMT line dated 26 October 2010, has an entry for the line where the incident occurred as follows: <ul style="list-style-type: none"> ○ 'NIMT MainL from 25.740 to 27.000km, Area Co-ord - Wgtn, Gang - MT3, 4 November 2002, Feature - Formation, Frequency - During Heavy Rain, Reason/Comment - SLIPS BUT NONE IN RECENT MONTHS' <p>The above evidence shows the Semi Permanent Bulletin No. 624 dated 1 September 2009 concerning Rule 6b Reporting Unusual Weather Conditions was not implemented in its entirety with respect to the North of Plimmerton incident which occurred on 30 September 2010.</p>
Action required	<p>The Semi Permanent Bulletin No. 624 dated 1 September 2009 concerning Rule 6b Reporting Unusual Weather Conditions must be reviewed and serious consideration be given to the recommendations made in this report to improve this process with respect to: the recording of information, detailing the acknowledgement process, detailing the risk assessment process, providing training for all parties, and providing more detailed knowledge and information concerning the risk factors involved in severe weather.</p>
Condition status	Open
<i>Response</i>	<ol style="list-style-type: none"> 1. <i>Root cause</i> 2. <i>Corrective action</i> 3. <i>Preventative action</i> 4. <i>Evidence</i>
Assessor comment (date)	

Condition status	
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Reference: 10/11 C6		Non-compliance grading: M
Subject title: Severe Weather Warning Aide Memoire Form		
Observation	The ONTRACK Semi Permanent Bulletin No. 624 dated 1 September 2009, Special Precautions for Safe Operations, Rule 6b - Reporting Unusual Weather Conditions is supported by the Severe Weather Warning Aide Memoire form used by the Network Control Managers (NCM) to record the receipt and distribution of Severe Weather Warnings (SWW) from the MetService. This form was recently reviewed and updated 1 November 2010 to improve the recording process for receiving Acknowledgements from Area Managers as discussed above in 10/11 C5.	
Action required		
Condition status	Open	
<i>Response</i>	<ol style="list-style-type: none"> 1. <i>Root cause</i> 2. <i>Corrective action</i> 3. <i>Preventative action</i> 4. <i>Evidence</i> 	
Assessor comment (date)		
Condition status		

Reference: 10/11 R10	
Subject title: Severe Weather Warning Aide Memoire Form Update	
Observation	As discussed in 10/11 C5
Action recommended	<p>It is recommended that the Severe Weather Warning Aide Memoire Form be improved as follows:</p> <ul style="list-style-type: none"> • A row is required for the date SWW are received from the Met Service, and distributed to Area Managers. • Another column(s) is required to record the email of the SWW to Area Managers. • Include on the form the process, and recording of the process for the NCM to undertake when an acknowledgement is not received from the Area Managers and the escalation process to be undertaken. • Include a check box for the removal of the SWW comment in the speed restriction database, • Include a comments section for any action undertaken by the NCM, or Traffic Controller, with respect to closing a line.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

2.5 Internal Audit

Reference: 10/11 C7		Non-compliance grading: M
Subject title: Audit Changed Processes		
Observation	<p>There is no evidence that Semi Permanent Bulletin No. 624 dated 1 September 2009 concerning Rule 6b Reporting Unusual Weather Conditions, has been audited since approved. NRSS 2 Safety Management, Issue 2 dated 11 June 2007, part 8.3 The Change Management Process, requires that following the promulgation of a change the final step is: 'system integrity – evaluated reviewed/enhanced.' NRSS 4 Risk Management, Issue 2 dated 11 June 2007, Part 7 requires following a change that risk screening and risk assessment occur if required to ensure that the changes made have effectively reduced the risks and no new risks have been added as a result of the change. The RSSM Issue 3 dated 4 April 2008, Part 7, and NRSS 9 Audit, Issue 2 11 June 2007, require internal audits to be conducted to ensure compliance with the rail safety system. This is of particular importance following changes to processes.</p>	
Action required	Processes that are changed must be audited in a timely manner to ensure they are implemented and have effectively reduced the relevant risks.	
Condition status	Open	
<i>Response</i>	<ol style="list-style-type: none"> 1. <i>Root cause</i> 2. <i>Corrective action</i> 3. <i>Preventative action</i> 4. <i>Evidence</i> 	
Assessor comment (date)		
Condition status		

2.6 Occurrence Management

Reference: 10/11 C8		Non-compliance grading: M
Subject title: Incident Investigations		
Observation	<p>The following action has been taken with respect to incident reporting and investigation for incidents being reviewed as part of this special assessment:</p> <ul style="list-style-type: none"> • 25 Sep 2010, Manawatu Gorge - freight train derailment as a result of a slip. A MLD1 has been 	

	<p>completed 11 Oct 2010. It should be noted that it took 9 days for the track to be operational. No investigation report has been done.</p> <ul style="list-style-type: none"> • 25 Sep 2010, North of Taumarunui - freight train derailment as a result of colliding with a slip (as was initially reported). MLD1 has been completed dated 6 October 2010, site information completed 8 October 2010, and drivers report completed 1 October 2010. No investigation report has been done. • 30 Sep 2010, North of Plimmerton - Tranz Metro train derailment as a result of colliding with a slip; derailment put the train foul of the adjacent mainline resulting in a collision with the south bound service. ATRS consultants (Australia) are investigating this incident. The report should be completed in draft by 3 December 2010. It is currently unavailable. • Kaikoura slips following the Christchurch earthquake, 4 Sep 2010 - property damage (no derailment or train collisions involved). No reports and no investigation was carried out into these incidents. <p>The reports mentioned above are incident site management reports and no occurrence investigation has occurred, except in the case of the 30 Sep 2010, north of Plimmerton incident where ATRS Consultants have been employed to undertake the incident investigation.</p>
Action required	NRSS 5 Occurrence Management, Issue 2 dated 23 May 2010, Part 6.1 Table 5 details the reporting requirements for occurrences. Incident investigations must be undertaken as detailed in NRSS5.
Condition status	Open
<i>Response</i>	<ol style="list-style-type: none"> 1. Root cause 2. Corrective action 3. Preventative action 4. Evidence
Assessor comment (date)	
Condition status	

Reference: 10/11 R11	
Subject title: ATRS report - 30 Sep 2010, North of Plimmerton Incident	
Observation	As discussed in 10/11 C8
Action recommended	It is recommended that the ATRS report for the 30 Sep 2010, north of Plimmerton incident be presented to NZTA when available.
Status	Open
<i>Response</i>	
Assessor comment	

(date)	
Status	

Reference: 10/11 R12	
Subject title: Emergency Rail Protection Plan Wellington	
Observation	From previous incident investigation reviews conducted in the Wellington Region an Emergency Rail Protection Plan has been developed. It is currently in a draft state dated 22 October 2010. The plan has been developed to ensure the protection is maintained during the incident management phase of returning to normal operations.
Action recommended	It is recommended that NZTA be informed of the progress and implementation of this plan.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

2.7 Crisis Management

Reference: 10/11 R13	
Subject title: Specific Incident Based Emergency Plans	
Observation	The RSSM Part 8 refers to 'ONTRACK Crisis Management Plan (document Q371) as the key document for managing Emergencies. Document Q371 KiwiRail Network Incident Management Plan, Issue 6 dated July 2010 is written at a global level and does not include specific incident based emergency planning for particular types of emergency scenario's. Part 3.1 identifies significant incidents that may require activation of the Incident Management Plan, but does not have specific plans for significant incident type.
Action recommended	It is recommended that Emergency Planning be developed for specific incident types as is best practice to improve the timeliness and effectiveness of response to incidents.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

Reference: 10/11 R14	
Subject title: Local Emergency Plans	
Observation	ONTRACKS ROP Section 11 Emergency Procedures, part 2.1 Emergency Planning refers to Local Emergency Plans, in that, 'Each manager is responsible for ensuring appropriate emergency response plans are developed for sites under their control, that rail personnel are trained in

	these plans and the plans are tested to ensure they are fit for purpose.' It appears no Local Plans have been developed and the managers interviewed were not familiar with this requirement at the local level.
Action recommended	It is also recommended that the need for Local Emergency Plans be reviewed and established where required.
Status	Open
<i>Response</i>	
Assessor comment (date)	
Status	

Section 3

Observations relating to other licensees and/or interested parties

The observations in this section of the report relate to other licensees and/or interested parties. It is the responsibility of the NZTA to determine the action to be taken (i.e. should the observation be passed on the other operator/interested party and what follow up action is to be taken).

Nil observations.

Section 4

Operator response

The findings in this report have been discussed at the exit meeting with the KiwiRail Network.

I consulted on the factual correctness of my draft report with the licence holder, and have incorporated necessary changes into the report.

A response to the findings is expected from KiwiRail Network on or before 25 February 2011.

The operator is to enter their response into the applicable sections in the Condition and Safety Recommendation boxes in this report, and provide documented evidence to the assessor (and the NZTA if appropriate) to support those responses.

It is the responsibility of the licence holder to distribute this report to interested parties within its organisation.

Section 5

Guide to this report

Assessment findings

The assessment findings detailed in this report can fall into one of three broad categories: Conditions, Safety Recommendations and Observations.

Conditions

Conditions are findings of non-compliance which may arise in one of two ways. Firstly, the safety system procedures may meet the requirements of the Act but are not being implemented and complied with in practice. Secondly, the organisation's procedures may not conform to the Act's requirements – even though those documented procedures may be being followed.

Conditions, indicated by a [C] code, are given either a High, Medium or Low rating.

Conditions are rated high if there is an immediate or significant safety risk as judged by the assessor. The operator should address these as a matter of urgency. In comparison, a finding of a small number of documents being out-of date or past their review date might be given a low rating as the immediate safety implication is less. A medium rated condition would obviously fall between these two examples.

However if a condition is not addressed in a timely manner, or re-occurs at a subsequent assessment, the assessor may see fit to raise the rating at the next assessment drawing attention to the need for continual compliance with the Act and the licence holder's safety case.

Safety Recommendations

Safety recommendations are actions that the organisation is strongly urged to implement in the interests of good safety management practice but are not considered non-compliances. Safety recommendations are indicated by an [R] code.

Observations

Observations are either Conditions or Safety Recommendations that are applicable to another rail participant but need to be identified for follow up. It is not necessarily expected that the organisation being assessed address these observations, as they will be reviewed, managed and passed on by the NZTA to the parties concerned. Observations are indicated by an [O] code.

Report referencing format

All Conditions, Safety Recommendations and Observation are given a prefix unique to the assessment period by year and month (e.g. August 2010 = 10/08). These items are sequentially numbered in the form "10/08 C4" (Condition No. 4 identified in the assessment of August 2010). This identification system must be used when referring to Conditions, Safety Recommendations and Observations in all correspondence relating to this report.

Addressing report findings

Conditions (non-compliances) must be responded to by the rail licence holder with either evidence of completed corrective action taken, or with an acceptable corrective action plan, to modify behaviour to match the complying process, or to improve the system to meet the requirements of the Act. Safety Recommendations must be responded to as either accepted or rejected with reasons given. If accepted, the proposed plan of action needs to be included in the response.

It is essential conditions are managed and addressed to prevent recurrence. Therefore a four phase process must be implemented as follows:

1. Identify the root cause
2. Establish a corrective action
3. Establish a preventative action
4. Provide evidence

Each stage of the process must be evident in the documented response. If these stages of condition closure are not addressed effectively, neither the assessor nor the NZTA will accept the condition for closure.

Report Ends