

Annual Return 2004

Final Report

Independent Reporter B

31 August 2004

Produced for
The Office of Rail Regulation

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Document Control Sheet

Project Title Independent Reporter B

Report Title Annual Return 2004 – Final Report

Revision v3_0

Status Final

Control Date 31 August 2004

This document has been produced, checked and authorised in accordance with a Quality Management System accredited under BS EN ISO 9001:2000 (Certificate NO: LRQ 0901862).

Record of Issue

Issue	Status	Author	Date	Check	Date	Authorised	Date
3_0	Web	M S West	26/11/04	M Hamilton	26/11/04	M S West	26/11/04
2_0	Final	M S West	31/08/04	D Stratford	31/08/04	M S West	31/08/04
1_0	Interim	M S West	02/08/04	D Stratford	02/08/04	M S West	02/08/04

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Executive Summary

- 1 Mouchel Parkman was appointed by the Office of Rail Regulation (ORR), and Network Rail, as Independent Reporter B with responsibility for reporting on the accuracy of Network Rail's Annual Return in three Regions (North West, Midlands and Great Western) together with associated functions at headquarters.
- 2 The reporting responsibility is being discharged by a team of auditors and technical specialists. Data and commentary contained in Network Rail's Annual Return to the Regulator 2004 was examined and compliance with agreed procedures tested by the Reporter B team. The Annual Return 2004 covered activities and performance in the fiscal year 2003-04.
- 3 The examination activities were focused on meeting the following requirements:
 - forming a detailed opinion on the accuracy of the data and information set out in the Annual Return, the quality of the process by which it was compiled and the reasons thereof;
 - making a detailed comparison of the data and information set out in the Annual Return and the assumptions made in the Periodic Review;
 - forming an opinion on whether the Annual Return complies with the obligations of Network Rail under its Network Licence; and
 - assessing whether the Annual Return has been completed in accordance with the procedures established by the Regulator.
- 4 The requirements for auditing the Annual Return were met using a combination of structured interviews with headquarters and Regional staff and an analysis of both documented definitions and procedures as well as electronic and paper records. A number of transactional checks were performed using small samples selected at random and reported figures were traced back to the primary data source. The Regional audits took place whilst Network Rail was compiling the data for reporting and the meetings at headquarters occurred following production of the 1 July submission of the Annual Return.
- 5 Following the team's investigations, it was concluded that:
 - Network Rail is substantially compliant with documented procedures agreed with the ORR;
 - Network Rail has provided a commentary within the Annual Return 2004 that explains any assumptions material to the figures reported for activities and performance in 2003-04;

- there were departures from the agreed procedures, the materiality of which was investigated and commented upon under the relevant section of this report;
- while sampling on some asset types is behind schedule, the programme of sampling asset condition has substantially exceeded its mid-way point; and
- Network Rail afforded free and unfettered access to staff involved in the reporting process and to data on which reported figures are based.

6 Independent Reporter B acknowledges the co-operation of Network Rail and the ORR in the successful discharge of its duties for the Annual Return 2004.

Scope of Audit

7 Independent Reporter B's view of Network Rail's Annual Return 2004 was formed based on extensive interviews and investigations in Network Rail's offices as well as those of several maintenance and renewals contractors. In accordance with the lessons learnt during the audits of the Returns in 2003 and 2002, the Reporter's team included transactional analyses and sampling of primary data sources in reaching an opinion on the reliability of the data contained in the Annual Return 2004.

Audit Findings

Data Confidence Grades

8 Network Rail decided to assign confidence grades to the information reported in the Annual Return 2004. Independent Reporter B was under the impression that measures for which the national confidence grade was influenced by the quality of data collection and management in the Regions would receive a Regional grade as well as one for the national network. Reporters were to consider the proposed confidence grades in the same way as other data and information reported in the Annual Return. The grades that were proposed were verified, where possible, using evidence collected during audits or presented in the commentary. A number of measures did not have a proposed Regional confidence grade and the Reporter questioned the veracity of several of the grades proposed (see below).

Regional Variations

9 The implementation of the Regional Management Template initiative (ORG1) in June 2003 was a positive step towards reducing the variability in the approach to reporting between Regions observed in previous audits. Unfortunately, this initiative did not remove the variability entirely and subsequent reorganisations led to uncertainty and changes within the business that were not conducive to robust and verifiable reporting.

Operational Performance

10 Many of the issues raised during the 2003 audit remained and were evident in 2004. The tables of train delays reported in the Annual Return 2004 included data ranked by delay code and not by impact on network traffic and the codes were not grouped

in any way in either the commentary or analysis to allow ease of comparison with other measures concerned with delays. The dependence of the quality of Operational Performance data reported and of the commercial implications of delay attribution on the competence of key staff and on checking procedures was clearly apparent.

Asset Condition & Serviceability

Broken & Defective Rails

- 11 Network Rail acknowledged the gaps and deficiencies in the reporting of defective rails in 2003-04. This was attributed primarily to the continued existence of bespoke systems in the IMCs many of which are not integrated into Network Rail's own systems. A major initiative including the updating of RT/CE/S/057 and an updated Raildata system was delivered in August 2003. Network Rail did not manage the migration of data from the old to the new system very carefully and did not cleanse data collected under the previous system from the database. This was despite a particular concern expressed in the Reporter's 2003 report about the way that defects collected and coded between April and August 2003 would be handled.

Condition of Asset Temporary Speed Restrictions Sites

- 12 No material changes took place in the way that TSRs were reported in the period 2003-04 although improvements to the way that data was processed at headquarters did address the issues raised in the 2003 audits.
- 13 The previous practice of closing TSRs active at the end of the reporting period and the creation of a new TSR on the first day of the new year was outlawed when the definition and procedure were updated in 2003-04. The durations of TSRs for the purpose of deciding which should be included under the four week regulatory reporting threshold were calculated to the nearest day. This change in methodology avoided the rounding issues raised in previous audits.

Slope Failures Causing Derailment

- 14 This measure was improved significantly during the year with the introduction of a table showing the number of slope failures by Region in addition to the number of failures causing derailments and train delays of over 750 minutes. During the audit, Reporter B was shown evidence of a slope hazard scoring system that was trialled in the North West Region during 2003-04 and a numeric method of ranking potential earthwork failures.

Bridge Condition

- 15 A sample of only 10% of the structures population was surveyed in 2003-04. This failed to achieve the target of 17% to ensure a 100% coverage by the end of 2005-06. Evidence collected by Reporter B showed that between 20 and 25% of bridges had probably been incorrectly scored by more than 10%. Based on this finding, Reporter B has questioned the national accuracy proposed by Network Rail of B3. The Reporter also considers that the cumulative 29% sample of bridges surveyed to-date is sufficient to establish a baseline on which a regulatory target could be set.

Signalling - Condition & Failures

- 16 The Midlands and North West Regions were non-compliant with the requirement that signalling assets with condition grades of 3 or 4 are re-assessed. Concerns were raised over the robustness of the delay attribution process generally. This may have resulted in an over-reporting of signalling failures (by around 6%) because of the potential for the track circuit failure code to be used inappropriately. The continued lack of a robust national training programme for delay attribution staff was highlighted once again.
- 17 Reporter B was provided no evidence of any analysis of the systematic and unsystematic error involved in the measures of signal asset condition and failures. Without such an analysis, Network Rail should not consider national confidence grades with greater confidence than those appropriate for the Regional data.

Electrification - Condition & Failures

- 18 Reporter B questioned the confidence grades proposed by Network Rail for M11 and M12 because of the inconsistent treatment of Regions with few assets. In the case of AC traction power failures, such Regions received a grade of BX whilst for DC traction power failures, a B1 grade was proposed.
- 19 No DC contact system condition assessments were undertaken in North West Region in 2003-04. It is estimated that the Region renewed 2.1% of the network total conductor rail in the reporting year but 3.1% of the network total remained unsurveyed in the Region.
- 20 The cumulative sample for feeder stations, track sectioning points and substations all exceeded the milestone targets for the end of 2003-04.

Stations – Condition & Facilities

- 21 Over 16% of the stations contained in the national database were condition surveyed over five years ago and 1% had no scores recorded for important elements such as platforms. Network Rail claimed that non-systematic error was cancelled when combining Regional data to obtain a national average but no evidence of quantified analysis was presented to Reporter B. As a result, the B2 grades proposed by Network Rail are questioned.
- 22 Great Western Region had improved the effectiveness and efficiency of station surveys by organising the surveyors on a geographical basis rather than by TOC, as previously. North West Region undertook no surveys of station facility at all in 2003-04. The effective implementation of the hand-held data recorders should resolved urgently to facilitate the station survey programme.

Light Maintenance Depot Condition Index

- 23 Network Rail did not achieve appropriate proportional progress by the end of 2003-04 to ensure that all depots will be surveyed by the end of the 2005-06. In addition, the introduction of hand held data recorders to facilitate depot surveys was delayed and had teething problems.

Activity Volumes

Track Renewed

24 The reported data contained an over-reported figure for rail renewed by 11% (estimate) due to the erroneous inclusion of short lengths of rail renewed by maintainers below the 200ft threshold for regulatory reporting. The reporting of patch re-sleepering, although required under the revised definition and procedure, was not possible according to Network Rail due to the lack of sophistication of the management systems in use during 2003-04.

25 Inappropriate staff were appointed to positions in which they were required to authorise renewals volumes for publication in 2003-04. In future years, any person charged with authorising data should be capable of undertaking a robust sense-check of the data and be able to explain to auditors how the information was collected, processed and verified.

Structures Renewed

26 Network Rail was non-compliant with the agreed definition for the reporting of renewals of culverts (M26), retaining walls (M27) and tunnels (M29) because an incorrect lower value threshold was applied. The threshold for bridges was lowered and will have inflated the reported volumes compared with previous years. Much of the data required for the Annual Return was received by HQ too late for inclusion in the 1 July submission of the document. It is not clear why such information is not readily available to the front-line managers of renewals contractors that spent a total of £3.2bn across the network in 2003-04.

Signalling Renewed

27 The revised definition for this measure introduced the Signalling Equivalent Unit (SEU) as the basis for the reporting of renewals activity. Reporter B identified complementary works, misunderstandings among Regional staff concerning the definition of an SEU for regulatory reporting purposes, and the appointment of inappropriate staff to positions in which they are expected to authorise data for reporting as contributory factors.

Network Capability

28 The regulatory target for each capability measure is for no overall reduction in functionality over the control period. The only exceptions to this are changes agreed through the network change procedure. In the absence of any commentary or tables, in the Annual Return, quantifying changes that were implemented via the network change procedure, it is impossible to assess whether Network Rail has met the target of no reduction in functionality. Reporter B continues to have reservations about the quality of the data reported in this section of the Annual Return and it would be inappropriate to rely on the difference between the figures reported in 2002-03 and 2003-04 to judge progress against the regulatory target.

29 Action is required by Network Rail to continue to improve the quality of data in the various systems now used to source data for the capability measures.

Reconciliation with 2003 Business Plan

- 30 The procedures for compiling the Business Plan, Regulatory Accounts (Supplementary Information) and the Business Plan reconciliation in the Annual Return are not documented in the same way as those for the reporting of other measures contained in the Annual Return. As a means of assessing compliance under such conditions, Reporter B undertook a reconciliation, matching the national renewals expenditure reported in the Annual Return with that contained in the Regulatory Accounts Supplementary Information.

Customer Reasonable Requirements

- 31 It is the view of Reporter B that the move towards including requirements through alternative processes, such as Local Output Commitments, makes this particular measure virtually redundant. A danger that is posed by using alternative agreement processes is that customers may be able to obtain the Network Rail resources without having to justify, through auditable channels, the reason for the request.

Audit Plan for Annual Return 2005

- 32 The audit of Network Rail's Annual Return 2005 will return to the issues raised during the 2004 audit and seek evidence of actions being taken to improve areas where weaknesses were discovered. Investigations, involving transactional analyses of selected measures will be undertaken following discussions with ORR and Reporter A. Measures that involve surveys of a sample of assets will be the subject of further analysis examining the degree to which the cumulative sample is representative of the population. The scope of the audit will continue to include third parties that provide data to the reporting process.



for and on behalf of Mouchel Parkman Services Limited
as Independent Reporter B
August 2004

Introduction

33 This is Independent Reporter B's third annual report and covers the activities undertaken to verify the accuracy of the information reported in Network Rail's Annual Return 2004. The latter includes measures reported for the fiscal year 2003-04.

34 Reporter B was appointed to verify the data reported for the Great Western, Midlands and North West Regions as well as appropriate HQ functions. Reporter B was also instructed to examine the data reported against the following measures that are managed exclusively by Network Rail HQ:

- Slope Failures Causing Derailments (M6); and
- Light Maintenance Depot Condition Index (M19).

Scope of Work for Reporter B

35 The Scope of Work related to the Annual Return is defined in Part A of Schedule 1 to the Contract for Reporter B. The schedule requires a report to the Regulator that includes the following:

- The Reporter's detailed opinion on the accuracy of the data and information set out in the Annual Return, the quality of the process by which it was compiled and the reasons thereof;
- A detailed comparison of the data and information set out in the Annual Return and the assumptions in the Periodic Review (as notified by the Regulator);
- The Reporter's opinion on whether the Annual Return, as submitted by Network Rail, complies with the obligations notified to the Reporter by the Regulator;
- Advice to the Regulator regarding the approach to, and criteria for, future Periodic Review determinations;
- An analysis of Network Rail's expenditure on its network and the allocation of that expenditure by Region and asset;
- An assessment of whether the Annual Return has been completed in accordance with the procedures for the compilation and submission of the Annual Return established by the Regulator and notified to the Reporter; and
- The Reporter's assessment of the underlying significance to the management, efficient operation, renewal, replacement, enhancement and development of the network of the data and information being reported in the Annual Return.

Structure of this Report

36 This report has been prepared to facilitate reading in conjunction with the Annual Return 2004. The sections which follow are:

- A summary of Reporter B's opinion on compliance by measure. It includes reference to the baseline outputs and targets set in the periodic review, progress towards those targets and comments on the co-operation received by the Reporter's team during the audits;

- Findings of the audits by Region. It contains a high level commentary of the areas of best practice and poorer performance identified. It is intended to assist the Regions in drawing attention to where effort is required to raise standards. Areas of best practice highlighted in this section provide poorer performers with a potential source of advice when looking to find ways of improving;
- Audit findings under convenient groupings of measures. In each case, the scope of the audit, Annual Return results, findings and recommendations are covered together with progress towards the Regulatory targets and compliance with the agreed definitions and procedures;
- A summary of recommendations made by grouping of measures. All of the recommendations listed are considered to be sufficiently serious to warrant immediate action by Network Rail. In the opinion of the Reporter, such actions should be focused on removing the issue or non-compliance and rectifying any resultant poor data quality in time to positively affect the quality of the information presented in the 2005 Annual Return; and
- Annex 1 contains a series of tables that show the reconciliation of renewals expenditure by Region and by Route. This annex is referred to in the section containing the reconciliation with the 2003 Business Plan.

Opinion on Compliance

- 37 This section contains Reporter B's opinion on Network Rail's compliance with the obligations under the terms of the Network Licence conditions concerning reporting. It covers progress against the targets set in the Periodic Review, observations on the planning of the audits and the co-operation received from Network Rail staff.
- 38 Generally, Reporter B is satisfied that Network Rail was compliant in the preparation and reporting of information contained in the Annual Return 2004. Where audits have exposed examples of poor data quality or failures to adhere strictly to written procedures, these observations have been noted under the appropriate sub-section of this report covering the measure and Region (or HQ) concerned.
- 39 Section 5 of the Annual Return 2004 contained Network Rail's opinion of the targets set, and progress towards, a number of Key Performance Indicators (KPIs). The indicators are Network Rail's own and were not required as part of the Annual Return under the Network Licence. They were not reviewed or audited by Reporter B and, as a result, the Reporter's opinion on compliance is qualified to not include the contents of Table 89. The KPIs have not been approved by the Reporter.
- 40 This report has been produced solely for the confidential use of the ORR and Network Rail for the purpose of verifying the information contained in Network Rail's Annual Return 2004 and for checking compliance with the Network Licence conditions covering reporting. It may not be relied upon for any other purpose or by any third party for any purpose whatsoever.

Baseline Outputs in the Periodic Review

- 41 As part of the Periodic Review of track access charges, the Regulator quantified a number of monitoring targets. These targets were deemed to represent the outputs that Network Rail was funded by the Periodic Review to deliver. They covered asset serviceability and condition and were contained in Table 14.1 of the Final Conclusions of the Periodic Review document.
- 42 Subsequent to the publication of the final conclusions, agreements were made with the ORR that the outline regulatory targets would be modified to reflect constraints associated with the available quality and quantity of data, and the time required to assess asset condition. In a letter from the ORR dated 31 August 2004 (ref: 182765) it was confirmed that the targets applicable to 2003-04 were those contained in Section 1.4 of the Asset Reporting Manual (NR/ARM/Section 1 Issue 3 22nd March 2004).
- 43 Table 1 contains a summary of the regulatory targets taken from the ARM. The column titled 'Performance 2003-04' has been added and lists Reporter B's opinion on Network Rail's progress towards the targets for each asset type that received a target. 'Traffic light' shading of the column has been used to indicate clear

achievement of the target (green); failure to meet the target (red), partial achievement (yellow), or baseline not established (white).

Asset Type	Measure	Monitoring Target	Performance 2003-04
Track	Serviceability:		
	TSRs	No target set	
	Broken Rails	Target for 2003-04 = 675	The 334 reported was significantly better than the target.
Earthworks	Serviceability:		
	TSRs	No target set	
Signalling	Serviceability:		
	Failures	No deterioration from 2000-01 annual total. (25,106)	Failure to meet target (28,098) was outside of the tolerance limit.
	Asset Condition	No deterioration from baseline. Baseline set for single composite measure once sufficient sample achieved.	Baseline average condition not yet established.
Electrification	Serviceability:		
	DC 3 rd rail	No deterioration from 2000-01 annual total. (45)	Target met but 33 incidents was within statistical variability caused by random fluctuation as expressed by tolerance limit of $\pm 47\%$.
	AC OHL	No deterioration from 2000-01 annual total. (88)	Target met but 79 incidents was within statistical variability caused by random fluctuation as expressed by tolerance limit of $\pm 28\%$.
	Condition:		
	AC TFS & SP	No deterioration from baseline. Baseline set for single composite measure once sufficient sample achieved.	Baseline average condition not yet established.
	DC substations	No deterioration from baseline. Baseline set for single composite measure once sufficient sample achieved.	Baseline average condition not yet established.
	AC OHL	No deterioration from baseline. Baseline set for single composite measure once sufficient sample achieved.	Baseline average condition not yet established.
	DC 3 rd rail	No deterioration from baseline. Baseline set for percentage of rail falling below a threshold once sufficient sample achieved..	Baseline average condition not yet established.
Structures	Serviceability:		
	TSRs	No target set	
	Condition	No deterioration from baseline. Baseline set for single composite measure once sufficient sample achieved.	Baseline average condition not yet established.
Stations	Condition	2000 NMS: Maintain single composite measure at 2.2	Average condition grade worse than target but within tolerance limit.
	Facilities	No target set	
Depots	Condition	No deterioration from baseline. Baseline set for single composite measure once sufficient sample achieved.	Baseline average condition not yet established.

Table 1. Summary of performance against periodic review targets.

Confidence Grades

- 44 Network Rail decided to assign confidence grades to the information reported in the Annual Return 2004. The Reporter was under the impression that measures for which the national confidence grade was influenced by the quality of data collection and management in the Regions would receive a Regional grade as well as one for the national network.
- 45 Reporter B was to consider the proposed confidence grades in the same way as other data and information reported in the Annual Return. The grades proposed were therefore to be verified using evidence collected during audits or presented in the commentary. The Reporter's opinion on the accuracy of the data contained in the Annual Return and on compliance with the conditions of the Network Licence were to include reference to the confidence grades proposed by Network Rail.
- 46 Table 2 contains a summary of the confidence grades proposed by Network Rail. The table shows that grades were not proposed for all measures in all three Regions and/or nationally. For several measures, the comments column indicates where the commentary contained in the Annual Return was unclear. Also indicated are several measures where the national confidence grade proposed suggests greater confidence than proposed for the Regional data on which it is based. Comments on issues related to specific measures are contained in the appropriate section of this report.

Audit Planning, Preparation & Co-operation

- 47 Unfortunately, Network Rail had planned for another reorganisation of the Regions to take place in May 2004. Many of the key staff with which the Reporter B team had established a working relationship moved to different roles at some time during May 2004. The uncertainty, stress and additional workload that the reorganisation created had a significant and negative impact on the arrangements for the Regional audits. This was in many ways a repeat of the situation experienced in June 2003.
- 48 In the opinion of Reporter B, the audits took too long to organise and there were frequent and unnecessary changes to the programme, often at short notice. These logistic problems resulted in wasted time and effort on the part of the Reporting and Regional staff. Whether these costly changes and the resultant abortive work may be attributed solely to the reorganisation is a moot point. It is the opinion of Reporter B that future audits should be programmed (to the point of date, time & venue) at least six months in advance and an instruction issued to key staff requiring them to attend when required.
- 49 Reporter B would like to thank Network Rail staff for co-operating fully with the auditors despite the challenges faced during the reorganisation. This co-operation extended to supplying further supporting information requested during the audits as well as answering questions without reservation. The team was given full and unfettered access to all of the information requested and the professionalism of both Regional and HQ staff is acknowledged and appreciated by Reporter B.

Measure	Great Western	Midlands	North West	National	Comments
M1 Broken Rails	*	*	*	A2	
M2 Defective Rails	B2/B3/C5	B2/B3/C5	B2/B3/C5	*	NR proposed different grades for different aspects of this measure.
M4 Condition of Asset TSR sites	B2	B3	B2	B3	
M6 Earthworks Failures & Derailments	*	*	*	AX	
M8 Bridge Condition	*	*	*	B3	
M9 Signalling Failures	B3	B3	B3	B2	Commentary confusing, are regional and national grades the same at B2 or B3?
M10 Signalling Asset Condition	B4	B4	B4	B3 or B4?	Commentary confusing, is national B3 or B4?
M11 AC traction power incidents causing train delay	B2	B2	B2	B2	
M12 DC traction power incidents causing train delay	-	-	B1	B2	
M13 AC traction feeder stations & track sectioning points	B3	B3	B3	B3	Commentary is not explicit concerning regional and national grades.
M14 DC traction substations	B3	B3	B3	B3	Commentary is not explicit concerning regional and national grades.
M15 AC traction contact systems	B3	B3	B3	B3	Commentary is not explicit concerning regional and national grades.
M16 DC traction contact systems	B3	B3	B3	B3	
M17 Station condition index	*	*	*	B2	
M18 Station facility score	*	*	*	B2	
M19 Light Maintenance Depot – condition index	*	*	*	C3	
M20, 21, 22, 25 Track renewals	C3	C3	C3	C3	
M23, 26, 27, 28, 29 Structures renewals	B3?	B3?	B3?	B3	Commentary unclear about which regions should be BX and B3.
M24 Signalling renewed	*	*	*	B3	
C1 –C4 Network Capability	*	*	*	B2	
Reconciliation for 2003 Business Plan	B2	B2	B2	A2	

Table 2. Confidence Grades proposed by Network Rail.

NOTE: * indicates that Network Rail did not propose a confidence grade in this category.

Summary by Region

50 This section summarises the main findings of the audits by Region. It contains an overview of examples of best practice observed in the Regions and also issues requiring attention. Best practice has been highlighted to assist poorly performing Regions to identify potential sources of good advice when improvement plans are being produced.

General

51 Several observations made during the audits apply equally to all Regions. These include both examples of best practice and issues which require attention. The following is a summary of the supra-Regional observations.

52 Reporter B was pleased to see evidence for decisive actions in response to feedback following the audit of 2003. In particular, the improvements made to the processing of TSRs and the updated reporting of earthwork failures are welcomed. The trials of a risk-based approach to earthworks and the competence of the Regional staff approving data for inclusion in the Annual Return were also noteworthy.

53 Whilst the revision of the definitions and procedures was welcomed by the Reporter, inevitably some teething problems arose. In particular, the requirement under several measures for data to be frozen at the end of period 1 of the following year proved difficult as this point in time does not match the regular business reporting cycles for data in all measures. Network Rail should consider revising the requirement to better match the routine reporting cycles.

54 The implementation of hand-held data recording technology, and its associated software, for property asset surveys caused significant difficulties across the Regions in 2003-04. Examples of the need to re-survey because data could not be uploaded from the hand sets were discovered during the audits. This issue needs to be resolved before consistent and cost-effective data capture can be achieved.

55 One impact of the problems described was the significant backlog in depot surveys that had developed by the end of the reporting year. This stood at 28.6% of the total depot population and represented more than one year of surveys according to the programme. This backlog needs to be addressed urgently.

56 Significant non-compliance in the reporting of rail renewals volumes were observed in the audits. This was a very serious issues since plain line track and S&C renewals accounted for £1.26bn of spend in 2003-04. Action is required at all levels of the organisation to ensure that such poor reporting of investment output is not repeated in future Annual Returns.

Great Western Region

57 The Region reported a continued improvement in operational delays.

58 TSRs were well managed with additional staff now familiar with the reporting process and the Region was less reliant on a single individual.

59 Staff involved in conducting station surveys had been reorganised from a TOC to a geographical basis. This had significantly improved the distribution of workload between surveyors.

Midlands Region

60 The Region reported a significant number of unclassified defects against the M2 measure despite the outlawing of such a classification under the revised definition and procedure.

61 There appeared to be confusion in the Region over the regulatory reporting of signalling renewals activity in SEUs. The confusion seemed to have arisen because the SEU is also used as the basis for project costing and unit cost reporting. The latter two activities do not have the same requirements as the reporting to ORR despite the fact that these use the same basic unit of measurement.

62 Positive observations were that the Regional E&P Engineer undertook a thorough analysis of traction power failures and was able to fully justify the information reported in the Annual Return; and the usefulness of the station facilities database to a TOC in the Region that plans to use it for investment planning purposes.

North West Region

63 The Region gave the impression of being the least well organised in the reporting of information for inclusion in the Annual Return. The region-specific failings were observed as well as those general ones noted elsewhere.

64 A number of material non-compliances were observed including the failure to appoint staff to roles explicitly referred to in the definitions and procedures. Whilst this failure may have been justified from a business planning point of view because the Region ceased to exist shortly after the end of the reporting period and has been subsumed into the London North West Territory, it had an adverse impact on the quality and reliability of the data contained in the Annual Return.

65 Examples of poor performance included: no station facility surveys undertaken during the year, continued unreliable scoring of bridge condition, 7.7% of the total train delays in the Region attributed to unexplained, a failure to rigorously verify data supplied by HQ for measures such as the Capabilities and an over-reliance on the checking of TSR source data by HQ.

66 For a number of the measures the Process Owner during 2003-04 was inappropriate as they had insufficient knowledge of the underlying processes to be able to sense check data supplied to them or to approve the data for inclusion in the Annual Return with any credible authority.

Operational Performance

Scope of Audit

67 The audit of Operational Performance was to comprise a review of any changes in procedures implemented after the 2003 audit and a high level verification of the data reported in the Annual Return. A more detailed investigation of delays attributable to particular asset types was to be included in the audit of those measures. For example, delays caused by failures of electrification assets were to be audited in greater detail under measures M11 and M12.

68 A number of meetings were held with staff responsible for managing the attribution of delays and with both the owners of the reporting procedure and staff responsible for reporting against the measure. A list of the meetings held may be found in Appendix J.

Annual Return 2004 Results

69 The network total delays attributable to Network Rail decreased by 6.8% to 13.7 million minutes in 2003-04. During the same period traffic volumes, as measured by train km, increased by 2.1% on a like-for-like basis. Operational Performance may therefore be considered to have improved by over 8%.

70 The largest improvement was observed in track-related delays (15%) with rolling contact fatigue delays improving by 70% and those caused by TSRs by 25%. These improvements were the result of a focus on the management of RCF and TSRs in the Regions over the last two years.

71 Weather related delays decreased by 29% as a result of the relatively low rainfall figures for 2003-04 compared with previous years. Flooding and major storm damage was consequently not as severe as it had been in 2002-03. Extremely high summer temperatures did contribute to an increase in the number of track faults by 5.5%. Network Rail estimated that 250,000 delay minutes were directly attributable to the exceptionally hot summer days in 2003.

Findings

Progress Against Regulatory Target

72 The regulatory target for Operational Performance concerns the delay minutes per 100 train km for passenger trains only. The target for 2003-04 was 1.32 mins/100 train km which Network Rail did not meet. The target was based on a 2.5% reduction in delays to passenger train per year during the control period. The actual figure for 2003-04 was 2.65. No regulatory target was set for delays to freight trains.

Understanding of & Compliance with Definitions & Procedures

73 During the 2003 audit Reporter B discovered that IMCs have the facility within the TRUST system to alter the delay code for an incident attributed to a code for which they are commercially responsible, providing that the new code is also their responsibility. This facility exists for all I, J and W codes. For example, it would be

possible for an IMC to alter the attributed code from I1 overhead line/third rail defect to IA signal failure. This would reduce the total delay due to incidents in delay code 201 in the Annual Return and increase that reported against 302A. Despite raising this as a issue in previous reports, no evidence was presented to the Reporter demonstrating how Network Rail has ensured that IMCs were not altering delay codes and compromising the data reported in the Annual Return.

Regional Findings

- 74 Table 3 shows the trends in the number of train km, total train delays and delays per 100 train km reported in 2001-02 to 2003-04. Also shown in brackets is an index which was based on the figures reported for the North West Region in 2001-02.
- 75 Table 3 clearly shows that traffic volumes increased in all three Regions whilst the total train delays increased in North West and decreased in both Midlands and Great Western Regions. The normalised delays (mins/100 train km) decreased in Great Western Region and increased in the Midlands and North West Regions. Only Great Western Region reported a figure below that for the network average (2.86) and the Region was the only one of the three audited by Reporter B that has shown a consistent downward trend in delay minutes since 2000-01.
- 76 Delays attributed to condition of track TSRs did not appear in the top ten causes of delays in any of the three Regions audited.

Region	Train km			Total Delay mins			Delays per 100 train km		
	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
North West	50,343,836 (100)	52,104,225 (107)	54,297,632 (108)	1,499,216 (100)	1,463,731 (98)	1,867,533 (125)	2.98 (100)	2.81 (94)	3.44 (115)
Midlands	75,630,262 (150)	74,245,756 (147)	79,330,187 (158)	2,936,360 (196)	3,106,982 (207)	2,698,137 (180)	3.88 (130)	4.18 (140)	3.40 (114)
Great Western	64,909,087 (129)	67,034,101 (133)	68,516,729 (136)	1,880,957 (125)	1,887,580 (126)	1,741,972 (116)	2.90 (97)	2.82 (95)	2.54 (85)

Table 3. Regional traffic and total delays 2001-02 to 2003-04.

77 Table 4 summarises the top ten train delay causes for the Midlands Region in 2003-04.

Delay Code	Category	(%)	Cumulative (%)
106	Other infrastructure (4)	10.5	10.5
301B	Track circuit failures (1)	9.4	20.0
104B	Broken rails/track faults (2)	9.3	29.3
101	Points failures(3)	9.2	38.5
104A	TSRs due to condition of track (5)	7.3	45.7
502C	NR Commercial – dispute take back (6)	6.0	51.8
501	NR production responsibility (7)	5.1	56.8
301A	Signal failures (8)	4.6	61.4
104C	Gauge corner cracking (9)	3.8	65.2
503	External fatalities & trespass (10)	3.4	68.6

Note: Rank for 2002-03 shown in brackets

Table 4. Midlands Region top ten delays 2003-04.

78 The top five delays in 2003-04 were all in the top five reported in 2002-03. Other infrastructure was up from 8.7% to 10.5% in the year. This was consistent with the national trend which showed the delay minutes attributable to this code increase by 4.8% and the number of incidents by 17.7%. Rails, points and track circuits accounted for 27.9% of the total reported Regional delays. Table 5 shows the comparable data for the Great Western Region.

79 Points, rails and track circuits accounted for 34.1% of the reported total and were the top three causes in this Region in the reporting year. This was a repeat of the situation in 2002-03 and was also the same in the North West (26.6% of total) as shown in Table 6.

80 As in 2001-02 and 2002-03, North West Region reported that over 5% of the total delays were attributed to the unexplained code. This code did not appear in the top ten of either of the other Regions in either year. The network total delays per 100 train km under the unexplained code increased by 12.5% to 0.09 in 2003-04.

Delay Code	Category	(%)	Cumulative (%)
104B	Broken rails/track faults (1)	12.7	12.7
301B	Track circuit failures (2)	12.3	24.9
101	Points failures (3)	9.1	34.1
502A	NR Commercial – train planning (5)	6.5	40.5
501	NR production responsibility (7)	5.6	46.1
503	External fatalities & trespass (6)	4.9	51.0
302A	Signalling system & power supply failures (8)	4.8	55.8
110	External weather impact (4)	3.9	59.7
401	Bridge Strikes (-)	4.1	63.8
301A	Signal failures (9)	3.8	67.7

Note: Rank for 2002-03 shown in brackets

Table 5. Great Western Region top ten delays 2003-04.

- 81 During the Regional audit, the reason given for the relatively large number of delay minutes attributed to code 601 was the lack of resources in the Manchester Control Room and the difficulty in recruiting, training and retaining staff. These issues were compounded in 2003-04 with the addition of new staff to cover the Stoke Stafford area which transferred from the Midlands Region. The managers audited did not feel that the new staff were adequately trained.
- 82 The Manchester Area also has an aging infrastructure, with older-type signal boxes and a high density of traffic. Midlands Region, in contrast has more up to date power boxes which tend to experience fewer failures.
- 83 Many of the issues raised during the 2002 and 2003 audits remained and were evident in 2004. The tables of train delays reported in the Annual Return 2004 included data ranked by delay code and not by impact on network traffic and the codes were not grouped in any way in either the commentary or analysis to allow ease of comparison with other measures concerned with delays. The dependence of the quality of Operational Performance data reported and of the commercial implications of delay attribution on the competence of key staff and on checking procedures was clearly apparent.

Delay Code	Category	(%)	Cumulative (%)
104B	Broken rails/track faults (2)	10.7	10.7
301B	Track circuit failures (3)	8.1	18.8
101	Points failures (4)	7.8	26.6
601	Unexplained (5)	7.7	34.3
501	NR production responsibility (7)	5.6	39.9
502C	NR Commercial: dispute take back (6)	5.1	45.0
106	Other Infrastructure (-)	3.9	48.9
110	External weather impact (-)	3.6	52.6
150	NR share of leaf fall/adhesion delays (10)	3.5	56.1
503	External fatalities & trespass (-)	3.2	59.3

Note: Rank for 2002-03 shown in brackets

Table 6. North West Region top ten delays 2003-04.

Observation & Recommendations

Observations

- 84 The use (and potential abuse) by IMCs of the facility to alter I, J and W codes has not been investigated by Network Rail and therefore its potential impact on the measures reporting delays (and incidents) caused by failures of specific infrastructure (such as signalling or electrification) remains unproven.

Recommendations

- 85 No specific recommendations are made concerning the reporting of Operational Performance.

Broken & Defective Rails

Scope of Audit

86 Audits were undertaken by Independent Reporter B in 2004 to investigate Network Rail's reporting of the following measures:

- M1: Number of Broken Rails; and
- M2: Rail Defects.

87 The aim of the audits was to verify the accuracy of the data reported, to review the impact of actions taken in response to previous audits and to audit compliance with the agreed definitions and procedures.

88 The references for the definition and procedure for these measures are:

- NR/ARM/M1DF, Issue 3, 17th February 2004;
- NR/ARM/M2DF, Issue 4, 17th February 2004; and
- NR/ARM/M*PR, Issue 4, 22nd March 2004, for both M1 and M2.

89 The audits included Great Western, Midlands and North West Regions as well as HQ. A number of IMCs were also visited in the Great Western and Midland Regions. These visits were arranged to coincide with the meetings in the Regional offices.

90 It should be noted that Network Rail during the visits was in the process of reorganisation at both HQ and Regional level. This reorganisation consisted of a complete restructuring into new geographical areas concurrent with the taking back in-house of maintenance activities with the transfer of staff from the IMCs. As a result, in a number of cases, the staff interviewed as part of the audit had only very recently been appointed to their post.

91 Appendix J contains a complete list of the meetings held during the audit. The Appendix does not record all instances where telephone or email correspondence has taken place.

Annual Return 2004 Results

92 No material changes took place in the way broken and defective rails were reported during 2003-04. The Annual Return 2004 commentary recognised the issues raised in previous audits surrounding the inconsistent reporting of defects across the network. This inconsistency was attributed in the commentary to a lack of robust and congruent information systems in the IMCs. Network Rail believes that this situation will improve in the next reporting period, as maintenance transfers in-house in the summer of 2004. Whilst a series of actions were reported in the commentary as 'currently underway' in July 2004, it is likely that the impact of these improvements will not be realised until the full reporting year 2004-05 or beyond.

93 The trend in the number of broken rails is shown in Figure 1. The graph includes both the four weekly period data and a 13-point running average. The former shows a distinctly seasonal trend with steadily decreasing annual maxima in periods 10-11. The running average also shows a trend of decreasing broken rails over the four years covered by the data. The maximum recorded in 2003-04 was only half that observed in 2000-01.

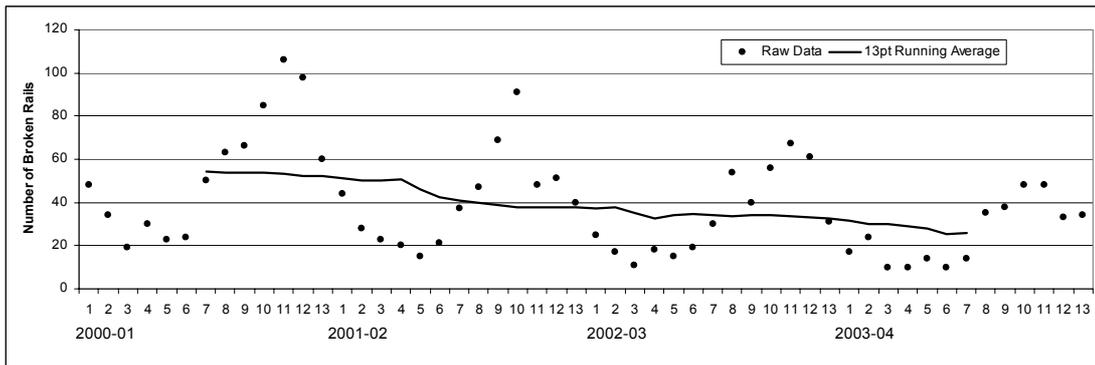


Figure 1. Trend in the number of broken rails identified.

94 A correction to the network total number of isolated rail defects reported at 2002-03 year end was made in the Annual Return 2004. The previously stated figure of 34,964 was found to be overstated by 7,072 (-20.2%). The number of mid-rail defects was significantly reduced by 6,248 to 20,192 (-23.6%). Also welds defects were reduced by 1,502 to 1,387 (-52%). The number of defects remaining at the end of the year was reported at 31,301; 3,409 more than the total corrected figure for 2002-03.

95 The figure reported for continuous rail defects in the Annual Return 2003 was also corrected. The correction amounted to an increase of 403km (25.4%) to 1,986km. The defective rail total remaining at year end was reported as 1,867km.

Confidence Grades

96 Network Rail assigned a confidence grade of A2 for the national reporting of broken rails but failed to propose a grade for any of the Regions covered by Reporter B. The A2 confidence grade would imply an accuracy of reporting of ±1 to 5%. The audits did not reveal any evidence to contradict the grade proposed.

97 For defective rails, Network Rail acknowledged in the Annual Return that it is less confident in the reporting than for broken rails. Inconsistencies in the interpretation of the standards and the continued use of various bespoke software databases to record and upload defect data were recognised as contributory factors to the reduced confidence. A grade of B3 was proposed for both Regional and national reporting levels. Investigations have shown that inaccurate reporting of defects ground and defects remaining would imply a lower level of confidence than B3.

Findings

- 98 It is acknowledged that a major reorganisation was taking place at Network Rail, both at HQ and Regional level during the audit for 2004. Similarly the IMCs were in the process of being taken back in-house.
- 99 The reported improvement in the number of broken rails should be considered against the major programme introduced by Network Rail to reduce the number of broken rails by targeted rerailing and the introduction of a revised management system for rolling contact fatigue, which resulted in more rail grinding. Potential defects that could have led to broken rails were eliminated thereby resulting in the improved figure for M1.
- 100 However, the National Rail Management Engineer acknowledged that there still remained gaps and deficiencies in the reporting of defective rails in 2003-04, evidenced by the correction of 7,072 defects. Because the Raildata system was introduced at HQ and in the Area offices during the year, but was not used to generate the data reported in the Annual Return, inconsistencies exist in the reported figures.
- 101 It was established that, although migration from the old to the new system, and from the old RT/CE/S/057 standard to the updated definition introduced in March 2004, took place, no general updating or data cleansing occurred during the reporting year. As a result inconsistencies remained in the data at the year end. It was disappointing to note that unclassified defects (82) were reported. It is believed that these came from a small number of IMCs which had not been able to fully adopt the new categories (Midlands Region accounted for 74).
- 102 Some progress had been made as defects that had been removed from the track were reported. Labelling of new rail as suffering from light contact fatigue in order to increase the inspection frequency did not take place and, consequentially, some inconsistencies were removed from the data.
- 103 Defective rail grinding repairs, as part of the ongoing programme to keep GCC under control, were a significant success with an increase from 62,548 yards to 171,396 yards achieved. However, the National Rail Management Engineer acknowledged that this yardage might not represent all of the actual defects removed, even though the totals are apparently consistent. Reporter B noted that there was a very significant spread between Regions, which was explained by variations in the interpretation of the definition of this item by staff at HQ.
- 104 Network Rail is aware of the significant damage wheels can do to the track, in particular wheel flats, and as a result significant numbers of Wheelchex installations were commissioned (or are planned) with a view to removing defective rolling stock for repair before further damage is done to the track.
- 105 Reporter B investigated whether there was any correlation between rerailing and renewal programmes and the data obtained for rail defects and broken rails. In

general little attention was given to the data and programmes were formulated using other criteria. It was, however, never suggested that the data should be the sole criteria for these programmes and it was interesting to note that some Areas use the data for the rail grinding programme, while others carry out 'cluster' analysis on the data using the output as another further factor in the rerailing and renewal programmes.

Progress Against Regulatory Target

- 106 The reported network total for broken rails of 334 (to be corrected with an additional one from the Midlands Region to 335) was within the regulatory target (maximum of 675) by 50%. The reported figure was also better than the tolerance allowed for this measure (13.7% or approx 92 broken rails on the target of 675). In each of the three Regions for which Reporter B is responsible, the number of reported broken rails fell, and has been falling consistently since 1999-00. The improvement in 2003-04, compared with 2002-03, was 5% in Great Western Region, 40% (39% corrected) in Midlands Region, and 17% in North Western Region.

Compliance with Definitions and Procedures

- 107 Issue 4 of the definition for the reporting of rail defects specifically states that 'the use of unclassified as a sub-category is not allowed'. Clearly Network Rail was non-compliant with the agreed definition in reporting 82 unclassified defects remaining at the end of the year (and 186 new unclassified defects detected during the year).
- 108 The procedure covering defective rails (M2PR Issue 4) also prescribes actions for role-holders that should prevent the non-compliant reporting of unclassified defects (and similar erroneous reporting). The document states that the Regional Maintainer Auditor should 'carry out structured audits to ensure that systems comply with RT/CE/C/057' and the Region A3R Process Owner should 'sense check summary reports from all contracts/contractors'. Clearly neither of these actions were completed successfully in all Regions in 2003-04 otherwise no unclassified defects would have been reported and therefore the reporting was non-compliant with the agreed procedure.
- 109 Both M1DF Issue 3 and M2DF Issue 4 state that the reported data should be defined as the standard that exists at the end of the first period of the following year. This requirement was intended 'to give consistency in reporting and avoid confusion'. Unfortunately, annualised data for broken and defective rails is not routinely processed at the end of period 1 of the following year by Network Rail or the maintainers. As a result, compliance with the definition in this respect has been poor.

Regional Findings

Great Western Region

- 110 Both at Regional level as well as at Area level, concerns were raised during the audit over whether defects were identified correctly and thus categorised appropriately as isolated or continuous. Issues of concern were wheel burns, GCC and mileages of defects. It was suggested that inaccurate coding was the problem and further training would appear to be required. All Areas were connected to the Raildata

system by the end of 2003-04. Audits were undertaken during the year and copies supplied to the Reporter.

- 111 The Reporter's team visited the Thames Valley Area offices located at Reading. This Area was chosen because it was one of the first where maintenance was taken back in-house by Network Rail.
- 112 The Thames Valley Area Track Engineer and the Ultrasonics Engineer confirmed that only Sperry sticks were used during the reporting year. The Area had a full compliment of staff who were appropriately trained. The whole Area was tested to the required frequencies. The ultrasonic train was also used and its results rechecked with Sperry sticks.
- 113 The Thames Valley Area Track Engineer ensured that the records he maintained were appropriately recoded to eliminate all the unclassified defects. Defective welds were correctly dealt with in the reporting year with none incorrectly categorised as defective rails. A number of records were selected randomly and were compared with the track database record. No discrepancies were observed.
- 114 Broken and defective rail records were used to formulate the renewal and rerailing programmes, but they were just two factors of many considered.
- 115 The advantages associated with the Area maintenance coming back in-house were summarised by staff as improved communications and direct access to each other, within the area office. In general it was seen as having had a positive impact.

Midlands Region

- 116 During the audit it came to light that an error had been made in compiling the number of broken rails. A figure of 55 should have been reported rather than the 54 reported in the Annual Return 2004 (1 July submission).
- 117 The Regional Rail Management Engineer was unable to explain why some defective rails were not defined correctly. For rail defects, Midlands Region accounted for 74 unclassified defects out of a total of 82 nationally. The problem of misreporting of isolated and continuous defects was also evident. However, with the national Raildata system going live across the whole of the Region from period 2 2004-05, these problems should now have been eliminated providing new defects are identified and categorised correctly. It was noted that no data has been corrected retrospectively after the definition change to the RT/CE/S/057 standard was introduced in March 2004.
- 118 The Birmingham Area maintenance office at Saltley Depot was audited. Concerns were raised during the audit over whether defects were identified correctly and thus categorised appropriately as isolated or continuous. Issues of concern were wheel burns, GCC and mileages of defects. Further training would appear to be required. All Areas migrated to the Raildata system during the reporting year. Completion was

achieved in the Region in period 2 of 2004-05, Audits were undertaken during the reporting year and copies supplied to the Reporter.

- 119 The Region suffered from a lack of maintenance staff trained in the use of Sperry sticks. The ultrasonic train was deployed in the Region, the results from which were verified with ordinary sticks.
- 120 As the number of broken rails has decreased, Network Rail staff thought that cluster analysis was not useful. However, this method has been used in the Banbury Area to identify the distribution of defects. In the main the traditional methods of assessing for renewals and rerailing were used, although removing wheel burns and elimination of GCC had received a high priority.
- 121 The Birmingham Area Track Engineer and the Ultrasonics Engineer confirmed that only normal sticks are used at present and that they were non-compliant in the use of Sperry sticks. The Area had a full compliment of staff that were appropriately trained in the use of ordinary sticks.
- 122 The Birmingham Area Track Engineer ensured that the records he maintained were appropriately recoded to eliminate all the unclassified defects. Welds were also correctly dealt with in the reporting year and none were classified as defective rails. A number of records were selected randomly and were compared with the track database record. No discrepancies were observed.
- 123 Only one Wheelchex recorder was operating in the Banbury Area. Wheelflats still occur and it was considered that more Wheelchex equipment would be beneficial.

North West Region

- 124 The former Regional Track Engineer represented the Region at the audit. As the IMCs' staff were in the process of transferring into Network Rail, it was decided not to visit an IMC in the North West Region in 2004.
- 125 The former Regional Track Engineer confirmed that the new standards for RT/CE/S/057 had been introduced fully and also that the confusion regarding the isolated and continuous wheel burns definition had been resolved. All Areas were connected to the Raildata system, the migration took place during the reporting year. The method of labelling new rails as suffering from light contact fatigue did not occur in the Region. A separate database was held for such sites. No data was corrected retrospectively after the definition change.
- 126 The use of Sperry sticks increased during the year, except in the Liverpool Area where they were not used. Ultrasonic testing trains were used on certain routes, but their overall coverage was small and their output always verified with manual sticks.
- 127 The former Regional Track Engineer confirmed that the Wheelchex machines were all still in place and that the system was performing satisfactorily as wheelflats had almost been entirely eliminated from the Region. Correlation between rail

defects/broken rails was mainly done in the Manchester Area using cluster analysis. However, a focused programme of renewals was undertaken on Mersey Rail and this appeared to have produced a sharp reduction in broken rails. Other areas used the traditional methods of assessment for renewals and rerailling, such as age, rail depth, gal, condition of track, crippled joints and condition of sleepers, together with contact fatigue (GCC).

Observations and Recommendations

Observations

- 128 Interpretation of the standards concerned with defective rails continues to be patchy and inconsistent between maintenance teams (or IMCs) and Regions. In particular the reporting of defective rail grinding and the large post-publication corrections to the reported isolated defects are indicative of data that is not robust.
- 129 Network Rail was non-compliant in the reporting of defective rails and included unclassified defects in both the number detected during the year and the number remaining at year end. Actions required of specific role-holders intended to avoid such non-compliances were not followed.
- 130 The definitions for broken and defective rails require data to be frozen at the end of period 1 of the following year. This does not align with the normal business reporting cycles and has resulted in further non-compliances with the agreed definitions. Network Rail should consider redrafting the definitions to align with usual business reporting cycles.

Recommendations

- 131 That concerted and vigorous efforts are made to ensure compliance with the agreed definition and procedure for defective rails. Unclassified defects should be investigated and re-classified before production of the Annual Return and clear evidence produced at the next audit showing how the monitoring and auditing of data by role-holders has resulted in significantly improved data quality.

Condition of Asset TSR Sites

Scope of Audit

132 Audits were undertaken by Independent Reporter B to investigate Network Rail's reporting of the following measure:

- M4: Condition of Asset TSR Sites.

133 M4 is a measure which aims to provide ORR with an indication of the quality of the stewardship of track, structures and earthworks by identifying the total number of sites where a temporary speed restriction (TSR) has been imposed and the severity of those restrictions calculated using a defined formula. The measure is reported as the total cumulative number of TSRs and aggregated severity score occurring during the reporting year.

134 A revised definition and procedure had been issued during the reporting period for each of these measures. The versions in-force at the period end were as follows:

- NR/ARM/M4DF (issue 5 17 February 2004); and
- NR/ARM/M4PR (issue 6 22 March 2004).

135 The audits included Great Western, Midlands and North West Regions as well as HQ. They were aimed at verifying compliance with the recently updated definitions and procedures. The numbers contained in the Annual Return 2004 were verified by tracing a random sample of records from source data to the databases used to process and filter the data as reported.

136 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

137 Table 7 summarises the network total scores for 2003-04 represented as a percentage of the 2002-03 scores for both number and severity.

	Numbers	Severity
Track	91.9%	99.3%
Structures	91.4%	58.1%
Earthworks	89.5%	100.3%

Table 7. 2003-04 network total results as a percentage of 2002-03 results.

138 The commentary in the Annual Return acknowledged that severity scores had not fallen at the same rate as the numbers. This was not the case with structures although the numbers were small compared to track, as were the earthworks figures. The commentary continued by stating that this difference in the rate of decrease reflected the priority given to reducing those speed restrictions that gave rise to significant delays. This assertion was supported by Operational Performance data reported which showed that national delays caused to passenger and freight services by condition of track TSRs (TRUST code 104A) decreased by 275,261 minutes (25.4%) in the reporting year.

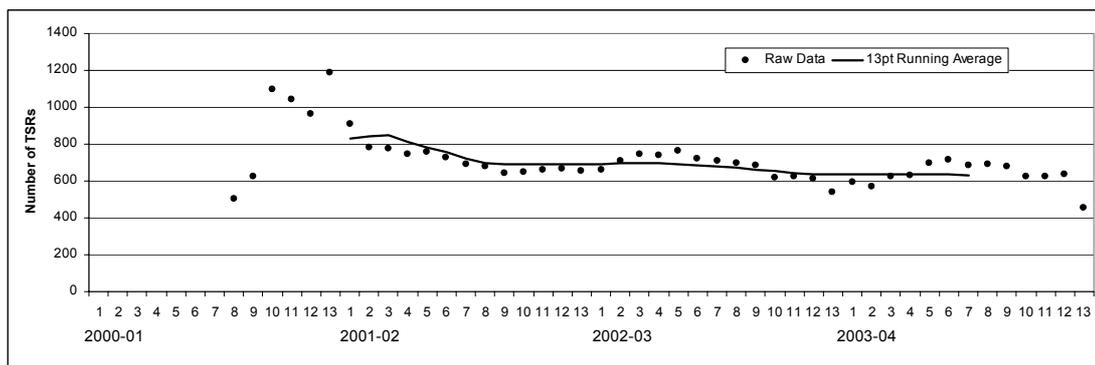


Figure 2. Trend in the number of TSRs.

139 Figure 2 shows the trend in the number of TSRs from 2000-01 to 2003-04. Also shown is the 13-point running average. There is little high frequency variability in the four-weekly data and the average shows a decreasing number from 2001-02 to the end of the reporting year. A season modulation is discernable in the data with slightly elevated numbers of TSRs during periods three to five.

140 The commentary in the Annual Return proposed a confidence grade of B3 nationally which Independent Reporter B considers to be fair. All of the Regions were assigned a grade of B2 except for Midlands and London North East for which B3 was proposed. Following the meetings held in the three Regions for which Reporter B is responsible, the lower level of confidence in the Midlands Region data is considered appropriate.

Findings

Progress Against Regulatory Target

141 The Regulator has not set a target for this measure to ensure that there is no disincentive to applying a speed restriction when it is judged necessary on safety grounds.

142 Reporter B has undertaken an analysis of the percentage change in the numbers and severity of TSR since 2001-02 which has been used as the earliest possible reference position with lack of any comparable data pre-dating this. In all areas except for earthworks severity, Network Rail have demonstrated an improvement in reducing the number and severity of TSRs since 2001-02. It should be noted that the 2001-02 data post-dates the Hatfield accident and so it is likely that using this data

as a reference point improvements are more easily demonstrated due to the high number of TSRs imposed immediately following this accident.

	Track TSRs		Structures TSRs		Earthworks TSRs	
	Number	Severity Score	Number	Severity Score	Number	Severity Score
Network Total 2003-04	1,061	5,712	53	54	85	323
Network Total 2001-02	1,354	7,517	79	208	99	304
% change	-21.6%	-24.0%	-32.9%	-74.0%	-14.1%	6.3%

Table 8. Analysis of TSR movements since 2001-02.

Compliance with Definitions and Procedures

143 Significant changes were made to the M4 definition and procedure for TSRs following recommendations made by the Reporters in previous audit reports. The key changes in the definition document (Issue 5) are summarised below:

- The definition document clarifies that the purpose of the TSR measure is as a proxy for asset condition and is not concerned with operational performance;
- It is confirmed that permanent speed restrictions are not included as reportable under the M4 measure;
- Tables have been included which clarify exactly what TSR imposition reasons are included and excluded under the respective asset types;
- The treatment of TSRs affecting more than one track is now clearly defined for all possible scenarios;
- The treatment required for a change to a TSR (new site, or continuation); and
- Rules governing the four week threshold, severity calculations and variations at the change in the reporting year are now clearly explained.

144 The key changes to the procedure document (Issue 6) for reporting the M4 measure are summarised below:

- The procedure now clearly specifies the responsibilities of the regional process owner;
- The procedure now accommodates and maps the two methods of data collection and reporting that are used in the Regions;
- The HQ process is also mapped in a process flow diagram; and
- The treatment and reporting of cross boundary TSRs is specified.

145 Further to this, HQ made considerable efforts to improve the checks and data verification processes inherent within the HQ M4 spreadsheet used to extract the

TSR data from regional spreadsheets and filter it to produce the data that is reportable under the M4 measure in the Annual Return.

146 The commentary in the Annual Return states that ‘whilst the values reported at the national level are likely to be within 5%, we cannot state this as a certainty and therefore declare this data to have a confidence grade of B3’. This prudent approach and level of confidence is supported by Reporter B.

Regional Findings

147 This section summarises the significant findings from the HQ and Regional audits.

HQ

148 A meeting was held with the HQ Reporting Champion for the M4 measure. The meeting focused on examination of the HQ M4 spreadsheet which is used to analyse the data received from the Regions and extract the figures for reporting to the ORR.

149 The HQ Reporting Champion led Reporter B through the process of receiving a Regional input spreadsheet and then extracting and filtering the data. The Reporter has a high level of confidence in the accuracy of this element of the data reporting process for the M4 measure.

150 There are numerous logic checks built in to the spreadsheet, as summarised:

- Checks are undertaken to ensure that all of the required data entry fields in the regional data have an entry;
- A check is undertaken that the date imposed and removed is in the correct format and is logical (eg date removed post-dates date imposed);
- Checks are undertaken on the start and finish miles and chains; and
- Checks are undertaken on the speed imposed data (eg. speed imposed is less than linespeed).

151 For the few scenarios where a discrepancy might have occurred that in built logic checks would not identify, a manual checking process was undertaken which involved the HQ Reporting Champion referring back to Regional staff to investigate the circumstances of particular TSRs. Evidence of this process was observed by Reporter B and it appeared that such investigations were documented as notes in the M4 spreadsheet.

Great Western Region

152 The Regional Process Owner applied the most recent versions of both the definition and procedure for the M4 measure. These documents were issued in the last few weeks of the 2003-04 reporting year. The retrospective application of the definition and procedure did not affect the Region’s ability to collect the data required for reporting as the most significant modifications were to the HQ processes. The Regional Process Owner demonstrated a good understanding of the new documents.

- 153 The Region’s ability to collect and report data for the M4 Measure was not impacted by the Network Rail organisational changes that occurred during 2003-04. The process owner had remained in post, following observations made in previous reports prepared by Reporter B, the Region had made an effort to train and familiarise another individual to undertake the data collection to provide some redundancy in the system.
- 154 The data provided to the Reporter at the time of the audit differed slightly from the data reported in the Annual Return 2004. The severity score for earthworks TSRs had increased from 126 to 127. This was an immaterial change and was not of concern.
- 155 Table 9 summarises the M4 TSR results for Great Western Regions in 2002-03 and 2003-04 as well as the percentage change.

	Track		Structures		Earthworks	
	Number	Severity Score	Number	Severity Score	Number	Severity Score
2003-04	157	764	11	17	31	127
2002-03	165	791	9	13	19	64
% change	-4.8%	-3.4%	22.2%	30.8%	63.2%	98.4%

Table 9. Summary of Great Western 02-03 and 03-04 results.

- 156 There was a significant increase in both the number and the severity score for earthworks TSRs in the Region. The structures TSRs also demonstrated an increase, whereas track TSRs decreased. The Regional Process Owner was not aware of the reasons for the changes although the commentary in the Annual Return suggests that earthworks TSRs increased as a result of the hot weather over the summer of 2003. Analysis of the data reveals that one long-term TSR, imposed prior to commencement of reporting year 2002-03, contributed 39.2% of the total with a severity score of 50. Further analysis by Independent Reporter B has aggregated the severity scores for those TSRs imposed between 1st June 2003 and 30th November 2003 in an attempt to validate the statement in the commentary. The total score for earthworks TSRs imposed between these dates is 26. The analysis shows that the number of earthworks TSRs imposed was more sensitive to the occurrence of extreme weather during the summer of 2003 than was the TSR severity score.
- 157 It is the opinion of Independent Reporter B that the process for recording the source data for the M4 measure in the Great Western Region is comprehensive and efficiently managed. Source data documents in the form of WON entries, wires and IMC TSR request forms were requested for three randomly selected TSRs imposed during 2003-04. These documents were provided subsequent to the audit and no discrepancies with the data in the database were identified.

Midlands Region

- 158 The Regional Process Owner applied the most recent versions of both the definition and procedure for the M4 measure. It was confirmed by the Process Owner that the retrospective application of the definition and procedure did not hamper the Region's ability to collect the data required for reporting as the most significant modifications required were to the HQ processes and the formulae applied.
- 159 During the 2002-03 audit, reference was made to the parachute teams that were created to focus on reducing TSRs following Hatfield as part of the IIP programme. It was confirmed that these teams were officially disbanded following ORG1. It was stated, however, that the personnel were redeployed to roles that continued to undertake the same tasks only from positions that made more business sense therefore there was no negative impact on TSRs as a result of this reorganisation.
- 160 The commentary in the Annual Return draws attention to the fact that there were some problems during 2003-04 concerning the management of TSRs in the Midlands Region brought about by changes in process and personnel. These issues were discussed with the Reporter during the audit.
- 161 It was stated that in August and September 2003 there was a problem with the reporting processes which required a reaffirmation of the processes and responsibilities in order to regain control and manage the TSRs down to an acceptable level. Evidence was provided to Reporter B that there was a proactive effort made to address this situation early in October 2003 by means of a memo covering the responsibilities and processes for effective management of TSRs.
- 162 Further discussion of this issue clarified that the net effect of this slippage was to increase the overall number and severity of TSRs in place as the rate of TSR imposition became higher than the rate of TSR removal. The impact was less directly associated with the accurate recording and reporting of the TSR data.
- 163 There was, however, an indirect consequence of this increase in the overall number and severity of TSRs. The Midlands Region accounted for 45% of the network total track severity score and recorded the second highest overall number of TSRs for 2003-04. This is largely due to the West Coast Route Modernisation programme activity. Due to this large quantity of TSRs in the Midlands Region, the Region ran out of time to complete the investigation into some of the apparent inconsistencies that were identified by HQ, and for this reason a confidence grade of B3 was assigned.
- 164 Notes within the HQ TSR spreadsheet for the Midlands Region expanded on the issue: 'With the extensive renewals work associated with the West Coast Route project and other activities there were a considerable number of changes of TSR records during the year. This gives the potential for duplication of entries and broken associations between records. Significant effort has been made to screen out duplicates and to ensure that all relevant associations (UID groupings) have been correctly identified.'

165 The process followed in the Midlands Region was essentially the ‘database’ process defined in the procedure document. The three Maintenance Delivery Managers and the equivalent WCRM individual recorded the relevant TSR data in spreadsheets, this was checked against information that had been entered into the WON and Control Log. The information was collected in the Infrastructure Improvement Programme (IIP) database and the necessary M4 data was extracted from this.

166 Independent Reporter B requested source documents in the form of WON entries, wires or IMC TSR request forms relating to three randomly selected TSRs imposed during 2003-04 from the Midlands Region. At the time of drafting these had not been provided.

North West Region

167 The revised M4 procedure and definition were not available to the Regional Process Owner at the time of the audit as they were held in files that had been moved to Birmingham and it was not possible to download them from the Network Rail intranet due to technical problems. This was noted as a non-compliance.

168 The impact of organisational changes within Network Rail during 2003-04 did not appear to have had a particular impact on the Region’s ability to collect and report the data required for the M4 measure, although the more recent restructuring had a significant impact on the ability of Reporter B to thoroughly audit the Region. Source data was not available for audit, including records of WON’s, wires and IMC TSR request forms. The procedure and definition document were also unavailable to the Regional Process Owner who was unable to demonstrate a thorough knowledge of the changes and clarifications incorporated within the new definition and procedure.

169 According to the Regional Process Owner there was an impact following ORG1 on the Regions available resource to manage and remove TSRs effectively. The IIP Team which was set up following Hatfield in each of the Regions had originally been tasked with investigating TSRs relating to Gauge Corner Cracking and had then progressed to looking at all TSRs. This had been effective in reducing the TSRs in the Region and had been retained when other Regions had disbanded their teams. As a result of ORG1, this team was disbanded in the North West. This had a negative impact on managing the numbers of TSRs. This view was not consistent with that expressed in the Midlands Region although Reporter B is not aware of the geographical details regarding the redeployment of the IIP Team personnel.

170 The Region had followed a dual system during 2003-04, recording TSR data in the IIP database as well as directly into the spreadsheet and reconciling between the two.

171 It is the opinion of Reporter B that the processes for recording the TSR data were followed during 2003-04. A significant caveat must be applied, however, Reporter B was unable to undertake any source data verification and the Regional Process Owner did not provide confidence that there was a satisfactory level of understanding of the rules for inclusion, exclusion and accurate reporting as defined

in the definition and procedure. There appeared to be an over-reliance by the Region on the HQ data filtering process.

Observations and Recommendations

Observations

- 172 Considerable and commendable improvements were made to the M4 definition and procedure during 2003-04.
- 173 The assertion in the commentary regarding the impact of extreme weather on earthworks TSRs in the Great Western Region does not stand up to scrutiny.
- 174 The position regarding regulatory targets needs to be clarified.
- 175 It was not possible for Independent Reporter B to complete a comprehensive audit on the North West Region due to recent restructuring.
- 176 In the Midlands Region, auditors were unable to complete the investigation into inconsistencies. This process should be completed and the impact of this should be reported in the report on the Annual Return 2005.

Recommendations

- 177 No specific recommendations are made concerning to the M4 measure.

Earthworks Failures & Derailments

Scope of Audit

- 178 The audit was intended to verify the accuracy of the data contained in section 2 of the Annual Return 2004 under the measure M6 Earthwork Failures & Derailments.
- 179 The measure was updated in 2003-04 and the Annual Return 2004 reported both the number of slope failures causing derailments (as in previous years) and the number of slope failures causing train delays (new for 2004).
- 180 A revised definition and a procedure had been issued during the reporting period. The versions in-force at the period end were as follows:
- NR/ARM/M6DF (issue 3 17 February 2004); and
 - NR/ARM/M6PR (issue 3 22 March 2004).
- 181 The audit concentrated on HQ staff since no Regional staff were referred to in the agreed definition or procedure and therefore had no significant role in the reporting. A cursory audit of the measure in the Midlands Region was added opportunistically to the meeting concerned with earthworks renewals. This meeting served to collect background information useful to the audit of M6 and to inform the Reporter's view of the robustness of its reporting.
- 182 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

- 183 The reported slope failures causing derailment and >750 minutes of train delays followed the same pattern as previous years with one incident recorded. The commentary explained that the incident occurred in the Midlands Region at Willersley on 17th January 2004. The passenger train involved had struck a rock fall in a tunnel approach and was derailed.
- 184 The new measure of slope failures causing train delays reported 47 incidents nationally. Of these, 21 (44.7%) occurred in the Great Western Region.

Findings

- 185 The small number of incidents reported in which both a derailment and >750 minutes of train delays occurred continues to highlight the rarity of the event necessary for inclusion in the Annual Return under the definition of this measure. The additional reporting of slope failures causing train delays has improved the usefulness of this measure.
- 186 The HQ Reporting Champion for this measure explained that he interrogated the National Control Log, filtering the relevant sections only to obtain the data required

for reporting against earthworks failures. Since a failure having several contributory causes is likely to have multiple entries in the log, there was little chance of any earthworks failures having been overlooked during this process. The Champion then produced a list of failures which was circulated to each Regional Earthworks & Drainage Engineer for confirmation. Evidence of the lists and of the confirmation by competent staff in the Regions was observed during the audit.

- 187 During the HQ audit, the Reporter was given a copy of the Table of Incidents caused by earthworks and slips for 2003-04. The table was compiled from data supplied in SETAN 28 and other Regional reports as well as from the National Control Log. No discrepancies were found with the data reported in the Annual Return.
- 188 The HQ Reporting Champion for this measure explained that the recording of delays caused by slope failures was not as volatile as that of track circuit faults for example because the cause was rarely disputed by operating companies. As a result, it was not as critical to set the point in time at which the data for the measure would be reported. Despite this, it was difficult for the auditee to demonstrate that the prescriptive date for freezing the data (end of period 1 in following year) had been complied with.
- 189 Auditors saw tangible evidence of work by Network Rail to develop its management of earthworks using a risk-based assessment and ranking methodology. The Soil Slope Hazard Index System was piloted in the North West Region during 2003-04. The system includes a draft specification for the assessment of earthworks that is numeric, repeatable and which highlights potential failure types. This progress was pleasing to see given the recommendations made by this Reporter in 2002 and 2003. The system appears to provide a robust framework within which risk can be assessed and subsequently managed.
- 190 A copy of the Structure Engineers' Technical Advice Note (ref: SE/TAN/0028 issue 1, September 2003) was also provided during the HQ audit. The note described a new numerical system for the hazard ranking of structures and earthworks failures and/or incidents. The system considers both the seriousness of any failure or incident, and the potential for damage or serious injury resulting from them. In combination with the index system described above, this is hard evidence of a rigorous approach to earthworks management.
- 191 Future audits should focus on collecting evidence of the application of these systems in the planning of interventions on the network and in the minimisation of disruption through delays as a result of preventative maintenance works.
- 192 The confidence grade attributed to this measure by Network Rail was AX. This was a reflection of the confidence that the organisation had in its systems and procedures for reporting and also the recognition that a numerical percentage precision is difficult to attribute in cases where the number of failures or incidents is small (or approaching zero). Reporter B would agree that this measure is well reported and concurs with the AX confidence grade.

Progress Against Regulatory Target

193 There are no regulatory targets for any of the activity measures.

Compliance with Definitions & Procedures

194 Reporter B did not discover any material non-compliances with the definition and procedure for this measure. An observation was made concerning the date on which data were frozen for reporting but this was not considered significant. The improvements made to this measure following the findings of previous audits were welcomed.

Regional Findings

195 No Regional investigations were undertaken as part of the auditing of this measure as all of the source information was available to the HQ Reporting Champion via the National Control Log.

Observation & Recommendations

Observations

196 The requirement in the definition for the data on which the reported measure depends to be collected at exactly the end of period 1 of the following year does not reflect the way that data is actually captured. Network Rail may wish to consider editing the definition to avoid future non-compliance.

Recommendations

197 No specific recommendations are made concerning the M6 measure.

Bridge Condition

Scope of Audit

198 The audit was intended to verify the accuracy of the data contained in section 2 of the Annual Return 2004 under the measure:

- M8: Bridge Condition.

199 The Structures Condition Marking Index (SCMI) is a tool used to provide a grade from 1 to 5 for the condition of bridges. 2003-04 is the fourth year in the programme of condition assessment and scoring. The target is to survey and mark every bridge in a six year period and then to continue with a rolling programme to monitor overall condition and trends.

200 A revised definition and procedure were issued during the reporting period for this measure. The versions in-force at the period end were as follows:

- NR/ARM/M8DF (issue 4 17 February 2004); and
- NR/ARM/M8PR (issue 4 22 March 2004).

201 Meetings were held in each of the Regions and at HQ to investigate the reporting process. Site visits were undertaken to witness the examination of at least one bridge in each of the Regions in order to be able to report upon the examination methodology and so that the data gathered can be subsequently tracked in the 2004-05 reporting year.

202 Similarly, data gathered from examinations that were witnessed at the beginning of 2003-04 was tracked through from the Structures Examination Contractor (SEC) to incorporation in the final report to the ORR.

203 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

204 The data reported for 2003-04 showed no deterioration in the overall average condition grade. There was a 12% decrease in the number of bridges examined during 2003-04 compared to 2002-03, which was attributed to change to the cut-off date for the reporting of examinations from 31st March to 15th February.

205 To the end of the reporting year, a total of 10,407 bridges had been subjected to an SCMI examination. Based upon the breakdown of bridges provided by Network Rail during the audit of the 2001-02 Annual Return, this represents approximately 29% of the total population.

- 206 The target is to complete an SCMI examination for every bridge by the end of reporting year 2005-06. This requires approximately 17% of the population to be examined each year. During 2003-04, 3,716 SCMI results were included in the Annual Return. This represented approximately 10% of the population, a decrease compared with the 4,255 bridges (12%) reported for 2002-03.
- 207 Network Rail attempted to justify a national confidence grade of B3 by stating that ‘the SCMI tool has been in place now for a number of years, which gives us confidence in our reporting’. The Reporter does not share Network Rail’s view. External auditing has clearly shown significant non-compliances with the relevant procedures and wide variations between Regions (and contractors) in scoring. Material adjustments of >10 SCMI values were identified in 23 of the 103 bridges (22.3%) re-surveyed in the three Regions covered by this audit. Nearly 5% of the scores for these bridges required adjustment by more than 20 SCMI points.
- 208 Given such large inconsistencies in the application of SCMI, Network Rail should include a robust estimate of the confidence grade proposed for each Region. These grades, and the national grade derived from them, should reflect the likelihood that between 20 and 25% of the bridges surveyed may have been incorrectly reported by more than 10%.

Findings

- 209 The decrease in the percentage of the bridge population examined in 2003-04 was explained by the fact that the cut-off date for reporting for the year has been brought forward to 15th February for 2003-04 compared with 31st March for 2002-03. This, combined with the fact that a disproportionately high number of bridges tend to be reported towards the end of the financial year (for commercial reasons), mean that it is likely that the number of bridges examined and reported by the contractor during the full fiscal year of 2003-04 was approximately equivalent to the number reported in the Annual Return for 2003.
- 210 In the four years that SCMI has been employed, 29% of bridges have been reported, leaving 71% to be reported in the remaining two years. Reporter B and Network Rail both believe that the full population will not be reported by the end of 2005-06 for the following reasons:
- Many bridges that received Detailed Examinations during the first two years did not receive SCMI examinations at the same time as the latter was being run as a trial and was not undertaken in all of the Regions. The SCMI data for these bridges will therefore not be available until they are examined in detail again during years 7 and 8 (2006-07 & 2007-08);
 - The Detailed Examinations of some structures have been delayed or deferred due to access difficulties. According to Network Rail, the principal reasons for these delays were:
 - problems accessing tenanted arches; and

– access problems created by the work involved in the West Coast Route Modernisation. And

- Bridges that are reported on or after 15th February of year six will not be included within the first six years of data.

211 If progress continues at the same rate during the next two years, approximately 53% of bridges will have been included in the M8 measure by the end of year 6. This figure will increase considerably during years 7 and 8 as many of the bridges missed during years 1 and 2 are reported.

Progress Against Regulatory Target

212 To the end of 2003-04 approximately 29% of the bridge population had been examined and condition scores reported in the Annual Return. It is the Reporter's opinion that this proportion of the population is sufficient to allow a baseline average condition to be defined. This is a necessary pre-requisite to the formal setting of the regulatory target.

213 Until the baseline average condition is established, it is not possible to monitor Network Rail's progress towards the regulatory target for bridge condition. It is the Reporter's opinion that regulatory targets should be considered for other structure-types such as tunnels, retaining walls and culverts. At least, an action plan should be agreed for the reporting of the condition of such assets in order to begin sampling with a view to establishing baseline average conditions.

Compliance with Definitions & Procedures

214 Issue 4 of the definition (NR/ARM/M8DF) was issued on 17th February 2004 and the 2003-04 results were prepared in line with the revised definition. The principal changes were:

- A requirement was introduced to present the results as a distribution graph, showing the number of bridges assessed in the Annual Return on a 1-100 scale, together with a similar graph showing the cumulative total number of bridges assessed for current and previous reporting years. The reason for introducing this requirement was to allow changes in the results to be clearly visible from year-to-year; and
- In order to permit the timely reporting of the SCMI data, the cut off date for examinations for data to be included in the Annual Return was altered to 15th February, instead of the 'end-of-year' date inferred in Issue 3. The effect of this has been that the number of bridges examined and reported was less for the year 2003-04, as it only included those bridges examined between 31st March 2003 and 15th February 2004. All future reports should cover a full twelve month period from 16^h February to 15th February.

215 Issue 4 of the procedure (NR/ARM/M8PR) was issued on 22nd March 2004 and the 2003-04 results were prepared in line with the revised definitions. The principal difference was:

- The removal of ‘Step 6’ which required the SCMI score to be entered into RAR. This had proved impracticable to achieve and was of no significant benefit.

216 Some modifications were also to be made to the SCMI Code of Practice RT/CE/C/041:

- Masonry spalling – this was a major change. Issue 2 was being consistently misinterpreted by examiners and did not address low level spalling adequately. The changes brought the handbook in-line with what was being practiced by the Examiners and so should not result in a significant change in the results reported to the ORR;
- Timber – some minor changes were included. However, timber bridges make up such a small proportion of the bridge stock that the changes should not significantly affect the results reported to the ORR; and
- Several other grey areas were clarified, based upon feedback from the User Group.

217 Further comments on compliance with the agreed definition and procedure are contained in the Regional Findings section which follows.

Regional Findings

Great Western Region

218 To date 1,566 of the bridges in Great Western Region have been examined, representing 32% of the total bridge population. 1,132 of these bridges (23% of the total bridge population) were reported during 2003-04.

219 If progress continues at the historical rate, approximately 56% of bridges will have been included in the M8 measure by the end of year 6. This figure will increase considerably during years 7 and 8 as many of the bridges missed during years 1 and 2 are reported on

220 During the observation of a bridge examination in the Region the following issues were noted. For one structure the Examiner had no sketches or prepared forms and did not attribute the SCMI scores whilst on site. He stated that he was competent to Units 9 and 10 of RT/CE/S/047 but this was not verified by the auditor.

221 An external audit of the Structures Examination Contractor’s performance in the Region was undertaken during the year with 33 bridges being independently scored. The performance of the contractor was similar to the previous year with two bridges requiring a score adjustment of $\pm 11-20$, 14 of $\pm 4-10$ and 17 of ± 3 . No bridges were adjusted by $> \pm 20$.

Midlands Region

222 To date 1,841 of the bridges in Midlands Region have been examined, representing 32% of the total bridge population. 429 of these bridges (7.5% of the total bridge population) were reported during 2003-04.

- 223 If progress continues during the next two years at the same rate, approximately 52% of bridges will have been included in the M8 measure by the end of year 6. This figure will increase considerably during years 7 and 8 as many of the bridges missed during years 1 and 2 are reported on.
- 224 Auditors observed two bridge inspections in the Midlands Region and noted several examples of good practice in compliance with the agreed procedure. The Examiners had prepared forms and sketches based on reconnaissance visits and in one case the SCMI scores were attributed on site. Additional elements were discovered at one location, hidden above the bridge abutments. These were correctly added to the SCMI report. Both Examiners stated that they were competent to Units 9 and 10 of RT/CE/S/047 although no evidence was provided on site.
- 225 An external audit of the Structures Examination Contractor's performance in the Region was undertaken during the year with 29 bridges being independently scored. The performance of the contractor was similar to the previous year with one bridge requiring a score adjustment of $\pm 11-20$, 12 of $\pm 4-10$ and 16 of ± 3 . No bridges were adjusted by $>\pm 20$.

North West Region

- 226 To date 1,636 of the bridges in North West Region have been examined, representing 24% of the total bridge population. 467 of these bridges (7% of the total bridge population) were reported during 2003-04.
- 227 If progress continues during the next two years at the same rate, approximately 40% of bridges will have been included in the M8 measure by the end of year 6. This figure will increase considerably during years 7 and 8 as many of the bridges missed during years 1 and 2 are reported.
- 228 Auditors observed two bridge inspections in the North West Region and noted a number of non-compliances with the agreed procedure. For example, one Examiner had no prepared forms and sketches when he arrived on site. He did not attribute the SCMI scoring to elements whilst on site. The Examiner said that he had been on the SCMI training courses but was not aware of Units 9 and 10 of RT/CE/S/047. In another case, elements were missing from the sketch and form used to record data and the score for one deck element had been altered when the survey record was traced to the SCMI software. These non-compliances were not considered material.
- 229 An external audit of the Structures Examination Contractor's performance in the Region was undertaken during the year with 41 bridges being independently scored. The performance of the contractor was poor with five bridges requiring a score adjustment of $>\pm 20$ and 15 by $\pm 11-20$. Two bridges were actually adjusted by $>\pm 30$.
- 230 The audit revealed a poorer performance in 2003-04 than observed in the previous year.

Observations & Recommendations

Observations

- 231 A baseline condition from which the regulatory target can be has not been established for bridges. Reporter B is of the opinion that a cumulative sample of 29% is sufficient for the baseline to be agreed.
- 232 No condition assessments of any structure types other than bridges were reported in the Annual Return 2004. The Final Conclusions of Period Review referred to regulatory targets for 'structures'.
- 233 External audits continued to highlight poor performance among the contractors responsible for examining bridges and assigning SCMI scores. This problem implies unreliable and inconsistent condition assessments between Regions and will have affected the accuracy of the data reported in the Annual Return.
- 234 Reporter B disagrees with Network Rail's proposed national confidence grade of B3 which it believes to be overly generous. The national grade should be revised down and robust proposals made for Regional confidence grades that reflect the variability that exists between SECs.

Recommendations

- 235 The baseline condition for bridges should be agreed and the regulatory target set.
- 236 An action plan is needed to improve the accuracy of reporting SCMI scores. This plan needed to focus on minimising the inconsistency of scoring which clearly exists between Regions (and between contractors).

Signalling – Failures & Condition

Scope of Audit

237 The audits were intended to verify the accuracy of the data contained in section 2 of the annual Return under the measures:

- M9 Signalling Failures; and
- M10 Signalling Asset Condition.

238 M9 is a measure which reports the total number of signalling failures which cause a cumulative total train delay of more than 10 minutes per incident. M10 measures the condition of the signalling assets using a 1-5 grading system. The condition grade is based upon the residual life of the signalling assets within a signalling interlocking area as calculated by the SICA tool.

239 Revised definitions and procedures were issued during the reporting period. The versions in-force at the period end were as follows:

- NR/ARM/M9DF (issue 5 17 February 2004);
- NR/ARM/M10DF (issue 4 17 February 2004);
- NR/ARM/M9PR (issue 3 22 March 2004); and
- NR/ARM/M10PR (issue 4 22 March 2004).

240 The audits were aimed at checking compliance with the recently updated definitions and procedures. The numbers contained in the Annual Return were also verified using the source data obtained during the Regional and HQ audits. The audit trail from source data to the final Annual Return data was checked by analysing processes, databases and systems.

241 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

242 The number of reported signalling failures causing cumulative train delays of >10 minutes decreased by 3.6% to 28,098 in 2003-04.

243 Figure 3 shows the trend in reported failures from 2000-01 to 2003-04. Also shown is the 13-point running average. Clearly shown is the variability in the four-weekly data and a trend of an increasing number of incidents from 2000-01 to the end of 2002-03 (highlighted by the running average) and an apparent decreasing trend that started in 2003-04.

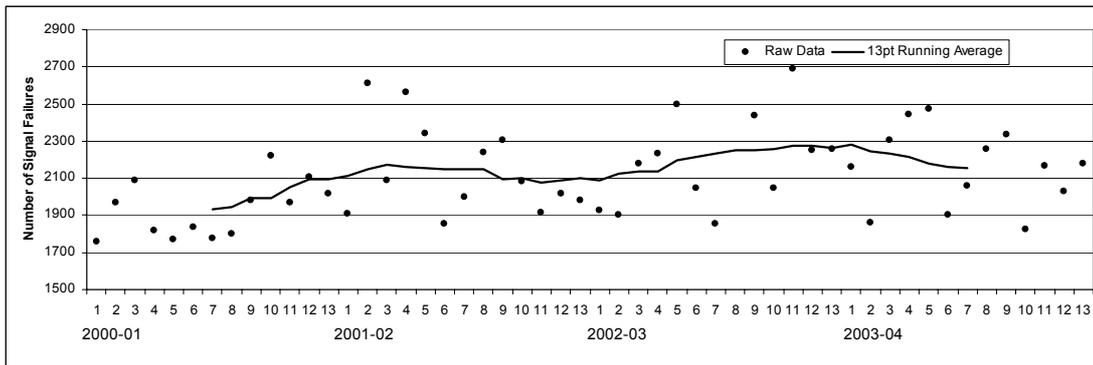


Figure 3. Trend in the number of signalling failures.

244 Whilst there was an overall decline in the number of incidents reportable under signalling failures, Great Western Region experienced a small increase (of nine incidents), Midlands saw an increase of 96 incidents and North West an increase of 181 incidents. It should be noted that the Stoke Stafford Area transferred from Midlands to North West Region during the reporting period. All of the remaining Regions reported a decrease.

245 The 2004 Annual Return reported a slight decline in the overall condition of the signalling infrastructure, with a weighted average condition grade shifting from 2.4 to 2.5 based upon the cumulative results collected since 2000-01.

246 For the first time condition grades were reported by Region as well as nationally. The average condition grades for Great Western, Midlands and North Western Regions were calculated as 2.92, 2.91 and 2.50 respectively. The latter closely matched the reported national average condition grade whilst the former two were higher, indicating a poorer average condition of the assets.

247 Network Rail proposed a national confidence grade for signal failures (M9) of B2 with Regional figures receiving only a B3 grade. For M10, a similar pattern was proposed with the Regional figures quoted as B4 and the national figures as B3. The numerical part of these grades imply an accuracy of $\pm 1-5\%$, $\pm 5-10\%$ and $\pm 10-25\%$ for grades 2, 3 and 4 respectively.

Findings

248 Whilst there was a decrease in the number of reported incidents in 2004 and hence an improvement in the performance under M9, this was largely due to a significant improvement in the London North Eastern Region which accounted for 83% of the total reduction. The Midlands and North West Regions continued to report declining performance. These Regions were both significantly affected by the West Coast Route Modernisation programme and it was suggested during the HQ audit that this decline is explained by a bath-tub curve of failure rate being experienced on the new infrastructure installed as part of the programme.

249 The Reporter received a spreadsheet from the SICA Coordinator at HQ which was used to compile the M10 results. An analysis of this spreadsheet raised the following issues:

- There appeared to be a factor of 0.775 applied to all but a few of the remaining life estimates generated by the SICA tool except for the Great Western Region where no factor had been applied. This indicated that the pSICA tool was producing remaining life estimates that were considered optimistic by staff at HQ;
- An attempt was made to reproduce the data as reported in the Annual Return and the total number of interlockings assessed appeared to be 1,400 rather than 1,393 as reported in the Annual Return;
- There also appeared to be some discrepancies over the distribution of scores in the East Anglia Region.

Progress Against Regulatory Target

250 The Annual Return stated that the Regulatory target for M9 was for ‘no deterioration from the network total reported for 2000-01 (25,106)’. The number of incidents reported in the Annual Return showed that Network Rail failed to achieve the regulatory target and that the number of incidents reported was outside the tolerance limit allowed for the measure.

251 It should be noted that some regulatory documents refer to delay minutes caused by failures to signalling infrastructure rather than the number of incidents, with no lower time threshold mentioned (M9 reports only incidents causing >10 minutes of delays).

252 Table 10 uses data from the Operational Performance section of the Annual Returns 2004 and 2003 to obtain data for each year, 2000 to 2004, describing the total number of signal failings and the national delay minutes to passenger and freight trains.

Item	2000-01	2001-02	2002-03	2003-04
No. of reported signalling failure incidents(1)	23,561	25,621	25,902	25,430
National delay minutes(2)	1,815,225	2,205,471	2,544,420	2,483,096
Average delay minutes per incident	77	86	98	98
No. of incidents reported (M9)	25,106	27,905	29,013	28,098
Estimated delay minutes (M9)	1,934,257	2,402,079	2,850,022	2,743,611

Notes:

(1) Total incidents reported against codes 301A, 301B, 302A & 302B

(2) Total delay minutes reported against codes 301A, 301B, 302A & 302B (passenger+freight)

Table 10. Estimated delay minutes caused by signalling failures.

253 Table 10 shows that the average delay minutes per incident increased by 27.3% during the four years from 77 to 98 minutes. The actual number of incidents reported for M9 was used to estimate the delay minutes attributable to signalling failures.

254 The estimated failure incident delay minutes increased by 41.8% from 2000-01 to 2003-04.

M10 Signalling Asset Condition

255 The Annual Return stated that the Regulatory target for M10 was for 'no deterioration from a baseline average condition grade which will be established during the second control period once a sufficient sample size is achieved'.

256 The Annual Return 2004 reported a declining average condition grade for signalling assets but, in the absence of an agreed baseline average condition it is not possible to assess progress against the regulatory target.

Compliance with Definitions & Procedures

257 The definition for M9 (NR/ARM/M9DF Issue 5) was updated in 2003-04. It stated that the data to be reported in the Annual Return should be that existing at the end of period 1 of the subsequent reporting year. Further clarification was also provided to ensure that only delay minutes that exceed the ten minute threshold are included and not those that equal it.

258 Whilst both the definition and procedure for M10 were updated to include some minor corrections and clarifications, these had no material impact on the reporting in 2004.

259 Unfortunately, the most recent versions of the definitions and procedures (for both M9 & M10) had either not been issued to relevant Process Owners in the Regions or the Process Owners were not aware of their existence. This exposed a weakness in the control of documents within Network Rail. Whilst controlled copies of the latest version of definitions and procedures were circulated to HQ Champions and to some staff in the Regions, Process Owners were not on the controlled distribution list and so whether they received a copy of the updated documentation was left to chance.

260 Several examples of procedural non-compliances were observed during the Regional audits. These have been noted under the Regional Findings.

261 Network Rail attributed a national confidence grades for both M9 and M10 that were higher than those quoted for the Regions. The Reporter was not provided with any evidence to support the attribution of these grades. Indeed evidence was requested of an analysis of the systematic and unsystematic error in the reporting of M10. Without such an analysis, the Reporter is of the opinion that Network Rail should not claim a national confidence grade with a greater accuracy (say 3) than the Regional reporting would support (say 4).

262 If the systematic error involved in the monitoring of either measure was significant, it would not be eliminated simply by combining data from seven Regions. Even if random, or unsystematic error were the dominant form, a sample size of seven is probably too small to allow positive and negative errors to cancel.

Regional Findings

263 During the HQ audit the lack of a training programme to ensure accurate attribution of delays to the signalling codes was highlighted as a potential reason for inaccurate reporting in all Regions.

Great Western Region

264 During 2003-04 one of the larger TOCs that operates in the Region had established their own control centre co-located with the Network Rail Control Room. This had significantly improved the delay attribution process and had reduced the number of disputes outstanding considerably as many were resolved verbally. Only circumstantial evidence was available to support this as the biggest impact had been on immediate resolution of what would have become disputes within a week or between the flash and day 42 refresh.

265 The requirement in parts of the network for manual reporting of train movements due to the absence of automatic train movement recording points (Smart sites) was acknowledged as a possible source of inaccurate data reporting. If a delay arising through inaccurate manual reporting was not likely to have a significant commercial impact then there was less likelihood that it would have been challenged and corrected.

266 The Region demonstrated delivery of in-house training and a competency monitoring regime for its delay attribution staff. Resourcing levels were also shown to be satisfactory.

267 All 100% of the signalling assets in the Region have been assessed using either sSICA or SICA2b. As a result of the confidence that HQ had in the quality of the survey data, no numerical adjustment was made before inclusion in the Annual Return. The Reporter is satisfied that the Region had a robust system in place for assessing signalling asset condition.

Midlands Region

268 The reasons behind the increases in the number of failures experienced by the Midlands, and North West Regions were explored during the HQ audit. It was proposed that this increase was entirely due to the start of a bath-tub curve of failure rate caused by significant installation of new infrastructure in these Regions. No investigations were conducted by HQ to confirm this and no evidence to support it was provided.

269 Considerable sums of money were spent on signalling renewals during 2003-04, although this was largely channelled through the West Coast Route Modernisation programme. The Midlands Region actually underspent by 44% and the North West

Region underspent by 24% against the Business Plan forecasts but the total signalling renewal spend on Midlands, North West and WCRM was £381.4m which would support the possible impact of a bath-tub effect on failure rates.

- 270 With the completion of the WCRM Stage 1A works (Euston to Birmingham and Manchester) due by September 2004, future audits should examine the failure rate in the Midlands and North West Regions (or Territory) with a view to substantiating this theory.
- 271 During 2003-04 the Stoke Stafford area was transferred to the North West Region. The results reported in the Annual Return 2004 had been modified to reflect this, including an adjustment to the 2002-03 figures.
- 272 Reporter B obtained figures from the Midlands Region for the Stoke Stafford area for 2003-04 which allowed some analysis of the impact of this transfer of assets on the results. Table 11 provides the M9 reportable figures for the Midlands Region taking the transfer into account and also the figures had the transfer not occurred.

Stoke Stafford		Total with transfer		Total without transfer	
2002-03	2003-04	2002-03	2003-04	2002-03	2003-04
562	443	5,850	5,827	5,288	5,384

Table 11. Effects of Stoke Stafford transfer of assets on Midlands M9 results.

- 273 If the Stoke Stafford transfer had not occurred then the Midlands Region would have demonstrated a greater improvement in performance as the 21.2% reduction in the number of incidents in that area would have offset the increase in the number of incidents in other parts of the Midlands network.
- 274 The Reporter explored whether the IC Track Circuit Failure incident code had been liable to inaccurate attribution to delay minutes and incidents. The opinion of the Process Owner in the Midlands Region was that this was highly likely as failure of the track circuit was often the first indicator of a fault but was not always the root cause. An estimate was made that between 25% and 30% of delays attributed to the IC code might have been incorrectly reported and should not have been included under the M9 reportable codes. There was no evidence available to support this estimate due to limitations with the TRUST software.
- 275 Clearly this level of inaccuracy could have resulted in the M9 data in the Annual Return being significantly over reported. For the Midlands Region, alone the figures would have decreased by approximately 350 incidents. If this level of inaccuracy was reproduced nationally then the total number of incidents would be reduced by approximately 6% or 1,600 incidents.

276 The rate of progress in assessing signalling asset condition in the Region was slow to the end of 2003-04. The Region attempted to achieve the target proportion of assets to be assessed by failing to re-survey assets in grades 3 or 4 within the required one or three years respectively. This practice is a non-compliant with the agreed procedure.

North West Region

277 The M9 Process Owner was not familiar with the new requirement for data to be reported at the end of period 1 of the subsequent reporting year and had reported year end figures for 2003-04.

278 Apart from the Stoke Stafford posts that had transferred from the Midlands Region, resource levels had not changed since 2002-03 and the Region considered itself to be under-resourced. There were still areas that lacked dedicated delay attributors. Analysis undertaken by the Performance Manager in the Midlands Region as a result of the new territory based structure revealed that the delay attribution staff in the North West Region were each handling approximately double the number of delay attributions compared with their counterparts in the Midlands Region. This had affected the quality of the attribution work and the accuracy of the data as well as the clear up rate in terms of dispute resolution.

279 Although not easy to quantify, this lack of resources was possibly a contributory factor to the higher number of reported M9 incidents in the North West Region. Only three of the seven Regions showed an increase in incidents, and two of those were only marginal. The North West Region reported the highest percentage rise of 5.2%.

280 No sSICA or SICA2b assessments were undertaken by the Region in 2003-04 (or in previous years). A number of assets were known by staff to have reached grade 4 (red condition) and to require an urgent repeat survey. None of these had been arranged or undertaken as the assets were due to be renewed before the end of 2005-06. This is not compliant with the agreed procedure.

Observations & Recommendations

Observations

281 Two of the three Regions for which Reporter B was responsible for auditing were non-compliant with the requirement for a re-assessment of signalling assets that had condition grades of 3 or 4.

282 Network Rail provided no supporting evidence to substantiate the confidence grades proposed for M9 or M10. In particular the higher confidence assigned to the national figures than to the Regional ones is questioned in the absence of an analysis of systematic and unsystematic error in the collection of data.

283 Concern remains over the attribution of delays generally. The impact of inappropriate use of the track circuit failure code may have resulted in a significant (circa 6%) over-reporting of signalling failure incidents. Improved reliability in delay attribution is needed if the Annual Return is to contain robust information.

Recommendations

- 284 All Process Owners and staff with a role referred to in the agreed definitions and procedures should be on the controlled distribution list and should receive updates in accordance with Network Rail's document control procedures.
- 285 The shortage of adequately trained delay attribution staff in the North West be addressed urgently as this has significantly affected the reliability of reported data for several of the measures that rely on information contained within the TRUST system.

Electrification – Failures & Condition

Scope of Audit

- 286 The audit was intended to verify the accuracy of the data contained in section 2 of the Annual Return 2004 under the measures M11 to M16 concerning the failures due to AC & DC traction power and the condition of contact systems as well as feeder stations, track sectioning points and substations. Compliance with the recently updated definitions and procedure contained in the Asset Reporting Manual was also audited.
- 287 Source data was obtained during audits undertaken in the Regions, issued raised during previous audits were revisited and the sampling of asset condition was investigated to assess its likely impact on the reported average condition grade.
- 288 Revised definitions and procedures had been issued during the reporting period. The versions in-force at the period end were as follows:
- NR/ARM/M1*DF (issue 3 17 February 2004); for M11, M12, M13, M14, M15 & M16;
 - NR/ARM/M1*PR (issue 3 22 March 2004) for M11 & M12; and
 - NR/ARM/M1*PR (issue 4 22 March 2004) for M13, M14, M15 & M16.
- 289 Meetings were held in each of the Great Western, Midlands and North West Regions as well as at HQ. The Reporter attended several condition assessments to observe the process of reporting from initial data collection and to track the results of the assessment through the data processing stage and into the Annual Return.
- 290 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

Traction Power Incidents

- 291 Network Rail reported a decrease in AC Traction Power Incidents (causing train delays of over 500 minutes) from 102 in 2002-03 to 79 in 2003-04 (a decrease of 22.5%).
- 292 The reported number of DC Traction Power Incidents (causing train delays of over 500 minutes) increased from 32 in 2002-03 to 33 in 2003-04 (a 3.1% increase).
- 293 Figures 4 and 5 show the trend in reported incidents from 2000-01 to 2003-04. Also shown are 13-point running averages. Clearly shown is the variability in the four-weekly data and a trend of a decreasing number of incidents shown by the running average.

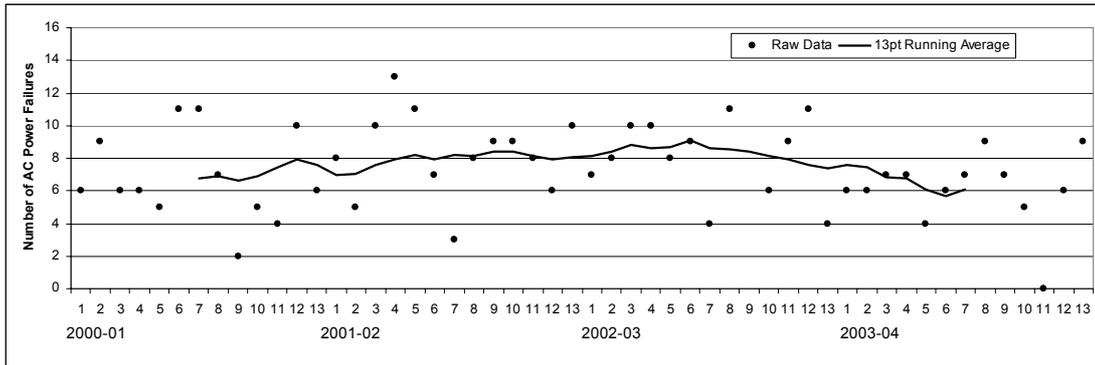


Figure 4. Trend in the number of AC traction power incidents.

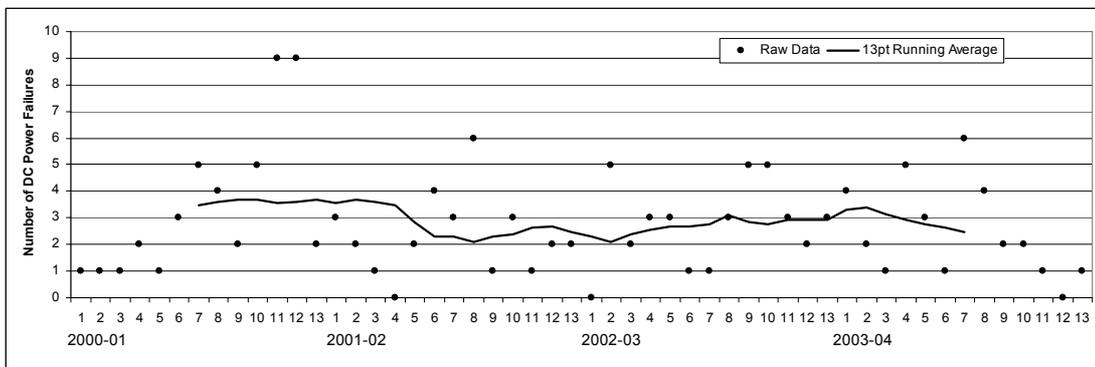


Figure 5. Trend in the number of DC traction power incidents.

294 The confidence grades assigned by Network Rail for failures under both AC and DC systems were the same at B2. This implied a confidence of ± 1 to 5% although no evidence of any calculations to support this assertion were provided in the commentary. Network Rail was also inconsistent in its treatment of Regions that experienced few power traction failures. For AC power traction failures (under M11), Great Western, Scotland and Southern were quoted as having BX confidence grades on the basis of few AC ‘assets of this type’. By contrast, for DC power traction failures (under M12), North West Region which had only two failures, was quoted as having a B1 confidence. No evidence was presented to support any of the confidence grades reported and the inconsistency concerns the Reporter. As a result of this concern, the Network Rail reported confidence grades for these measures are questioned.

295 *Traction Feeders Stations, Sectioning Points & Substation Condition*
Network Rail reported that 66 Feeder Stations (FS) had been condition assessed during 2000-04. This represents 80% of the population, which exceeded the assessment target of 75%. 148 Track Sectioning Points (TSP) had been assessed during 2000-04 (70% of the population). The assessment target was achieved. The Annual Return 2004 reported a slight increase in the proportion of assets in condition bands 2 and 4, balanced by a decrease in the proportion in condition band 3.

296 325 DC substations were assessed during 2000-04 (78% of the population), which exceeded the 75% assessment target. The percentage of assets in condition band 1 (free from defects) increased from 18% in 2000-03 to 31% in 2000-04.

297 No Regional confidence grades were proposed in the Annual Return. One grade was quoted and it is assumed that this related to reporting at the national level. The grade of B3 implied an accuracy of ± 1 to 5% although no explanation or justification for this range was provided in the commentary.

Traction Contact Systems Condition

298 The Annual Return 2004 reported a 4% increase of assessment scores in band 1 for AC traction contact systems. The average condition grade improved from 1.8 in 2002-03 to 1.7 in 2003-04.

299 The confidence grade reported for this measure was B3 implying an accuracy of ± 5 to 10% although no evidence to justify this grade was presented in the commentary and the Return lacked proposals for Regional confidence grades.

300 For DC traction contact systems, the Annual Return 2004 quoted a similar condition score profile as in 2002-03. Table 44 contained some discrepancies as neither of the percentages quoted for 2000-03 nor those for 2000-04 totalled to 100. On further investigation this was accounted for by rounding errors in the 2000-04 figure but the former had omitted the conductor rail located in the Midlands Region. The corrected values (to 1 decimal place) for condition grade 1-5 were 37.6%, 43.0%, 17.0%, 2.3% and 0.2% respectively. The average condition grade (to 1 decimal place) for 2000-03 was unaffected and reported in 2004 remained unchanged from the previous year at 1.8.

301 The confidence grade proposed for M16 was B3 at both Regional and national levels. The commentary was not explicit in its description of the situation in the North West Region during the reporting year. Investigations by the Reporter have revealed that no condition assessments were undertaken in this Region and that it was assumed, on the basis of the renewal of 40% of the conductor rail length in the Region, that the condition of the assets was good. Using the information provided in the commentary, North West Region now has 2.1% of the network total conductor rail in a recently replaced state and 3.1% of the network total that has not been condition assessed in 2003-04. In consequence, the Reporter questions both the Regional confidence grade of B3 for North West Region and the national confidence grade of B3 when 3.1% of the network total length has not been sampled in the reporting year.

Findings

302 The average condition grade is insensitive to small changes in the distribution of tension lengths. It is the opinion of Independent Reporter B that the average of the individual ECAP scores, rather than the banded scores, would provide a better indication of the actual average tension length condition.

Progress Against Regulatory Target

303 The Annual Return stated that the regulatory target for both M11 and M12 is for ‘no deterioration from the number of incidents reported for 2000-01 (88)’.

304 Table 12 uses data from the Operational Performance section of the Annual Returns 2004 and 2003 to obtain for each year in 2000-04 describing the total number of overhead line/third rail fault incidents and the national delay minutes to passenger and freight trains.

Item	2000-01	2001-02	2002-03	2003-04
No. of reported OLE/3rd rail fault incidents	1,696	2,070	1,621	1,468
National delay minutes	280,526	357,032	350,894	395,062
Average delay minutes per incident	165	172	216	269
No. of AC incidents reported (M11)	88	107	102	79
Estimated AC delay minutes (M11)	14,556	18,455	22,080	21,260
No. of DC incidents reported (M12)	45	30	32	33
Estimated DC delay minutes (M12)	7,443	5,174	6,927	8,881

Table 12. Estimated delay minutes caused by traction power failures.

305 It should be noted that the figures for 2001-02, 2002-03 and 2003-04 were obtained from the Annual Return 2004 whilst those for 2000-01 were extracted from the Annual Return 2003. Changes to the definition had been made to exclude weather related incidents in the Annual Return 2004, and prior years’ figures had been restated. Therefore the three years data obtained from Annual Return 2004 were all comparable. The data in Annual Return 2003 had not been updated to reflect this definition change but the number of incidents in 2001-02 and 2002-03 were the same in both Returns. The number of delay minutes however, had decreased by 12% and 6% respectively. If this trend was applied to the 2000-01 figures, the average delays per incident in 2000-01 shown in Table 12 would have been even lower.

306 Table 12 shows that the average delay minutes per incident increased by 63% during the four years from 165 to 269 minutes. The actual number of incidents reported for M11 and M12 were used to estimate the delay minutes attributable to M11 and M12.

307 The Annual Return stated that the Regulatory targets for M13 and M14 were for ‘no deterioration from a baseline average condition grade which will be established once a sufficient sample is achieved’.

308 Targets had been set for surveying the assets, to ensure that 100% of the population had been assessed by 2006:

- 75% of the FS population should have been assessed by 2003-04. By inspecting 66 out of a network total of 83, 80% have been assessed;
- 70% of the TSP population should have been assessed by 2003-04. By inspecting 148 out of a network total of 210, this target has been achieved; and
- 75% of the DC substation population should have been assessed by 2003-04. By inspecting 325 out of a network total of 418, 78% have been assessed.

309 The Annual Return states that both M15 and M16 have a regulatory target for no deterioration from a baseline average condition grade which will be established once a sufficient sample is achieved. This has not yet been set.

310 A target was set for M15 to ensure that 20% of the population would be assessed by 2006. 14% of the AC traction contact systems should have been assessed by 2003-04. 15% of the population was assessed.

311 No regulatory target had been set for M16.

Compliance with Definitions & Procedures

312 Several changes were introduced when the definitions and procedures were revised during the reporting year. For M11 and M12 covering the reporting of asset failures, the revised definition stated that data should be captured at the end of period 1 of the following year to ensure consistency. Unfortunately this point in time does not coincide with either the end of year or the 42-day refresh of the end of year data. As a result, Network Rail did not produce reports of failures at the end of period 1 and were non-compliant with the agreed procedure.

313 Readers of the Annual Return should realise that the exclusion of failures during extreme weather conditions (as defined by the operating band of equipment) was introduced in the latest issue of the definitions for M11 and M12. This will have reduced the number of incidents reportable in 2003-04 compared with previous years.

314 The main change to the procedures for M11 and M12 involved the source of the information used. HQ produced the incident figures using information contained in the National Incident Log. Tables were then sent to each Region for staff to check and approve for publication. Audits in Great Western, Midlands and North West Regions highlighted that some had not adopted the re-issued procedure and many had produced their own data against these measures. Such Regions were much better able to check and approve the data supplied by HQ at the end of the year.

315 The definitions and procedures covering electrification assets (M13 to M16) did not change significantly in 2003-04. The only observed non-compliances related to

sampling of non-contact system assets, a condition assessment workshop and the internal audit of contact system condition assessment. The latter two (internal audit and workshop) were not held in 2003-04 as required by the agreed procedures. The sampling of non-contact system assets did not take into account equipment type, age, usage and geographical location when the annual condition surveys were being planned.

Regional Findings

Great Western Region

- 316 The Great Western Region has little AC electrification and no DC electrification. No incidents were reported for either measure in the Annual Return 2004. Great Western Region has reported no AC or DC incidents since 2001-02. The Regional E&P Engineer believed the Region to enjoy the benefits of a good standard of maintenance.
- 317 The Region has three feeder stations (all SMOS equipment type) and no DC assets. All three assets were assessed during 2003-04 and the assessments were attended by HQ. All assets were placed in condition band 2. 100% of the population were assessed.
- 318 Great Western Region had carried out six AC contact system inspections during 2000-04. The sample set required the Region to have performed 21 (28.5%). This was attributed to time pressure and suggests a low priority. Of the six assessments all were in condition band 1.
- 319 Certain files and records were unavailable during the audit due to the recent reorganisation of the Regions into Territories. A data folder had apparently been set up to collate any information regarding the Annual Return. No spreadsheet had been set up to record AC and DC incidents, and so periodic lists sent to the Regions could not be accurately verified.

Midlands Region

- 320 The Region reported a significant decrease in M11 incidents from 39 in 2002-03 to 21 in 2003-04 (35% decrease per 100stk). The Regional E&P Engineer believed the decrease was due to the heavy maintenance programme for slow lines, the fast lines upgrade and the risk based maintenance plan employed in the Region. It should not be forgotten that the Stoke Stafford area was transferred from Midlands to North West Region during the reporting period.
- 321 The Region maintained a spreadsheet of all AC incidents, which was filtered to compare the periodic figures sent to the Regions by HQ. The Regional E&P Engineer also carried out his own in depth data analysis, and was confident that HQ data could be accurately verified. In the opinion of Independent Reporter B this represented best practice.
- 322 The Region met its targets for the percentage of non-contact systems to be condition assessed. Staff in the Region maintained a spreadsheet containing records of each

feeder station and track sectioning point. Each asset was colour coded to show whether it was to be assessed in the current year, whether it had been previously assessed or still awaiting an assessment. Staff were able to monitor progress easily with this spreadsheet.

323 Assessments were carried out with the maintainers present. On site, the scores were written on printed ECAP questionnaires which were later transferred to an electronic copy. Hard copies were kept in a folder, and all were sent through to HQ at the end of the year.

North West Region

324 North West Region reported 13 AC incidents in 2003-04, three of which occurred in the Stoke Stafford area which was transferred from Midlands Region during the reporting period. The Region produced a referenced incident report file retaining all documentation for incidents.

325 Two DC incidents were reported in 2003-04, compared to none in 2002-03. HQ at the end of Period 13 believed the Region to have had zero incidents during 2003-04 however, this was corrected by the Region.

326 The Region had met or exceeded the target percentages of non-contact electrification assets to be condition assessed by the end of 2003-04.

327 The North West Region gained the Stoke Stafford area in a boundary change with Midlands Region during 2003-04.

328 The Region assessed non-contact system asset condition whilst the maintainers were present. For M13, site inspections were recorded on printed ECAP questionnaires which were later transferred to an electronic copy. Hard copies were retained in a folder, and all were forwarded to HQ as they were produced. A spreadsheet was also maintained by the Region recording which assets were to be assessed and when.

329 For M14 site inspections the scores and notes were recorded on a pro-forma which were later transferred to an electronic ECAP questionnaire. Original score sheets were not retained due to a lack of storage facilities.

330 The Region exceeded its target of 243 AC OLE tension lengths in the year by nine. All of the original score sheets were retained in a file. A monitoring spreadsheet was used to ease viewing of what had, and had not been, assessed, and inspection dates where applicable. North West Region carried out no DC assessments during the reporting year.

Observation & Recommendations

Observations

331 Network Rail has not been reporting delays caused by failures of AC or DC assets (M11 & M12) that allow performance against the regulatory targets set for these

measures to be assessed. Table 14.1 of the Period Review Final Conclusions expressed the target in terms of delay minutes and not the number of incidents.

- 332 Reporter B believes that Network Rail has misinterpreted the regulatory targets set for electrification asset condition. Table 14.1 of the Period Review Final Conclusions does not defer the setting of a target until a sufficient sample has been achieved and effectively set the asset condition in 2000-01 as the baseline against which no deterioration would be measured.
- 333 Network Rail should consider the merit of reporting failure incidents at the end of period 1 of the following year as the existing reporting of delay minutes does not appear to be aligned with this timescale. The reporting of M11 & M12 was non-compliant with the agreed definition in this respect.
- 334 Regions that had collected their own data concerning delays caused by asset failures were much better able to check and approve the data supplied by HQ (as sourced from the National Incident Log).
- 335 No condition assessment workshop for M13 & M14 was arranged or held in 2003-04 and no internal audit of contact system condition assessment was undertaken as required by the agreed procedures. Sampling of the non-contact assets did not consider equipment type, age, usage or geographical location as stated in the procedure. Network Rail was non-compliant on all three counts.
- 336 Great Western Region had not completed the sampling of AC contact systems required to the end of 2003-04. North West Region undertook no DC assessments at all in 2003-04.
- 337 Midlands Region handled the condition assessment of electrification assets particularly well. Auditors observed clear examples of best practice that Network Rail would benefit from sharing with other Regions (or Territories).

Recommendations

- 338 No specific recommendations are made concerning the electrification measures (M11 to M16).

Stations – Conditions & Facilities

Scope of Audit

339 The audit was intended to verify the accuracy of the data contained in section 2 of the Annual Return 2004 under the measures:

- M17: Station Condition Index; and
- M18: Station Facility Score.

340 Revised definitions and procedures had been issued during the reporting period. The versions in-force at the period end were as follows:

- NR/ARM/M17DF (issue 3 17 February 2004);
- NR/ARM/M18DF (issue 4 17 February 2004);
- NR/ARM/M17PR (issue 4 22 March 2004); and
- NR/ARM/M18PR (issue 5 22 March 2004).

341 Meetings were held in each of the Great Western, Midlands and North West Regions as well as at HQ. The Reporter's technical specialist attended several surveys to observe the process of reporting from initial data collection and to track the results of the assessments through the data processing stage and into the Annual Return.

342 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

343 The Annual Return reported condition grades for each category of station (A-F) for the last four reporting years. A total of 2,500 stations were included, with 577 having been added or updated in 2003-04. Of these, 85 had been inspected in 2002-03 but had not been processed in time for publication in the 2003 Annual Return.

344 The national data showed that the number of stations graded 1 (as installed) and 5 (no longer serviceable) had decreased by 14.6% and 3.7% respectively. Stations graded 2 increased by 2.4% and accounted for 72.6% of the total reported at the end of the year.

345 The 577 stations added or updated in the year exceeded the 20% pa target referred to in the procedure. Even if the 85 inspected in 2002-03 are removed, the target was still exceeded.

Findings

- 346 Analysis of the HQ database showed that 420 (16.8%) of the stations reported were surveyed more than five years ago. Whilst many of the asset elements present at stations will not suffer from rapid condition degradation, some elements are likely to have conditions at the end of 2003-04 that were significantly different to those reported in the Annual Return. Caution is advised when using the data for this reason.
- 347 Within the database, two stations were found to have no data covering platform condition and 12 stations appeared to have an average condition grade without any of the 34 constituent elements having been scored. On the assumption that every station at which trains make scheduled stops contains a platform, 24 stations (1.0%) were reported without important elements having been included in the calculation of the condition score.
- 348 The Annual Return proposed a national confidence grade for station condition of B2. No Regional confidence grades were proposed. The large number of surveys over five years old, the missing data identified in the database and the variability known to exist between Regions (and contractors) has led Reporter B to the opinion that further justification is necessary before the $\pm 1-5\%$ can be accepted.
- 349 A national confidence grade of B2 was proposed for stations facilities. No Regional grades were proposed and Network Rail stated that when computing the network total scores, 'non-systematic error is cancelled and confidence in the score is increased.' Insufficient evidence of the relative dimensions of the systematic and unsystematic error has been provided for the Reporter to verify this assertion.

Progress Against Regulatory Target

- 350 According to the Annual Return 2004, the Regulatory target for station condition is to maintain the average condition grade at 2.2 (based on the cumulative average condition grade at the end of 2000-01). The average condition grade remained at 2.25 in 2003-04 which was apparently within the tolerance limit of 60.1.
- 351 There is no regulatory target for M18 Station Facilities.

Compliance with Definitions & Procedures

- 352 The observations made on compliance with the definitions and procedures have been included under the Regional findings for these measures.

Regional Findings

Great Western Region

- 353 The Regional surveys in 2003-04 were carried out by an external contractor that had been employed on a five year contract since 2002. The Regional Process Owner claimed that the continuity of contractor had also improved the consistency of the scoring.

- 354 The surveys were undertaken between January and March 2004. In total, updates for 79 stations were completed in 2003-04 of the 385 station population in the Region (20.5%). Only two stations remained un-assessed.
- 355 The average score was 2.15, which was lower (better) than the national average of 2.29 for the 2003-04 sample. It was also a significant improvement from 2002-03, when the Regional sample average was 2.29.
- 356 With regard to M17 Station Condition, the Region received no feedback from HQ following submission of the survey data. This constituted a non-compliance with the agreed procedure. At the time of the audit in the Great Western Region the interviewees were not aware of any external audits having been commissioned by HQ. It later transpired during the HQ meeting that audits had been undertaken.
- 357 For stations facilities, 140 of the 386 stations in the Region were surveyed in 2003-04 (36.3%). This was an improvement on 2002-03 when only 18% were surveyed. Each surveyor had a target of five stations per period but selected which to survey based on the opportunity presented by visits for other reasons. This worked well for the Region.
- 358 Surveyors were geographically rather than TOC based in 2003-04 so there was a more efficient distribution of the survey workload. The Region also adopted a one page (A3) summary resurvey sheet which simplified and speeded up the process. This is considered best practice which should be shared with other Regions.
- 359 An audit was undertaken by HQ covering the M18 Station Facilities measure and internal checks of data entry took place in 2003-04. No instances of inaccurate data transposition were identified. Reporter B also checked the records of Theale and Exeter St David's stations in the database. No errors were found.

Midlands Region

- 360 Station condition surveys were undertaken by one contractor in 2003-04. This removed some inconsistency. All of the surveys were carried out between September 2003 and January 2004, which enabled the Inspectors to focus dedicated resources on the task. This also had a positive effect on consistency of the approach and scoring.
- 361 The Regional Process Owner had a high degree of confidence in the contractor's spreadsheets and only problems raised by the contractor were discussed. The Regional Process Owner carried out internal audits of 5% of the sample (3 stations) in 2003-04.
- 362 No external audits of the process occurred during the year despite the requirements of the procedure. The Region was non-compliant in this respect.
- 363 The Regional Process Owner raised a concern that in the procedure, the condition rating of components is based on the remaining life of components as a percentage

of its expected useful life. This does not take into account the deterioration in condition of assets due to factors such as environment, usage and lack of maintenance. For example, if a newly constructed floor shows moderate defects (due to usage, environment etc), then this could be scored 2 or 3 but it is still very young and so its rating based on remaining asset life could be as high as 1. It was felt that there may be some misleading results being reported as a result of such scenarios

364 The Regional Process Owner for the station facilities measure (M18) had made efforts in 2003-04 to improve the quality of the process by emphasising the importance of collecting and updating the data to the surveyors and ensuring that they had the necessary forms on visits. The Regional Process Owner and the nominated data manager had personal targets connected with the completion of a minimum number of surveys to promote compliance with the procedure.

365 The Regional Process Owner expressed the opinion that the database was very useful. For example, Virgin Trains was intending to embark upon a significant station facilities improvement programme and information contained within the database will prove useful for planning purposes. Other Regions did not express the same view but the Regional Process Owner thought that this could be because of the reorganisation disrupting some established relationships and communication channels. It may take time for awareness of the database to become more widespread.

North West Region

366 Key staff in the North West Region had not received the updated definition and procedure highlighting the lack of an adequate document control process for distribution of the document to role holders.

367 The condition assessment and detailed examination contracts were let separately for the first time by the Region as a result of the delay to the introduction of the hand held devices.

368 11 stations were transferred from the Midlands to the North West Region, giving a total population for 2003-04 of 421 stations. 106 stations were surveyed in 2003-04 between February and April 2004, covering more than 20% of the population and thus meeting the requirements of the procedure. Problems were experienced in uploading the data from the hand held devices and some re-surveys were required to capture the data manually.

369 Only two stations in the Region remained un-assessed at the end of the reporting year.

370 The Region did not follow the agreed procedure covering station facilities during the reporting year. The post of Regional Process Owner was vacant for much of the period. This lack of clarity over responsibility for the measure will have affected the quality and quantity of the data reported.

- 371 Facilities data was collected in 2003-04 from quarterly change control update requests from the various train operators. Only eight full resurveys were undertaken in the Region. This was a significant non-compliance with the procedure. Previous audits have highlighted the lack of a programme to achieve the rolling five year target in the Region.

Observations & Recommendations

Observations

Station Condition

- 372 The quality of data in the database remains questionable, with scores lacking for certain elements, and the 34 asset elements not weighted in terms of importance. The existence and veracity of checking and internal audits within the Regions was variable, indicating a lack of data quality management.
- 373 Table 14.1 of the 'Periodic Review of Railtrack's Access Charges: Final Conclusions', Volume 1, ORR, October 2000 stated that the Regulatory target for station condition was 'to meet and sustain Railtrack's own annual target values for both average condition and distribution between categories and condition bands'. Network Rail did not publish such targets in the Annual Return 2004 and therefore progress towards meeting the Regulatory target cannot be assessed.

Station Facilities

- 374 There were no Regional confidence grades proposed in the Annual Return 2004 despite marked differences between the quality of data collection procedures in Regions.
- 375 There is no weighting of the assets in the procedure to reflect whether they are functional or their value to the public. This reduces the usefulness of the measure as a means of assessing deliver of services to the public. Similarly, there is no reflection in the scoring of situations in which a reduction in the number of assets due to improved technology has led to better facility.
- 376 Best practice in the Great Western Region of surveyors being geographically based, every site with changes being resurveyed and one page (A3) summary resurvey sheet being used to simplify and speed up process should be shared with other Regions (or Territories).
- 377 The North West Region was non-compliant with the procedure as there was no Regional Process Owner in-post for much of 2003-04 and no site surveys were carried out during the reporting period.

Recommendations

Station Condition

- 378 The issues with the hand held capture devices needs to be resolved and HQ must communicate to the Regions the implementation plan for 2004-05.

Station Facilities

- 379 To reduce the time taken to physically resurvey stations the one page (A3) summary resurvey sheet used in the Great Western Region should be shared across the Regions.
- 380 Review the situation in the North West Region to ensure that a Process Owner is appointed and that the Region has a programme of surveys in place for 2004-05.

Light Maintenance Depots

Scope of Audit

381 The audit was undertaken verify the accuracy of the data contained in section 2 of the Annual Return 2004 under the measure:

- M19: Light Maintenance Depot – Condition.

382 M19 is a measure which provides the ORR with an average condition grade on a scale of 1 to 5 for each of the Light Maintenance Depots (LMDs). This scale is a summary of the remaining asset life expressed as a percentage of the expected full life of the asset. The following 11 significant asset elements are examined:

- Track;
- External lighting;
- SHORE supply;
- Fuelling facility;
- Carriage washer;
- Wheel lathe;
- Gantry crane;
- Shed doors;
- Internal lighting;
- Superstructure; and
- Facilities & accommodation.

Not all of the LMDs have every element.

383 A revised definition and procedure were issued during the reporting period for each of this measure. The versions in-force at the period end were as follows:

- NR/ARM/M19DF (issue 3 17 February 2004); and
- NR/ARM/M19PR (issue 4 22 March 2004).

384 The audits were aimed at checking compliance with the recently updated definitions and procedures. The numbers contained in the Annual Return 2004 were also verified using data obtained during the HQ audit.

385 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

386 The 2004 Annual Return reported cumulative results for 43 Light Maintenance Depots (LMDs) which was an increase of two from 2003. These two additional LMDs (Worcester SH and Exeter St David’s) were surveyed in 2003-04. Cardiff Canton LMD was also resurveyed in 2003-04 as part of an external audit. This LMD had previously been surveyed in 2001-02 and received a score of 2.8 (grade 3) but received a score of 2.3 (grade 2) in 2003-04.

387 The net result was an increase of three LMDs at grade 2 and a decrease of one LMD at grade 3. The Annual Return 2004 commentary did not explain this pattern or the reasons behind it.

388 The 43 LMDs surveyed to the end of the reporting year represent 47% of the total population of 91 LMD properties. However, the three surveyed in 2003-04 accounted for only 3.3% of the population, and thus failed to meet the requirement of 20%pa specified in the procedure.

389 Whilst there may be a significant cumulative shortfall in the number of surveys completed to-date, the HQ Reporting Champion was confident that the number of depot inspections will increase in 2004-05.

390 Figure 6 illustrates the target number for inspections, the actual number achieved and the subsequent shortfall. The actual number of inspections has fallen each year since the start of the programme and there was a cumulative shortfall of 26 inspections at the end of the reporting year. This is equivalent to 28.6% of the total national depot population.

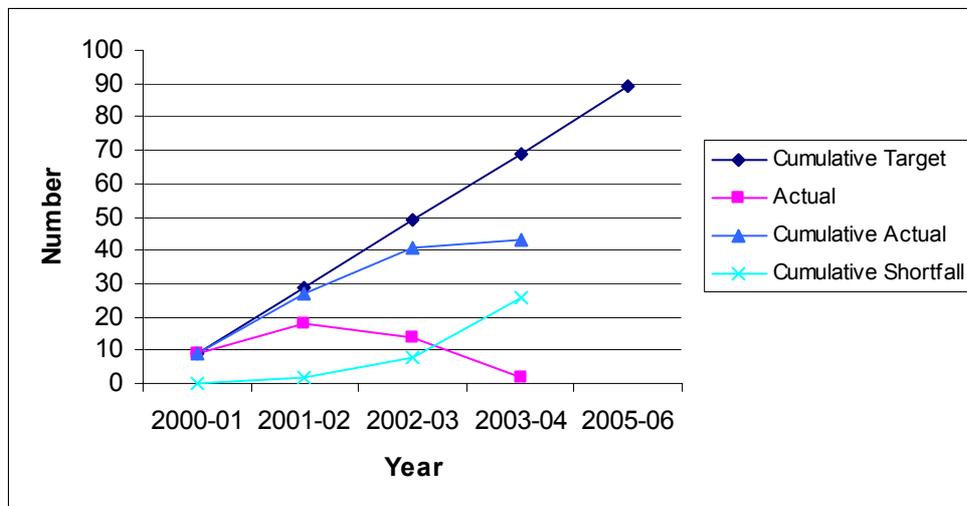


Figure 6. LMD inspection targets and actuals.

391 The average condition score for 2003-04 was 2.7, based on the cumulative sample. This had not changed from 2002-03. The underlying data was analysed and is shown in Table 13.

Category	Small		Medium		Large		All Sizes
	Average score	% surveyed	average score	% surveyed	Average score	% surveyed	% Surveyed
A	2.0	100.0%	2.9	50.0%	2.9	57.1%	57.1%
B	2.7	33.3%	2.7	66.7%	2.7	75.0%	60.0%
C	2.0	40.0%	3.4	18.2%	2.4	100.0%	41.7%
D	2.0	22.7%	2.8	23.1%	3.1	100.0%	35.3%
Total Inspections		29.0%		50.0%		61.8%	

Table 13. Analysis of LMD survey results including 2003-04.

392 Table 13 shows that 35.3% of the Category D depots had been sampled. Of these, 22.7% of the small type category D depots, 23.1% of the medium category D, and 100% of the large category D depots had been surveyed.

393 The most represented types of depots in the population are Small Category D and Large Category A, constituting 24.2% and 30.8% of the population respectively. These two categories account for more than half of the depot population. The indication is that Small Category D depots tend to be in better condition than Large Category A depots. As considerably more Small Category A depots remain unsurveyed the likelihood is that the average condition grade will improve for the sample size increases.

394 The Annual Return 2004 stated that ‘the regulatory target is for no deterioration from a baseline average condition grade’. No baseline average condition grade was stated.

395 The Annual Return 2004 proposed the confidence grade for this measure to be C3. No Regional confidence grades were proposed because the surveying of the LMDs is managed by HQ.

Findings

Progress Against Regulatory Target

396 The Annual Return stated that the Regulatory target for M19 was for ‘no deterioration from a baseline average condition grade’.

397 An improved average condition grade was reported that was outside of the tolerance limit of ± 0.1 on the target. Network Rail therefore met the Regulatory target for depot condition in 2003-04.

Compliance with Definitions and Procedures

398 The definition was updated during the reporting year and the purpose of the measure clarified: 'to assess the average condition of Light Maintenance Depots (LMDs) as a measure of Network Rail's stewardship of the asset'. A table defining the rating scale 1-5 was included in the explanatory notes. These clarifications have improved on the 2001 definition but have not changed the nature of the measure.

399 The procedure was also updated. The 'Principle of Reporting' remains that 20% of LMDs will be inspected per financial year, such that over a 5-year period all depots will have been inspected and an annual average condition rating will be calculated and tabulated.

400 The process flow diagram was improved now clearly defining responsibilities and clarifying instructions concerning the flow and storage of data. The essence of the procedure did not change.

401 The new procedure references the use of photographs for the LMD condition assessments along with the use of the guidelines contained in NR/ARM/M19MN (Supplementary Manual) Appendix 2 (Issue 2 22 March 2004). These references were introduced to encourage better consistency between surveys.

402 Network Rail was non-compliant with the procedure in 2003-04 because 20% of the population was not surveyed and the five-year programme was significantly behind the rate needed to achieve the five-year goal of inspecting all depots.

403 An external audit of the surveys by Waterman Burrow Crocker audit in 2004 also raised a number of non-compliances with the procedure, several of which are outlined in the section which follow.

Regional Findings

404 This measure is managed centrally and so Regional audits were not considered essential in the verification of the data contained in the Annual Return. This section summarises the significant findings from the HQ audit.

HQ

405 Only two new LMDs were inspected in 2003-04 and one LMD was re-surveyed as part of an audit. There is no Network Rail KPI in place for M19 and therefore the Reporter's perception is that there was insufficient focus on this measure in the reporting year. The HQ Champion was not concerned about the cumulative shortfall, which was caused by problems encountered with the introduction of hand held devices. The Champion was confident that the survey contractor will be able to recover the shortfall and meet the annual target of 20 surveys in 2004-05.

406 Early feedback from the external audit was not positive. The audit involved a desktop study of the Wembley and Selhurst survey reports and a resurvey of the Cardiff Canton Depot. A number of errors, omissions and inconsistencies were highlighted. For example, definitions of assets were not clear and there was lack of asset details. Calculated scores did not follow the correct procedure and there were arithmetic errors. Some buildings and rooms were omitted, some items included which should not have been (e.g. brushes), width and length measurements were transposed and measurements omitted. The summary comment was that ‘the overall quality of the three condition surveys is considered poor’.

407 This feedback, the Reporter’s observations during this audit regarding the sampling and slow progress compared with the annual survey target indicate significant concerns regarding the quality of the data reported for M19.

Observations and Recommendations

Observations

408 The programme of 20% (or 20 LMDs) to be surveyed per annum is not being met and a significant cumulative backlog (26 depots) has developed. This is a non-compliance with the agreed procedure and urgent action is required to recover the backlog.

409 The issue of the Regulatory target should be resolved. At present the Reporter’s view does not match that of Network Rail.

410 An external audit of the depots surveyors has raised concerns over the quality of the information collected and reported.

Recommendations

411 An action plan is established for the full implementation of the hand held devices as a means of survey data collection. The plan should include a programme of dates for the surveying of the 2004-05 sample (circa 20 depots) and the backlog carried over from previous years (26 depots). Feedback from the external audit should be analysed and the Action Plan should include specific steps to be taken to improve the quality of the surveys.

Activity Volumes - Track Renewals

Scope of Audit

412 The audit was intended to verify the accuracy of the data contained in section 3 of the Annual Return 2004 under the measures:

- M20 Rail Renewed;
- M21 Sleepers Renewed;
- M22 Ballast Renewed; and
- M25 Switches & Crossings Renewed.

413 All measures had been reported previously and were to be subject to a procedural audit with cross-referencing of the figures reported to other source documents.

414 Revised definitions and procedures had been issued during the reporting period for each of these measures. The versions in-force at the period end were as follows:

- NR/ARM/M2*DF (issue 5 17 February 2004) for M20, M21 & M22;
- NR/ARM/M25DF (issue 2 17 February 2004); and
- NR/ARM/M20PR (issue 4 22 March 2004).

415 The latter procedure covered all of the plain line track renewals measures in place in March 2004.

416 The audit included Great Western, Midlands and North West Regions as well as HQ. The auditors interviewed Network Rail staff this year and did not arrange meetings with contractors or in-house renewal teams. This was partly because Network Rail were able to provide all of the information requested during the audits and also because of the current upheaval in the contracting organisations caused by the return in-house of the maintenance function.

417 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

418 The network total for rail renewed was 1,391km against a forecast in the Business Plan of 1,198km. Great Western, Midlands and North West Regions all delivered more than the forecast by 70 (47.9%), 23 (11.1%) and 51km (80.9%) respectively. WCRM under-delivered by 140km (38.3%).

- 419 The commentary for rail renewed indicated that rail renewed by maintainers had been captured for the first time in 2003-04 and that this volume included ‘renewal of shorter rails as well as the over 60m category specified in the definition’.
- 420 The volume of sleepers renewed over the network as a whole was 3.1% below that forecast in the Business Plan at 823km. The commentary eluded to problems experienced in collecting reliable data on the types of sleepers renewed. In particular, data collection from the WCRM team and maintainers appeared to have been problematic. Great Western, Midlands and North West Regions all exceeded their Business Plan forecast volumes.
- 421 The network total for ballast renewed was 833km compared with 985km forecast in the Business Plan (-15.4%). Great Western and Midlands Regions failed to achieve their Business Plan forecasts whilst North West achieved slightly more (48km compared with 46km). The separation of ballast renewed by types of installation was compromised, according to the commentary, by the failure of the WCRM team to subdivide their total figure.
- 422 Total renewals of S&C units did not achieve the 393 unit target set in the Business Plan, reporting an actual figure of 381 (3.1% fewer). Midlands Region in particular, failed to meet its forecast by 45 units (54.9%). Apparently, only five partial renewals were completed during the year (excluding WCRM that did not report partial renewals) compared with 204 partial renewals in the Business Plan forecast.
- 423 The confidence grade assigned by Network Rail for the reporting of all four of the track renewals measures was C3 for the Regions and B3 for the national figures. This would imply that the reported data was within $\pm 5-10\%$ of the actual value. The significant omissions in the reporting of WCRM volumes, the apparent lack of any concrete sleeper data, inclusion of rail renewed by maintainers in lengths shorter than the agreed threshold value, the absence of any re-ballasting breakdown from the WCRM team and significant and unexplained variance in partial S&C renewals to Business Plan, causes Reporter B to question this level of confidence.

Findings

- 424 A number of the period 13 returns from the Regions contained figures authorised for inclusion in the Annual Return that did not match the figures contained in Table 53. Further investigation during the audit at HQ exposed the fact that volumes had been added to the Regional figures using data from the Annual Maintenance Volumes Return. The latter does not apply the reporting threshold of 200ft (60.96m) and is non-compliant with M20DF. As a result, the figures contained in Table 53 have been over-reported and, based on the estimate by HQ staff that the 50% of the maintenance volumes contained renewals at lengths <200ft, an estimate has been made of the scale of this over-reporting in Table 14.

Region	Period 13 Return (km)	50% of Maintenance Volume (km)	Most Likely M20 Volume (km)	Annual Return Volume (km)	Error (%)
Great Western	157	29.5	186.5	216	15.8
Midlands	202	14	216	230	6.5
North West	63	23.5	86.5	114	31.8
National	1,111	138	1,249	1,391	11.4

Table 14. Estimate of M20 reporting error.

425 In the absence of any figures showing the Regional breakdown of sleeper or ballast renewals by type, HQ produced figures based on assumptions concerning the nature of the works that IMC and renewals contractors undertake. These estimated figures were not set to the Regions for sense checking or for approval. Their accuracy must be questioned and the reporting by the Regions was clearly non-compliant with the agreed definitions.

426 Investigations showed that the data contained in the Annual Return was reported using year-end figures and was not frozen at the end of period 1 of 2004-05 as stated in the definitions.

Progress Against Regulatory Target

427 There are no regulatory targets for any of the activity measures.

Compliance with Definitions & Procedures

428 The principal change made in the latest issue of the procedure involved the prescription of the source of data and methodology to be adopted in calculating the figures to be reported. Previously the Regions were able to adopt their own approach to the reporting of track renewals volumes.

429 The definition for rail renewed was edited to include a threshold of 200ft (60.96m) below which piecemeal renewals would not be included in the Annual Return. Rail grinding was specifically excluded under the revised definition. The methodology for computing the rail, sleepers and ballast volumes was aligned with FRM01 which makes the regulatory reporting more consistent with routine reporting within the Network Rail business.

430 Under sleepers renewed, the pro rata adjustment for patch re-sleeping was introduced in the revised definition and, if the rate of replacement is less than 1 in 3, then patch renewals are to be excluded from the reported figure. Information provided by Network Rail staff co-ordinating the production of track renewals volumes at HQ informed Reporter B during the audit that this reporting requirement cannot be met given the information available from existing information systems.

- 431 Partial renewal of S&C units was introduced for the first time in the latest issue of M25DF. This category of renewals includes for the replacement of ballast at S&C sites by either traxcavator or Automated Ballast Cleaner.
- 432 The agreed definitions for the track renewals measures state that the data should be collected from figures frozen at the end of period 1 of the following year 'to give consistency in reporting and avoid confusion'. Unfortunately, the definition actually achieves neither because the data required to compute the renewals volumes is reported at the end of period 13 across the business without exception. It might be possible, given considerable effort, to re-calculate the figures at the end of period 1 but Reporter B questions the value of such a re-calculation. The Regions did not perform this re-calculation in 2003-04 and it is suggested that the definition should probably be re-written to remove it as a requirement.
- 433 The inclusion of rail renewed by maintainers was a positive step in the Annual Return 2004. Unfortunately, if the volume concerned included lengths that do not meet the definition agreed with the ORR, the reporting of rail renewed is non-compliant.
- 434 The current definition for sleeper renewed (M21DF Issue 5 17 February 2004) explicitly required patch re-sleepering volumes to be adjusted pro rata (ie. 1 in 2 replacement should be reported at 50% of the length of track involved). During the HQ audit, it was stated that the reporting systems in-place were not sufficiently sophisticated to enable this adjustment to be made. Figures reported in the Annual Return did not there comply with the agreed definition.

Regional Findings

Great Western Region

- 435 During the audit of the Great Western Region, the auditees produced superseded versions of the definitions covering the reporting of rail, sleeper and ballast renewals volumes. They did have the correct version of the definition for S&C renewals.
- 436 The slight under-delivery of the forecast S&C units (80 actual vs a forecast of 83) was attributed to resourcing problems within the contractor employed for this work. The more significant under-delivery of ballast quantities was accounted for by the loss of a Medium Output Ballast Machine (MOBC) to the WCRM programme. It is noted that despite this, the WCRM programme failed to deliver the forecast ballast renewal volume by 116km (34.1% of forecast). In the Great West Region, budget was moved from re-ballasting to rail renewals and the reported figures show an over-delivery against forecast for this measure of 70km (47.9%).
- 437 Staff in the Region provided evidence for the estimate of the confidence grade. Using a breakdown of rail, sleeper and ballast quantities by project code, a confidence grade was attributed to each code. The code with the highest volumes was attributed a confidence grade of A1. This accounted for 68.3% of reported rail renewed, 83.5% of sleepers and 84.0% of ballast renewed. If the A1 grade is reliable, then the C3 reported in the Annual Return for the Region would seem harsh.

438 The Reporter's confidence in the accuracy of the reported data was not raised however, when the Regional period 13 returns were observed not to contain any breakdown of the sleeper or ballast type.

Midlands Region

439 The auditee in the Midlands Region assumed that the superseded version of the definitions and procedure had been the appropriate ones for reporting in 2003-04 but had not made any enquiries to confirm which had been used to compile the data contained in the Annual Return.

440 From his experience prior to assuming responsibility for the reporting of track renewals (in May 2004), the auditee was confident that no minor re-railing volumes (<200ft threshold) had been included in the Annual Return figures from the West Midlands Area. He was unclear about the situation in other Areas (and therefore of the Regional figures as a whole).

441 Once again, data had been frozen at the end of the reporting period rather than at the end of period 1 of the following year. The person who actually signed the period 13 return to HQ was, in the opinion of the Reporter, inappropriate as they had not been involved in the process of collecting the data and had only assumed responsibility after the end of the reporting year. Under such circumstances, the Regional sign-off of the data was of little or no value.

442 Under M25, the Region authorised 31 complete S&C units renewed and 6 partial renewals. The Annual Return showed 37 complete for the Region and no partial renewals. Has HQ combined the two figures in error or was the Region incorrect when authorising the figures for publication? Neither possibility contributes to a sense of robust and rigorous reporting in the mind of the Reporter.

North West Region

443 The auditee in the Region had simply acted as a postman during the collation of data for inclusion in the Annual Return. He had received data from various engineers and had passed it to HQ. In the opinion of the Reporter he was not competent to monitor compliance with the agreed definitions and procedure, was unable to provide a robust 'sense check' of the data sent by HQ in the period 13 return for approval by the Region, and could offer no insight during the audit into likely sources of errors and/or inaccuracies in the reported figures. The auditee, who was proposed by Network Rail and not specifically requested by the Reporter, did not hold any of the roles referred to in the agreed procedure.

444 No evidence was available to the Reporter demonstrating that the reporting of patch renewal of sleepers had been compliant with the definition. No breakdown of the sleeper or ballast renewal types was provided by the Region in the period 13 return.

445 The Region had not approved the S&C unit figures sent from HQ in the period 13 return and had not approved any figures for inclusion in the Annual Return. HQ had calculated the number of completed S&C renewals for the year at 7 which the

Regional Engineer had questioned since her view was that 3 was the correct figure. The discrepancy was attributed to the 'probable' deferral of the Wigan Wallgate scheme although no definitive evidence for this was provided to the Reporter. The Track Renewals Analysis for the Region at period 13 shows 7 units completed under the like for like renewals heading. The Annual Return reported eight complete and no partial renewals.

Observation & Recommendations

Observations

- 446 Network Rail should resolve the inconsistent reporting of rail renewed from renewals and maintenance contractors. Either the definition should be edited to allow all renewed lengths to be included or all sources of data should be collected and the information processed in a way that is compliant with the agreed definition.
- 447 The Regions audited by Reporter B were all non-compliant with M21 and M22 and did not report the breakdown of sleeper or ballast type as required under the agreed definitions. The reporting for M21 was also non-compliant with the requirement for a pro rata reporting of patch re-sleepering because the systems used to extract the reported data do not allow for visibility of patch re-sleepering.
- 448 The reporting was also non-compliant with the agreed definitions for all track renewals measures requiring data to be frozen at the end of period 1 of the following year.
- 449 Network Rail's existing document control procedures should be applied to the distribution of the agreed definition and procedure documents not only to the primary contact with each of the Regions (or Territories from 2004-05) but also to those occupying named roles in the reporting process.

Recommendations

- 450 The person responsible in each Region for signing-off the period 13 return to HQ should be capable of conducting an informed sense check of the data presented and should be available to attend the audit. This person should have been closely involved in the management of the structures renewals process during the reporting year and be able to make informed responses to questions raised by the auditors.
- 451 That reference to the freezing of data at the end of period 1 of the following year be removed from the agreed definitions of all track renewals measures.
- 452 Network Rail's existing document control procedures should be applied to the distribution of the agreed definition and procedure documents not only to the primary contact with each of the Regions (or Territories from 2004-05) but also to those occupying named roles in the reporting process.

Activity Volumes - Structures Renewals

Scope of Audit

453 The audit was intended to verify the accuracy of the data contained in section 3 of the Annual Return 2004 under the measures:

- M23: Bridges Renewed;
- M26: Culverts Renewed;
- M27: Retaining Walls Renewed;
- M28: Earthworks Renewals; and
- M29: Tunnel Renewals.

454 The latter two measures (M28 & M29) were new measures for 2003-04 and were therefore to receive a process audit. The culverts and retaining walls measures had been introduced in 2002-03 and the intention was to conduct a more in-depth audit of the data reported. The bridges renewed measure has been reported for several years and was similarly to receive a more detailed audit.

455 Revised definitions and procedures were issued during the reporting period for each of these measures. The versions in-force at the period end were as follows:

- NR/ARM/M2*DF (issue 3 17 February 2004) for M23 & M27;
- NR/ARM/M26DF (issue 2 17 February 2004);
- NR/ARM/M2*DF (issue 1 17 February 2004) for M28 & M29; and
- NR/ARM/M23PR (issue 1 22 March 2004).

456 The latter procedure covered all of the structures renewals measures in place in March 2004.

457 The audit included Great Western, Midlands and North West Regions as well as HQ. The auditors interviewed Network Rail staff this year and did not arrange meetings with contractors or in-house renewal teams. This was partly because Network Rail were able to provide all of the information requested during the audits and also because of the current upheaval in the contracting organisations caused by the return in-house of the maintenance function.

458 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

- 459 The number of bridges reported as having been renewed across the network increased significantly from 97 in 2002-03 to 178 (83.5%) in 2003-04. This pattern was mirrored in the three Regions that Reporter B audited. Great Western Region reported a 262% increase in activity to 29, Midlands 100% to 26 and North West 211% to 28.
- 460 The number of culverts reported as renewed decreased significantly from 49 in 2002-03 to only 5 in 2003-04. In Great Western Region the reported figure fell by 3 to 0, in Midlands from 24 to 1 and in North West it rose from 0 to 1.
- 461 The number of retaining walls renewed was reported for the first time in the Annual Return 2004. The area of retaining wall reported as renewed showed a 7.3-fold increase year-on-year to 8,811m². The majority of the network total was accounted for by North West Region with 7,600 m² (86.3%).
- 462 The earthworks and tunnel renewals measures were reported for the first time in 2004. Total reported volumes were 112 and 13 respectively.
- 463 The confidence grade assigned by Network Rail for the reporting of all five of the structures renewals measures was B3 (BX for zero or small volume reports). This would imply that the reported data was within $\pm 5-10\%$ of the actual value. The significant increases in the WCRM volumes following the Reporter's HQ audit and the concerns expressed elsewhere over the lack of compliance with the agreed procedure and the impact of the application of different financial thresholds, causes Reporter B to question this level of confidence.

Findings

- 464 During the audits in the Regions and at HQ, staff were asked about the volatility in the activity volumes between years. This was attributed unanimously to the nature of renewals works on structures that were dependent on available possessions and involved assets that generally degrade in condition very slowly. The work banks for renewals works on structures were populated opportunistically. In addition structures vary significantly in size and so the number of renewals reported is not as informative as the area of work undertaken. The latter is now reported under M23 Bridges and M27 Retaining Walls. The former was only introduced in 2003-04 but the latter was also reported last year.
- 465 The total area of retaining wall reported as renewed on the network increased by 629% to 8,811m² in 2003-04. The majority of the total (7,600 m² or 86.3%) was accounted for by a single project in the North West Region which involved cleaning and de-vegetating a 400m long 19m wide retaining wall under preventative works. If this single project is removed from the network total, then the areas of other works renewed was very similar to the area reported last year (1,211m² vs 1,208 m²).

466 A significant source of variability overlooked in the commentary are the changes made to the thresholds below which renewals are not counted for the Annual Return. This issue is discussed in more detail below.

Progress Against Regulatory Target

467 There are no regulatory targets for any of the activity measures.

Compliance with Definitions & Procedures

468 The definitions and procedure relating to these measures were extensively rewritten during 2003-04. The most significant changes to the definitions concerned the value threshold (£) above which renewals were to be counted and the alignment of the source of the reported information with internal asset management reporting within Network Rail. Table 15 summarises the changes made to the thresholds.

Measure	Threshold (£) 2002-03	Threshold (£) 2003-04
M23 Bridges	150,000 per span	100,000 per bridge
M26 Culverts	0	50,000
M27 Retaining Walls	0	50,000
M28 Earthworks	N/A	100,000
M29 Tunnels	N/A	50,000

Table 15. Summary of threshold value changes.

469 Unfortunately, the audit at HQ showed that although Network Rail had diligently introduced the Structure Benchmarking Management Tool (SBMT) and the procedure for Structures Unit Costs (FRM04), the database from which the reported information was sourced applied a threshold of £100,000 for all five of the measures.

470 The explanation given for this was that the latest version of the definitions were only issued towards the end of the reporting period by which time almost an entire year of data had been collected using the previous threshold values. The Reporter's understanding is that the previous threshold were not £100,000 for any of the measures concerned.

471 The net result of this is that Network Rail is non-compliant with the agreed definitions and procedure for these measures in all but M28 Earthworks and M23 Bridges (which have a threshold of £100,000). The activities reported under M23 may give the impression of a greater increase in volumes compared with 2002-03 due to the change from a threshold of £150,000 per span to £100,000 per bridge. This is almost certainly likely to have captured more renewal projects than would have been captured under the previous definition of the measure. In the case of culverts, the clarification of the definition to include multi-bore culverts as one structure and the

increase in the threshold from 0 to £50,000 will probably have been instrumental in the 89.8% decrease in the renewals reported in 2003-04.

472 To compound the problem, the new documents were not issued until almost the end of the reporting period with an ambiguous instruction to those involved in collecting the source data 'to apply the new definitions and procedures where appropriate'. The SBMT had already been established to collect data using a threshold of £100,000 for each measure. There was no opportunity to collect data using another threshold at that late stage in the reporting year. Key staff at HQ assured the auditors that the database had been modified to record volumes in accordance with the revised definitions and procedure from the start of the 2004-05 reporting period.

473 The issue surrounding the reporting of multiple bore culverts was resolved in the rewritten definition which clearly states that 'multi-bore culverts are counted as one structure'.

Regional Findings

Great Western Region

474 The period 13 return was approved by the Region with a total of 1,245m² of deck renewed. Table 65 of the Annual Return reported 1,151m². It is not clear from the information provided during the audit whether this was an adjustment based on greater knowledge or a transposition error.

Midlands Region

475 Reporter B was provided with a download from the SBMT during the audit. The data was filtered according to total cost, completion date, category of work (replacement, repair etc.) in an attempt to verify the figures that had been approved in the period 13 returns for each of the structure renewals measures (M23, M26, M27, M28 and M29). With the exception of M26 Culverts Renewed, the numbers generated by Reporter B's analysis of the data differed considerably to the numbers approved in the Region. Further to this the numbers that were reported in the Annual Return were also inconsistent with both the numbers approved as well as the figures produced by Reporter B's analysis. In the case of bridge deck area renewed (M23), the Region approved a figure of 12,459m², the SBMT calculated a figure of 9,875m² and the Annual Return reported 1,278m². Further investigations into the reasons behind such large differences were on-going at the time of drafting this report (July 2004).

North West Region

476 The Region authorised a total number of bridge renewals of 17 in the period 13 return but did not provide any details of the deck area involved in the works. It is unclear why Table 64 showed 28 bridges renewed or where the deck area of 1,264 m² was obtained from. The Region did not appear to have authorised the publication of a deck area figure under M23.

477 For retaining walls the Region corrected the HQ calculation that renewal works had taken place on one wall during 2003-04. According to the Region, a zero figure

should have been reported. The Annual Return (1 July Submission) contained a figure of one. Similarly, the earthworks renewed according, to the Regional sign-off, totalled 13 in the year whereas Table 70 in the Annual Return showed 15. The tunnel and culverts renewed figures authorised by the Region were three and zero respectively whilst figures of two and one were reported in the Annual Return.

Observation & Recommendations

Observations

- 478 The data presented in the Annual Return 2004 for M23, M26, M27, M28 and M29 is not compliant with the agreed definitions and procedure for these measures. In particular the thresholds stated in the definitions were not applied to obtain the data reported in the Annual Return.
- 479 The area of works completed would be a useful addition to the reporting of M28 and M29, retaining walls and tunnel renewals in the same way as it has been for retaining walls and bridges.

Recommendations

- 480 The person responsible for signing-off the period 13 return to HQ should be capable of conducting an informed sense check of the data presented and should be available to attend the audit. This person should have been closely involved in the management of the structures renewals process during the reporting year and be able to make informed responses to questions raised by the auditors.

Activity Volumes – Signalling Renewed

Scope of Audit

481 The audit was intended to verify the accuracy of the data contained in section 3 of the Annual Return 2004 under the measure:

- M24: Signalling Renewed.

482 This measure had been reported previously but in 2004 the network total and Regional renewals activities were expressed in Signalling Equivalent Units (SEUs) for the first time.

483 A revised definition and procedure were issued during the reporting period for this measure. The versions in-force at the period end were as follows:

- NR/ARM/M24DF (issue 4 17 February 2004); and
- NR/ARM/M24PR (issue 1 22 March 2004).

484 The audit included Great Western, Midlands and North West Regions as well as HQ.

485 Appendix J contains a complete list of the meetings held during the audit. The appendix does not record all instances in which subsequent telephone conversations or email correspondence took place.

Annual Return 2004 Results

486 The network total signalling renewals increased by only 0.5% from the previous year to 1,125.7 SEU. The West Coast Route Modernisation programme accounted for 203 (18.0%) of the total with Great Western 8.0%, Midlands 9.1% and North West 1.9% of the total respectively.

487 The SEU is generally recognised as an improved means of monitoring the volume of renewals as it allows the replacement of individual elements of the signalling systems to be recorded. Previously the measure only reported whole-scale renewal of signalling assets over a length of track measured in km. Reporting SEUs better reflects the true signalling activity in a year because it will capture the way that most signalling replacement is undertaken. Work banks are generally populated with individual component (or small groups of components) replacements rather than large schemes.

488 The commentary alluded to the need for Network Rail to replace approximately 2,600 SEUs pa in order to manage the assets in a sustainable and good condition. Historically rates of renewal have not reached 56% of this rate and the Reporter notes that achieving such rates will require a step change in the way that signalling renewals are delivered.

489 The confidence grade assigned by Network Rail for the reporting of signalling renewals was B3. This would imply that the reported data was within $\pm 5-10\%$ of the actual value. No evidence was presented to support this figure in the commentary and no Regional grades proposed despite variations in the understanding of the measure and of SEUs between Regional Process Owners. The Reporter has no evidence with which to question the B3 grade.

Findings

Progress Against Regulatory Target

490 There are no regulatory targets for any of the activity measures.

Compliance with Definitions & Procedures

491 The most significant change to the definition and procedure is the requirement for the Investment Project Controls Manager to record renewals volumes and to ensure that they are correctly converted into SEUs. Whilst all Regions covered by this audit reported SEUs, it was clear that several key staff involved in the process did not understand the procedure and did not correctly convert signalling project details into SEUs.

492 The vehicle for 'Complementary Works' to be delivered by maintainers is a potential source of signalling renewals that are not captured by the current procedure. Such works would be funded via maintenance budgets and would not be collected by the Investment Project Controls Manager. This potential source of signalling works was not a risk to the accuracy of reporting under the previous version of the procedure because the latter only captured whole-scale renewal of entire signalling schemes.

493 The agreed definition for signalling renewals states that the data should be collected from figures frozen at the end of period 1 of the following year 'to give consistency in reporting and avoid confusion'. Unfortunately, the definition actually achieves neither because the data required to compute the renewals volumes is reported at the end of period 13 across the business without exception. It might be possible, given considerable effort, to re-calculate the figures at the end of period 1 but Reporter B questions the value of such a re-calculation. The Regions did not perform this re-calculation in 2003-04 and it is suggested that the definition should probably be re-written to remove it as a requirement.

Regional Findings

Great Western Region

494 During the audit a breakdown of the 89.4 SEUs reported by the Region was provided to the Reporter. The total matched that reported in the Annual Return and that approved via the period 13 return to HQ. The breakdown however, stated that the 89.4 units included enhancements as well as renewals. It is not known at the time of drafting whether any schemes that should have been recorded as enhancement were included in the 89.4 SEUs. The project descriptions appear to suggest that schemes were renewals in nature but this has not been confirmed.

495 The Region proposed a confidence grade of B2 in the period 13 return. The Process Owner noted that the majority of the data had been confirmed by the Signalling Partnership and that the data had also been checked by the Signalling Renewals Engineer.

Midlands Region

496 The Process Owner in the Region had not calculated the SEUs reportable for the schemes that were commissioned in 2003-04 prior to receiving the period 13 return from HQ for approval. He did not recognise the figures supplied and requested further details of how they had been calculated. Extensive volumes of correspondence were then generated within the Region in an attempt to verify the HQ figure of 102 SEUs. Eventually the figure was confirmed as comprising the following:

- Wellington resignalling (74 SEU);
- Notts-Newark level crossing renewals (20 SEU);
- 1 banner repeater renewed (1 SEU);
- 1 new banner repeater (1 SEU); and
- 12 TPWS Beds-Bletchley (6 SEU).

497 These figures raise a number of questions. Should the new banner repeater have been included under renewals or enhancements? Should the TPWS SEUs have been included given that the commentary in the Annual Return has habitually added such volumes to the total SEU figures? It is also interesting to note that the correspondence provided to the Reporter showed that it took over 10 weeks to resolve the issues and more than half a dozen different people were involved.

498 Figures calculated independently by the Process Owner for the Midlands Region suggested that the renewals figure should have been 65. This is very different from the figure of 102 reported and is of concern to the Reporter. Did all staff involved in the process understand what an SEU was and did they have access to the information from which a robust calculation of the figure could be made? If the 65 figure is accurate, then the Region has over-reported by 37 units (56.9%).

North West Region

499 The Process Owner in the Region had simply acted as a postman during the collation of data for inclusion in the Annual Return. He had received data from various engineers and had passed it to HQ. In the opinion of the Reporter he was not competent to monitor compliance with the agreed definitions and procedure, was unable to provide a robust 'sense check' of the data sent by HQ in the period 13 return for approval by the Region, and could offer no insight during the audit into likely sources of errors and/or inaccuracies in the reported figures. The auditee, who

was proposed by Network Rail and not specifically requested by the Reporter, did not hold any of the roles referred to in the agreed procedure.

500 On the period 13 return that was approved by the Process Owner, HQ had calculated that the Region had commissioned 21.5 SEU of renewal activity during the reporting year. Staff in the Region ‘corrected’ the initial HQ figure of 21.5 to 23.8 and approved the higher figures for inclusion in the Annual Return. HQ did not alter the figure and reported 21.5 SEU.

501 In a letter addressed to HQ, and supplied to the Reporter during the audit, a project manager from the North West explained that he had been instructed that ‘3 SEUs per LX (should be used and) not 1 as you advised’. This demonstrated a clear lack of understanding of the way that SEUs should be calculated for regulatory reporting and a non-compliance with the agreed procedure.

502 The confusion may have arisen because of the difference between using SEUs as a means of developing robust unit cost indicators for signalling works, and their use in the Annual Return to the ORR. Staff in the Region may have been familiar with the use of SEUs for the former but not the latter purpose as 2004 was the first year in which this unit was used to report activity volumes.

Observation & Recommendations

Observations

503 The adoption of SEU as the unit of measurement for signalling renewals is welcomed as it better captures the type of works that Network Rail undertakes to replace such infrastructure. However, it was clear during the audits that key staff did not appreciate how to calculate the SEU figure for renewals.

Recommendations

504 The person responsible for signing-off the period 13 return to HQ should be capable of conducting an informed sense check of the data presented and should be available to attend the audit. This person should have been closely involved in the management of the signalling renewals process during the reporting year and be able to make informed responses to questions raised by the auditors.

Network Capability

Scope of Audit

505 Audits were undertaken by Independent Reporter B in 2004 to investigate reporting of the following measures:

- C1: Linespeed Capability;
- C2: Gauge Capability;
- C3: Structures Route Availability Value; and
- C4: Electrification Capability.

506 The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2004 under Section 4, using source data obtained at Regional and HQ level. The investigations undertaken as part of the audits were intended to revisit the issues raised during the 2003 Annual Return audit. Regional checks were also performed to ensure compliance with the recently updated definitions and procedures. The versions in-force at the period end were:

- NR/ARM/C*DF (Issue 4, 17 February 2004); for C1 to 4 and
- NR/ARM/C*PR (Issue 4, 22 March 2004), for C1 to 4.

507 The audits included Great Western, Midlands and North West Regions as well as HQ.

Annual Return 2004 Results

508 Totals were reported for linespeed (31,766km), gauge (16,493km), structures route availability (31,257km) and electrification (12,348km).

Linespeed Capability

509 The 1st July submission of the Annual Return made no attempt to compare the speed band km figures for 2003-04 with those reported in 2002-03. On doing so, Independent Reporter B noted that the figures were identical. In response, an updated version of Table 72 was produced by Network Rail as shown in Table 16.

510 The changes to the network total in each band varied from -2% to +5% between 2002-03 and 2003-04. The total decreased by 0.6%

511 The physical linespeed increases and decreases reported in the Annual Return were not attributable to the GEOGIS Data Improvement Programme (GDIP).

Speed Band (mph)	March 2003 km of track in each speed band	March 2004 km of track in each speed band
Up to 35	5,289	5,570
40-75	16,978	16,585
80-105	7,106	6,994
110-125	2,393	2,415
Over 125	0	0
Total	31,766	31,564

Table 16. Corrected linespeed data for 2003 and 2004.

Gauge Capability

512 The Annual Return 2004 presented the gauge capability figures differently than in 2003. The actual km of route in each gauge band was stated, where as previously they were shown as cumulative totals. Network Rail restated the 2003 figures in the comparable format in response to a query from Reporter B (Table 17).

Gauge band	March 2003 km of route in each gauge band	March 2004 km of route in each gauge band
W6	5,379	5,223
W6 and W7	1,632	2,284
W8	7,126	6,340
W9	2,370	2,483
W9 and W10	163	163
Total	16,670	16,493

Table 17. Comparable gauge data for 2003 and 2004.

513 The change to the network total in each band varied from -11% to +40%. The total decreased by 1%.

Structures Route Availability

514 By comparing the data reported in the Annual Returns 2003 and 2004, the change to the network total in each band varied from -45% to +8%. The total decreased by 0.5%. The Annual Return 2004 stated that as there was no reported physical change in RA values during the reporting year and that the differences shown in the Annual

Return were due further investigations of past Annual Return data and improved data accuracy.

Electrified Track Capability

- 515 The 1st July 2004 submission did show the km of electrified track in March 2003 and 2004. The change to the network total in each band increased by up to 0.45%. The Annual Return 2003 did not report the 1500V d.c. overhead category. This had been reintroduced in 2004. The total increased by 0.4%. The Annual Return 2004 stated that the changes were due primarily to the CTRL and WCRM works, and also due to changes in GEOGIS.

Confidence grades

- 516 The capability measures were assigned a confidence grade of B2 although no Regional confidence grades were proposed and no evidence produced to justify the ± 1 to 5% accuracy inferred.

Findings

- 517 HQ staff were confident that the reported figures were accurate to within 1%, as the Regions had been asked to review the figures and approve them. It was pointed out by Reporter B that of the three Regions audited, two did not check the data calculated by HQ at all.
- 518 Although the Regions signed-off the period 13 Returns as instructed, comments were made that they needed more details of how the figures had been calculated. Indeed some Regions demonstrated a lack of understanding of the definitions and procedures for the measures. This was mainly due to the fact that, in the Reporter's opinion, the Regional Process Owners were the wrong people to be responsible for these measures, and in some cases had only been appointed days before the Regional audits.
- 519 During 2003-04 efforts had been made to update GEOGIS in line with the Sectional Appendix. The GDIP programme is still ongoing (as at July 2004), and there is no indication of how many changes have been made to GEOGIS as a consequence of this process. In addition, as GEOGIS is still being amended, there is no indication of how accurate the data in GEOGIS was at the end of the reporting period. It was unclear to the Reporter how much of the reported changes in the Annual Return 2003 and 2004 were due to actual changes to the network or to the data cleansing exercise.
- 520 A consistent method and sources of data were used in 2003-04. However, the 2002-03 audits had exposed the poor quality of data in GEOGIS and MapInfo in some Regions, because they did not maintain these databases. One Region was of the opinion that it was the IMC's responsibility to update the databases.
- 521 Currently HQ cannot amend data in GEOGIS and the Regions have to be asked or cajoled into make the changes for them.

Progress Against Regulatory Target

522 The Annual Return stated that for each of the capability measures the target is for no overall reduction in functionality during the control period except as agreed through the network change procedure. No tolerance was quoted for the capability measures.

523 In the absence of any commentary or tables quantifying changes to C2, C3 or C4 that were implemented via the network change procedure, it is impossible to assess whether Network Rail have met the target of no reduction in functionality. As discussed, Reporter B has serious reservations about the quality of the data reported in this section of the Annual Return. It would be inappropriate to rely on differences between the figures reported in 2002-03 and 2003-04 to judge progress against the regulatory target.

Compliance with Definitions and Procedures

524 Issue 4 of the definitions and procedures state the definitive operating publication as the Sectional Appendix, with data sources as GEOGIS and MapInfo.

525 In all capability procedures, the Regional A3R Process Owner is responsible for updating GEOGIS and for compiling a list of detailed changes. This did not happen in all Regions audited.

526 For each measure, the HQ Asset Reporting Manager calculated the track length for each band using data in one of the source databases. The Regional A3R Process Owner was required to confirm this data, and to investigate any discrepancies. Two of the three Regions audited signed the period 13 returns without conducting any checking or verification of the figures.

Regional Findings

Great Western Region

527 The Regional Process Owner was appointed a few days before the audit and signed the period 13 Returns without checking the data.

528 The Region believed that 95-99% of the linespeed changes during the year were due to GDIP, and were not aware of any true linespeed changes. Tables 73 and 74 in the Annual Return state the increases and decreases in linespeed changes that were not due to GDIP. Great Western Region had ten true increases totalling 27.7802 miles of track, and ten true decreases covering 21.625 miles of track.

Midlands Region

529 Separate Regional Process Owners were responsible for C1 to C3, and for C4. For C4 the Regional Process Owner was not convinced that he was the process owner, and did not know when he assumed responsibility. A consequence of this was that he had no knowledge of the procedure, and no figures were compiled independently.

530 For C1, Midlands Region updated GEOGIS on a weekly basis. Records were kept stating individual changes to linespeed due to GDIP and true linespeed changes.

Figure 7 shows the number of linespeed changes that were due to changes in the Sectional Appendix and so classed as ‘true’, and the number due to GDIP in each period. The number of GDIP changes generally increased throughout the year, with more reported in periods 10 to 13 than in 1 to 9. Overall, 64% of the changes were due to the GDIP data cleansing exercise.

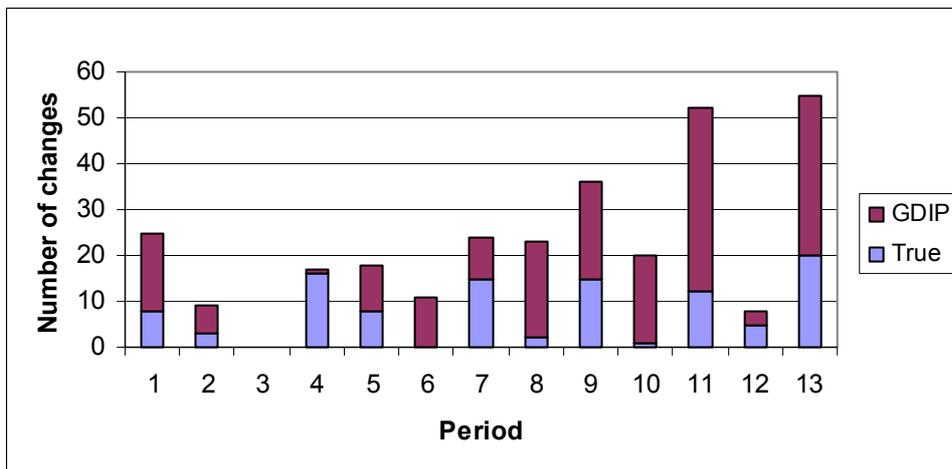


Figure 7. Changes to linespeed - number of changes.

531 Conversely, the length of track affected by GDIP changes was shorter when compared with the true changes (Figure 8). This observation was supported by anecdotal evidence collected which suggested that many of the GDIP changes involved connecting two adjacent lengths of track that had slightly different co-ordinates in GEOGIS at the point where they meet in reality. Of the total changes made, 73.8% (338,013 yards) were the result of true changes and 26.2% due to GDIP data cleansing.

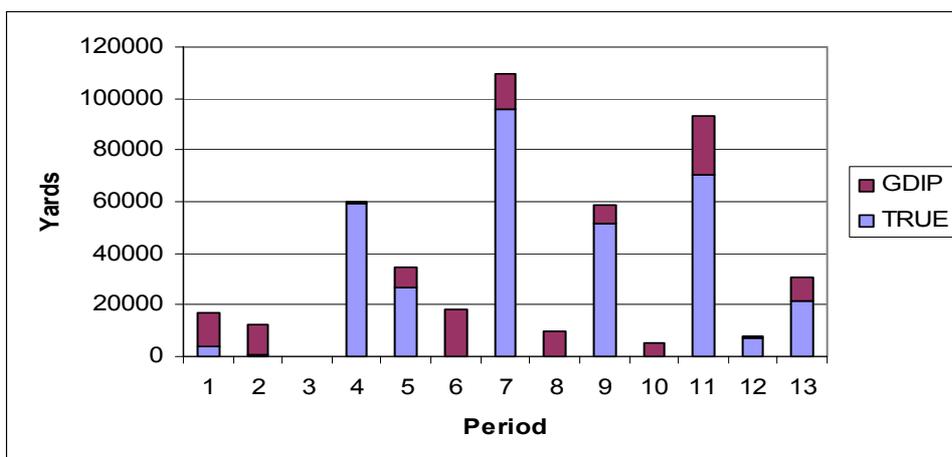


Figure 8. Changes to linespeed - Length of track.

532 Within the linespeed changes data supplied by Midlands Region, several records were found to be erroneous. Five records in 298 (1.7%) were discounted from the

calculations above either because the finish mileage was less than the start mileage or because the yardage part of the miles.yards field was greater than one mile. Given that these records were the result of a programme of data cleansing, it was worrying to discover such errors especially when they could have been easily avoided using some basic error checking techniques within the spreadsheet.

- 533 Also of concern to the Reporter is the fact that neither of the graphs shows an asymptotic decrease in the number or length of GDIP corrections. Such a pattern of decreasing errors would be expected if the programme were approaching the point of diminishing returns beyond which the effort of finding and correcting small errors would outweigh the benefit derived from correcting them. The pattern from the Midlands Region suggests that this point was not reached by the end of 2003-04 and the rate of error identification showed no sign of abating. How significant are the remaining and, as yet, unfound errors in GEOGIS? Without such an estimate, Reporter B does not believe that it is possible to assign a confidence grade to the capability measures that rely on GEOGIS.
- 534 Table 73 in the Annual Return 2004 quoted that there had been 47 increases to linespeed capability totalling 258.1286 miles. Table 74 quoted 11 decreases to linespeed totalling 25.371 miles.

North West Region

- 535 The Regional Process Owner had no knowledge of the data involved, and was not aware of the definitions and procedures. The Reporter believes that a more appropriate person should have been appointed.
- 536 The Region produced no list of changes as required by the procedures and were therefore non-compliant. The Region also had no idea how many changes were made due to data cleansing. The Region did not update GEOGIS as the Process Owner believed that the IMC's were responsible for doing this.
- 537 Table 73 of the Annual Return listed 18 true increases in linespeed changes over 81.3102 miles of track and six true decreases in linespeed capability over 21.3197 miles of track.

Observations and Recommendations

Observations

- 538 Network Rail staff do not appear to use error checking techniques when using spreadsheets. This would provide a low cost way of improving both the accuracy of the data contained in systems such as GEOGIS and of increasing the confidence grade that could be assigned to the capabilities data (among others).

Recommendations

- 539 HQ should appoint appropriate Regional process owners who understand the data involved.

- 540 Network Rail continues to improve the data quality in the various systems used to source information for these measures. The plan should include dates for the delivery of improved data quality and details of the checks that will be adopted to verify that an appropriate quality has been achieved.
- 541 That the ORR and Network Rail agree the details of the functionality baseline for each measure necessary for the appropriate regulatory target to be meaningful and in future Annual Returns, Network Rail quote the baseline as well as a list of all changes authorised under the network change procedure.

Reconciliation with 2003 Business Plan

Scope of Audit

- 542 The audit was intended to check the reconciliation of spend on renewals and maintenance reported in the Annual Return 2004. This validation was to include matching the Regional renewals spend with that reported by Route, the calculation of variances between the 2003 Business Plan figures and the actual spend and the calculation of variances between the renewals spend by asset category reported in the Annual Return and that reported in the Regulatory Accounts (Supplementary Information – Regional Expenditure Statement). Where possible, Reporter B was asked by ORR to comment on significant differences between the actual spend in the three Regions audited.
- 543 The audit involved a desktop analysis of Section 5 of the Annual Return 2004 (1 July submission) and the Regulatory Accounts provided by the ORR on 16th July 2004. A number of meetings were held at HQ, in the Regional offices and with contractors undertaking renewals and maintenance works. The meetings were intended to examine the systems and processes employed to record and report expenditure. A detailed financial audit was not undertaken as Network Rail's statutory and regulatory accounts are both the subject of audits by third parties.

Annual Return 2004 Results

- 544 The Annual Return reported forecast and actual expenditure on maintenance, renewals and enhancements by Region. The renewals figures were subdivided by asset type and were also presented by line of route. All figures were reported to the nearest £0.1m reducing the number of apparent errors in arithmetic that resulted from numerical rounding from those seen in previous years. Figures were reported in cash prices.

Confidence Grades

- 545 Network Rail proposed a confidence grade of B2 for the three Regions covered by Reporter B and B2 nationally. Since all of the data reported has been sourced from systems that produce accounts that are audited by third parties (Statutory and Regulatory), Reporter B is satisfied to accept the financial auditors opinions and the assumed materiality of 5% as indicative of the underlying confidence of the financial data.

Findings

- 546 The reported national spend on the network for maintenance was £1,245m, a variance of £-115m on the Business Plan forecast; whilst renewals spend was £3,203m (variance £-342m) and enhancements £770m (variance £-468m).
- 547 It is important to understand the process by which Network Rail plans and budgets for expenditure each year. Early in the calendar year, Business Plan submissions are made by each business unit to HQ. These are intended to be based on the best available information on asset condition in the Regions and the prioritisation of works

on which it is based should be rigorous and justifiable. The Business Plan document that is published each year contains the business unit submissions almost verbatim. This gives the reader the impression that the document contains the budgeted financial figures under which business units will operate in the forthcoming financial year. This is not the case because HQ reviews the business plans submitted by units and applies its own view of the impact of efficiency savings (both likely and aspirational or 'stretch' targets) and the reprioritisation of works based on supra-business units policies. HQ remits budgets to the business units for the value that it decides the units should spend.

- 548 As a result of the budgeting process, the total variance between the figures contained in the 2003 Business Plan and the actual expenditure figures reported in the Annual Return is a combination of the difference between the Business Plan forecast and the remitted budget, and the difference between the remitted budget and the actual spend. In this report the term **Business Plan variance** has been used to describe the former and **Budget variance** the latter.
- 549 A detailed reconciliation of renewals expenditure by Region and by Route is included in Tables A1 to A6 contained in Annex 1. The variances reported in the tables indicate the differences between the reported figures for the Region and that reported for the routes in that Region. The variances calculated for Great Western Region are significantly smaller than those for either of the other two. Since the individual variances in the former case are never larger than £61.5m (<1%), they may be explained by rounding errors. In the case of North West Region, the variances were material at £10.4m (8.7% of forecast spend by Region) and £11.8m (10.6% of actual spend by Region). The variances calculated for Midlands Region were immaterial at 1.1% of forecast and actual spend for the Region. The figures for North West were material (>5%) and as such should be explained by Network Rail. If they prove to be the product of rounding errors, then the data should be reported to more significant figures to remove this as a source of variance.
- 550 A number of the route tables contained missing rows despite the fact that the majority of values of zero were recorded as such (rather than left black or omitted). In the Great Western Region, the reallocation of £0.5m forecast for stations to actual spend on depots was evident. Reporter B believes that this reallocation occurred and that it is not an error in the table. The apparent 'gain' of £0.2m on route 32 in the North West Region was accounted for by 'close-out adjustments in BMIS for schemes from previous years' according to the commentary in the Annual Return.
- 551 Data for WCRM were included separately in the Annual Return 2004. Unfortunately, the data was only presented to the nearest £1m. Given that all work undertaken by the WCRM programme involved Route 1, it is not surprising that a zero variance Route-Region was observed for all asset categories. Because of the lack of any Route-Region variance, this data was not reproduced in Annex 1.
- 552 Inter-regional comparisons in the areas of renewals and enhancements are difficult because no robust methodology exists for comparing Regional expenditure. The

values included in both forecasts and reported actual figures for these items were entirely dependent on the strategy adopted nationally by Network Rail in conjunction with the SRA and the ORR. Comparisons of renewals and enhancements spend by track km or train km would show large variations between Regions. Such variations would be the result of chance (was a particular project undertaken in the year or is it planned for next year?), rather than indicative of robust management of the network. Maintenance expenditure may however be compared between Regions and the trend over time examined usefully.

553 Table 18 shows the reported actual maintenance expenditure expressed as £ per train km in each of the three Regions and for the total network. Figures are based on those reported in the Annual Returns 2004, 2003 and 2002.

Region	Maintenance spend per train km (£/train km)			% change (2002-03 to 2003-04)
	2001-02	2002-03	2003-04	
Great Western	2.31	2.70	2.79	3.3
North West	2.66	2.73	2.73	0.0
Midlands	1.41	2.33	2.64	13.3
Network total	2.06	2.53	2.60	2.8

Table 18. Regional comparison of maintenance expenditure 2001-02, 2002-03 & 2003-04.

554 The analysis shows that the network total spend on maintenance per train km increased by 2.8% between 2002-03 and 2003-04. This is marginally greater than the rate of inflation over the same period. This indicates that Network Rail has not increased the effort expended on maintenance as expected given the increase in the usage of the network over the same period.

555 Table 18 also shows that all three Regions audited by Reporter B spent more than the network average on maintenance in 2003-04.

556 Using data contained in Network Rail's QBR documents for each Region at the end of period 13 2003-04, it has been possible to produce a variance analysis for maintenance spend by IMCs under the Key Pway Activities group of cost codes (Table 19). A positive volume variance indicates that the IMCs underspent as a result of under-delivering against budget, and a negative price volume variance indicated that an overspend occurred as a result of higher than budgeted units rates. Unfortunately data were not available in the same format for the Midlands Region.

557 The analysis should be repeated in future years to monitor inter-Regional variability and Network Rail's commitment to maintaining the network. In view of the difficulties involved in quantifying the outputs from maintenance expenditure, effort should be made to link the expenditure to other measures in the Annual Return intended to behave as indicators of Network Rail's stewardship of the network. Efforts should also be made to investigate ways of normalising renewals and enhancement expenditure so that similar comparisons can be made. The latter may need to be at the project level rather than at the Regional level.

Region	Volume Variance (£m)	Price Volume Variance (£m)
Great Western	1.2	-7.8
Midlands	N/A	N/A
North West	5.2	-2.5

Table 19. Regional variances in maintenance spend on Key PWay activities.

Analysis of Unit Costs

558 The information reported in the Annual Return does not provide visibility of the unit costs on which the Business Plan and/or the budgets were based or that Network Rail achieved during the reporting year. Further investigations were undertaken during the audits to gain such visibility and to provide information that will help when analysing the apparent variances between the forecast and the actual expenditure reported in Section 5 of the Annual Return.

559 Table 20 shows the variability in both the budgeted unit cost rate and the actual rate achieved between the three Regions and the national total. It should be noted that the WCRM Business Unit did not produce a QBR for period 13 2003-04 and so comparable figures for this large programme were not available to Reporter B. The national figures quoted do not include any data from the WCRM programme.

560 The impact of the unit rates can clearly be seen in the figures shown in the Track Unit Cost Report 0304. Excluding WCRM, the plain line track renewal plus S&C budget (£661.4m) was underspent by £40.2m (6.1%) as a result of fewer quantities being delivered than was planned. At the same time, and as a result of higher unit costs being incurred than had been budgeted, there was a £24.7m price variance. The total net variance being £15.5m (£40.2m - £24.7m) if the failure to deliver the budgeted volume is considered 'favourable' and £64.9m if both variances are considered adverse. In the Reporter's opinion, the latter is more indicative of the impact on the renewals programme since the volume not delivered in 2003-04 will presumably necessitate inclusion in the not too distant future.

Progress Against Regulatory Target

561 There are no regulatory targets for the Reconciliation for 2003 Business Plan.

	National		Great Western		Midlands		North West	
	budget	actual	budget	actual	budget	actual	budget	actual
PLTR (£)								
Re-rail – both rails	217	229	241	202	165	185	182	161
Re-rail – one rail	166	191	387	167	132	164	190	133
Steel sleeper relay & re-rail	486	476	542	562	411	427	545	502
Re-rail resleeper reballast – traxcavator	704	731	707	698	568	756	766	838
Reballast - traxcavation	508	617	552	-	509	537	642	1,020
S&C (£000)								
Like-for-like renewals	425	436	516	554	219	354	435	190
Ironwork	24	23	-	56	-	-	6	16

Table 20. Comparison of unit costs (source: Track Unit Cost Report 0304.xls).

Understanding of & Compliance with Definitions & Procedures

562 The procedures for compiling the Business Plan forecast, Regulatory Accounts (Supplementary Information) and the Business Plan Reconciliation in the Annual Return are not documented in the same way as those for the reporting of other measures contained in the Annual Return. As a means of assessing compliance under such conditions, a reconciliation was undertaken, matching the national renewals expenditure reported in the Annual Return with that contained in the Regulatory Accounts Supplementary Information.

563 The Regional Expenditure Statement for 2003-04 did not include figures for maintenance or enhancement spend. Network Rail stated that this was agreed with the ORR and the omission of maintenance expenditure was a result of the lack of visibility of actual spend by asset category and the perception that the arbitrary apportionment of spend by category reported in the past had not been useful. Given that Network Rail has made much of the advantages that taking maintenance back in-house will bring to the transparency of cost reporting, Reporter B suggests that

maintenance expenditure is included in the 2005 Annual Return (and in subsequent years) as it has been in the past. The total figure should be broken down by Region (or Territory) and by asset category as Network Rail will have all of the necessary information without having to rely on financial reporting from third parties under IMC contracts.

- 564 The Annual Return stated that the total renewals expenditure of £3,203m contained an element of capitalised interest (£52m) which should be deducted before comparing the resultant figures (3,151m) with the figure reported in the Regional Expenditure Statement (£3,070m). The discrepancy (£81m) is apparently due to 'reactive and low value works that are budgeted for and recorded as renewal but in fact are maintenance'. This is a result of a change in accounting policy for the expenditure on the renewal of structures, stations and depots. The policy has moved away from applying an in-year charge to the profit & loss account to recording a depreciated replacement cost under which 'all amounts are capitalised'. The same explanation was given by Network Rail for the differences between the Regional renewals expenditure reported in the Annual Return and the Regional Expenditure Statement. These differences amounted to 7.6% of the figure in the Statement for Great Western Region, 8.6% for Midlands and 8.8% for North West. The variability between Regions was caused by the varying capitalisation of interest which is dictated by each project's compliance with the requirements of FRS15 and the reclassification of renewals spend under the depreciated replacement cost policy.
- 565 Network Rail provided no breakdown of the 'Other' column in the Regional Expenditure Statement despite the material total amounting to 13.2% of the total renewals expenditure. The £405m total was attributed to central business units including major projects, engineering, development and information management. apparently, the spend was dominated by hardware acquisitions.

Regional Findings

Great Western Region

- 566 In the Great Western Region, the remitted budget for maintenance was reduced by £21m from the forecast to £199m, total renewals expenditure was increased by £7.7m from the forecast to £294.7m and enhancement expenditure by £1.7m to £24.2m. The actual expenditure for 2003-04 on enhancements met the remitted budget but total renewals were under-spent by £25.9m (8.8% on budget (£18.2m or 6.3% on forecast). The apparent overspend on enhancement reported in Table 81 of the Annual Return was as a result of Business Plan variance. Actual maintenance spend was £8m lower than the remitted budget (4% on budget or 13.3% lower than forecast).
- 567 In an analysis of underspend provided by HQ, £8m was attributed to efficiency savings, £10m to planned deferral and £6m to unplanned slippage. Of the latter two, £11m was included in the works planned for 2004-05 and £5m in later years. The same analysis showed £6m of slippage under enhancements for the Region although this did not match the variance reported in the Annual Return.

Midlands Region

- 568 The Region received £189.8m as the remitted budget for maintenance, £254.1m against total renewals and £50.0m against enhancements. The actual spend on enhancements exceeded the budget by £2m and the Business Plan forecast by £35.5m. The majority of this variance was attributed to errors in the financial processing of the Cross-country route modernisation project. The Business Plan for the project showed £7.0m but HQ had overlooked a request for funds remitted in 2002-03, but not spent, to be rolled-over into 2003-04. The QBR showed a remitted budget for the project of £30.8m and an actual spend of £35.5m (budget variance £4.7m or 15%).
- 569 The remitted budget for renewals was £22.6m less than that contained in the Business Plan forecast. The signalling forecast alone was reduced by £18.6m. The Region underspent against budget by £14.2m of which £9.8m was due to deferred works, most of which will not be delivered until post 2004-05. Only £1m of the renewals underspend was attributed by HQ to efficiency savings.
- 570 The problems with signalling renewals was not limited to the Midlands Region, although it did affect the Region more than most. Early in 2003-04 Network Rail was experiencing spiralling signalling costs and did not consider that it was sufficiently in control of its contractors. A central signalling engineering team was established and it has been challenging scope, development and the timing of renewals for significant parts of the signalling work bank ever since.
- 571 The pattern of Business Plan and Budget variances for maintenance in the Region differed from those in the other Regions audited. The original forecast from the Region was reduced by HQ by £13m but the actual spend was £10m higher than the remitted budget. The net variance reported in Table 82 of the Annual Return was only £-2.4m. In both of the Great Western and North West Regions, remitted budgets for maintenance were lower than the Business Plan and the Regions underspent against both budget and forecast.

North West Region

- 572 The North West Region was remitted £157m for maintenance, £118.4m for total renewals and £17.3m for enhancements. These values were close to those included in the 2003 Business Plan (the Business Plan variance was small). Material renewals budget variances were recorded for signalling (£-3.6m, 17.9%), plant & machinery (£-1.8m, 47.9%), telecoms (£-1.6m, 50.3%) and depots (£-0.3m, 31.5%). The lineside buildings budget (£1.7m) was overspent by £0.6m (49.8%).
- 573 The signalling renewals expenditure in the Region was affected by the problems described above. The North West Region was remitted £20.1m for 2003-04 which was £1.7m less than the Business Plan forecast. The Region actually underspent the budget by £3.6m and the commentary in the Annual Return attributed that to a number of commercial problems encountered during the year. According to the HQ analysis of underspend, £6m of the total £8m deferred (£5m) or slipped (£3m), has been included in the 2004-05 programme.

- 574 The non-compliance with the reporting procedures referred to in the commentary of the Annual Return was caused by a combination of personnel changes and an organisational problem with holding individuals accountable for accurate reporting. These issues resulted in the failure to allocate certain key budgets to routes although the comment referring to failure to allocate track renewals expenditure by route has now been resolved.

Observations & Recommendations

Observations

- 575 The WCRM team did not complete the standard quarterly business reporting cycle at the end of period 13 of 2003-04 and therefore has not reported budgeted and actual unit costs and quantities for the programme for the year in a consistent way to the Regions.
- 576 North West Region did not allocate costs to routes in accordance with Network Rail procedures. Whilst this failure had been resolved before the year-end, it is indicative of an inconsistent approach to budgeting and cost monitoring between Regions.
- 577 The Supplementary Information – Regional Expenditure Statement to the Regulatory Accounts did not include any information on maintenance or enhancement expenditure.

Recommendations

- 578 That in future years Network Rail exploits the opportunity for cost transparency that in-house maintenance provides and produces a summary of maintenance expenditure by asset category and by Region in the Regional Expenditure Statement to the Regulatory Accounts.

Customer Reasonable Requirements

Scope of Audit

- 579 Audits were undertaken by Independent Reporter B in 2004 to investigate Network Rail's reporting of the Customer Reasonable Requirements (CRRs).
- 580 The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2004 under Section 6. The investigations undertaken as part of the audits were intended to revisit the issues raised during the 2003 Annual Return audit, and to examine any changes to the way that information was gathered and reported.
- 581 The audits included Great Western and Midlands Regions as well as HQ

Annual Return 2004 Results

- 582 The Annual Return reported that a total of 112 CRRs remained at the end of the reporting year. A total of 22 new CRRs had been submitted and 71 either completed or withdrawn.

Confidence Grades

- 583 The Annual Return quoted a confidence grade of A2. Reporter B agrees with this level of confidence. When broken down by customer or funder, as the numbers are small, confidence is realistically graded as AX.

Findings

- 584 The way that CRRs were monitored and reported was changed in 2002-03. A central database for CRRs is now managed by the Commercial Development Team at HQ. The central database includes the facility to record CRRs as aspirational. This allows CRRs that do not meet the SMART+F criteria to be tracked but removed from the Annual Return as they are recognised by both parties as non-compliant with the reporting criteria.
- 585 During the audit, Network Rail staff confirmed that of the 71 CRRs either completed or withdrawn, 58 had been withdrawn and 13 completed.
- 586 The commentary referred to the continuing process of improving the robustness of CRRs that did not necessarily either meet the SMART+F criteria, were ill defined or no longer featured in customers' business plans. Evidence was supplied that showed how CRRs were being incorporated into Local Output Commitments (LOCs). These documents had proved to be a more effective way of capturing the requirements and are managed and integrated into the business planning process.
- 587 Table 91 in the Annual Return referred to two categories of live CRRs: 'Enhancement' and 'Process'. During the audit, Reporter B clarified that the former were CRRs that required capital funding whereas the latter did not. The 'Account Management' category of CRRs did not appear in the 2004 Return. This was replaced by the 'Process' category.

Progress Against Regulatory Target

588 There are no regulatory targets in place for CRRs.

Understanding of & Compliance with Definitions & Procedures

589 The origin of this measure stems from the change in the Network Licence in 1997 when the Regulator required Network Rail (then Railtrack) to respond to reasonable customer requirements. It is apparent that Network Rail was, soon after the licence change, issued with a large number of requests from various type of customer of whom TOCs were in the majority. Since late 1998 Network Rail has been reporting a gradual reduction in the number of outstanding CRRs, due primarily to the process of persuading customers to withdraw CRRs that do not pass the 'reasonableness' test.

590 Section 6 of the 2004 Annual Return states that CRRs form part of Network Rail's current planning process. Whilst it is true that customers and PTEs can raise CRRs, amend them, or withdraw them, the move towards including CRRs in Regional Local Output Statements would appear to prejudice the effective capture of customer requirements as a reportable item to the ORR.

Regional Findings

591 Table 21 summarises the number of CRRs for customers or funders in the three Regions for which Reporter B is responsible.

592 The figures in the table show that 64% of the CRRs outstanding at the end of 2002-03 were withdrawn or completed during the reporting year. No CRR's were submitted during 2003-04. A balance of 24 was carried forward into 2004-05. This pattern of a gradual decline in the number of CRRs was repeated across the network.

593 It is the view of Reporter B that the move towards including requirements through alternative processes, such as Local Output Commitments, makes this particular measure virtually redundant. A danger that is posed by using alternative agreement processes is that customers may be able to obtain the Network Rail resources without having to justify, through auditable channels, the reason for the request.

594 The management of the CRRs database at HQ has reduced the opportunity for variability in data quality between the Regions.

Region	Customer or Funder	Live CRRs at Apr 2003	No. Withdrawn or Completed during Period	No. Submitted during Period	Live CRRs at Apr 2004
Great Western	First Great Western	0	0	0	0
Great Western	Heathrow Express	7	7	0	0
Great Western	Thames Trains	14	14	0	0
Great Western	Arriva Trains Wales	5	5	0	0
Great Western	Wessex	0	0	0	0
Midlands	Central Trains	12	3	0	9
Midlands	Centro	2	1	0	1
Midlands	Chiltern Railway	2	1	0	1
Midlands	Midland Mainline	4	3	0	1
Midlands	Silverlink	2	1	0	1
Midlands	Virgin Cross Country	0	0	0	0
Midlands	Virgin West Coast	3	0	0	3
North West	Merseyrail	3	1	0	2
North West	First North Western	0	0	0	0
North West	GMPTE	7	3	0	4
North West	Merseytravel	5	4	0	1
North West	West Coast Railway	1	0	0	1
Totals		67	43	0	24

Table 21. Number of CRRs for customers and funders.

Observations and Recommendations

Observations

595

Given that the CRRs no longer appear to be the primary means by which Network Rail engage with customers to identify their realistic aspirations for enhancements to the network, ORR should review the usefulness of this measure. Does the existing format of reporting CRRs meet ORR's objectives for its inclusion in the Annual Return?

596 If the ORR decide that the reporting of CRRs is no longer appropriate, it should either be removed from the Annual Return and/or replaced by a more appropriate measure.

Recommendations

597 No specific recommendations are made concerning the reporting of CRRs.

Recommendations

598 This section contains a summary of recommendations made by grouping of measures. All of the recommendations listed are considered to be sufficiently serious to warrant immediate action by Network Rail. In the opinion of the Reporter, such actions should be focused on removing the issue or non-compliance and rectifying any resultant poor data quality in time to positively affect the quality of the information presented in the 2005 Annual Return.

General

599 The following are recommendations that are relevant to Network Rail's reporting either independent of the individual measures themselves or equally important to all measures.

600 The definition and procedure documents should be circulated to all role-holders using the controlled distribution system.

601 Only appropriately qualified and experienced staff should be approving data for reporting in the Annual Return and attending the audits.

602 A process for auditing in the future following the establishment of the territory structure should be discussed as soon as possible (ORR/NR/Reporters A&B).

603 Future audits should be planned approximately six months in advance. Dates, times, attendees & venues should be fixed and staff expected to adhere to the programme with very few exceptions.

604 The regulatory targets should be clearly stated. There are issues surrounding the start of the new control period, the apparent lack of baselines for some measures and the different interpretations of Table 14.1 of the Final Conclusions October 2000. These issues should be resolved.

605 The paragraphs which follow contain a restatement of the recommendations made in the report for ease of reference.

Broken & Defective Rail (M1&M2)

606 That concerted and vigorous efforts are made to ensure compliance with the agreed definition and procedure for defective rails. Unclassified defects should be investigated and re-classified before production of the Annual Return and clear evidence produced at the next audit showing how the monitoring and auditing of data by role-holders has resulted in significantly improved data quality.

Bridge Condition (M8)

607 The baseline condition for bridges should be agreed and the regulatory target set.

608 An action plan is needed to improve the accuracy of reporting SCMI scores. This plan needed to focus on minimising the inconsistency of scoring which clearly exists between Regions (and between contractors).

Signalling Failures & Condition (M9 & M10)

609 All Process Owners and staff with a role referred to in the agreed definitions and procedures should be on the controlled distribution list and should receive updates in accordance with Network Rail's document control procedures.

610 The shortage of adequately trained delay attribution staff in the North West be addressed urgently as this has significantly affected the reliability of reported data for several of the measures that rely on information contained within the TRUST system.

Station Condition & Facilities (M17 & M18)

611 The issues with the hand held capture devices needs to be resolved and HQ must communicate to the Regions the implementation plan for 2004-05.

612 To reduce the time taken to physically resurvey station condition, the one page (A3) summary resurvey sheet used in the Great Western Region should be shared across the Regions.

613 Review the situation in the North West Region to ensure that a Process Owner is appointed and that the Region has a programme of surveys in place for 2004-05.

Light Maintenance Depot Condition (M19)

614 An action plan is established for the full implementation of the hand held devices as a means of survey data collection. The plan should include a programme of dates for the surveying of the 2004-05 sample (circa 20 depots) and the backlog carried over from previous years (26 depots). Feedback from the external audit should be analysed and the Action Plan should include specific steps to be taken to improve the quality of the surveys.

Rail Renewals (M20, M21, M22 & M25)

615 The person responsible in each Region for signing-off the period 13 return to HQ should be capable of conducting an informed sense check of the data presented and should be available to attend the audit. This person should have been closely involved in the management of the structures renewals process during the reporting year and be able to make informed responses to questions raised by the auditors.

616 That reference to the freezing of data at the end of period 1 of the following year be removed from the agreed definitions of all track renewals measures.

617 Network Rail's existing document control procedures should be applied to the distribution of the agreed definition and procedure documents not only to the primary contact with each of the Regions (or Territories from 2004-05) but also to those occupying named roles in the reporting process.

Structures Renewals (M23, M26, M27, M28 & M29)

618 The person responsible for signing-off the period 13 return to HQ should be capable of conducting an informed sense check of the data presented and should be available to attend the audit. This person should have been closely involved in the management of the structures renewals process during the reporting year and be able to make informed responses to questions raised by the auditors.

Signalling Renewals (M24)

619 The person responsible for signing-off the period 13 return to HQ should be capable of conducting an informed sense check of the data presented and should be available to attend the audit. This person should have been closely involved in the management of the signalling renewals process during the reporting year and be able to make informed responses to questions raised by the auditors.

Network Capability (C1, C2, C3 & C4)

620 HQ should appoint appropriate Regional process owners who understand the data involved.

621 Network Rail continues to improve the data quality in the various systems used to source information for these measures. The plan should include dates for the delivery of improved data quality and details of the checks that will be adopted to verify that an appropriate quality has been achieved.

622 That the ORR and Network Rail agree the details of the functionality baseline for each measure necessary for the appropriate regulatory target to be meaningful and in future Annual Returns, Network Rail quote the baseline as well as a list of all changes authorised under the network change procedure.

Reconciliation with 2003 Business Plan

623 That in future years Network Rail exploits the opportunity for cost transparency that in-house maintenance provides and produces a summary of maintenance expenditure by asset category and by Region in the Regional Expenditure Statement to the Regulatory Accounts.

Annex 1 – Reconciliation of Renewals Expenditure

Route	3		4		7		10		11		22		27		28		29		42		Total Region	
	Forecast (£m)	Actual (£m)																				
Track	62.5	59.3	31.2	29.2	17.9	19.2	8.2	8.8	2.6	2.8	2.6	1.2	10.2	5.2	1.0	2.4	2.6	3.4	3.6	3.8	141.8	135.3
Signalling	24.6	16.5	4.1	1.0	3.6	3.5	1.5	0.5	0.0	0.0	0.0	0.0	0.5	0.5	1.0	1.0	0.0	0.0	0.5	0.0	34.8	26.0
Structures	21.5	26.0	36.9	29.0	6.7	7.0	2.0	1.0	3.1	3.0	2.0	1.0	6.7	7.0	2.0	1.0	4.6	5.0	2.0	3.0	87.0	80.0
Electrification	0.5	0.1	0.0	0.0	n/a	n/a	0.0	0.0	n/a	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
Plant & machinery	3.6	3.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	6.0
IT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Telecoms	1.5	1.5	0.5	0.5	1.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	3.0
Stations	3.1	2.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.0	0.5	0.0	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	6.1	5.0
Depots	3.6	7.0	1.0	1.0	n/a	n/a	0.5	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	9.0
Lineside bldgs	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0
Other	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	2.0
Totals	122.4	118.2	75.3	62.7	30.2	31.2	13.8	11.3	5.6	5.8	5.1	2.7	17.9	13.2	4.6	4.9	7.2	9.5	6.1	6.8	287.2	267.8

Table A1. Great Western Region expenditure by route.

	By Route		By Region		Variance (Re-Ro)	
	Forecast (£m)	Actual (£m)	Forecast (£m)	Actual (£m)	Forecast (£m)	Actual (£m)
Track	142.4	135.3	141.8	135.3	-0.6	0.0
Signalling	35.8	23.0	34.8	26.0	-1.0	3.0
Structures	87.5	83.0	87.0	80.0	-0.5	-3.0
Electrification	0.5	0.1	0.5	0.5	0.0	0.4
Plant & machinery	4.6	4.5	4.6	6.0	0.0	1.5
IT	0.0	0.0	0.0	1.0	0.0	1.0
Telecoms	4.5	3.0	4.6	3.0	0.1	0.0
Stations	6.6	5.0	6.1	5.0	-0.5	0.0
Depots	5.1	9.0	5.6	9.0	0.5	0.0
Lineside bldgs	1.5	0.5	2.0	1.0	0.5	0.5
Other	0.0	2.9	0.0	2.0	0.0	-0.9
Totals	288.2	266.3	287.2	267.8	-1.0	1.5

Table A2. Great Western Region reconciliation of route with regional spend.

Route	1		5		7		9		11		25		30		31		43		Total Region	
	Forecast (£m)	Actual (£m)																		
Track	24.6	24.0	31.6	30.8	23.3	22.7	11.6	11.3	2.5	2.4	9.2	9.0	12.4	12.0	1.1	1.1	11.2	10.9	128.0	124.4
Signalling	21.9	10.3	6.3	6.6	9.7	4.5	14.3	3.2	1.4	1.2	1.0	1.3	2.4	1.3	4.8	4.4	0.8	2.7	63.7	35.9
Structures	5.1	5.1	10.8	10.5	7.6	7.4	1.3	1.3	0.6	0.6	5.2	5.0	3.1	3.1	3.6	3.6	1.9	2.0	39.3	38.6
Electrification	11.1	6.9	0.8	0.6	0.0	0.0	0.2	0.0	n/a	n/a	n/a	n/a	0.2	1.7	n/a	n/a	0.0	0.0	12.6	9.2
Plant & machinery	0.4	0.1	1.3	1.0	0.6	0.5	0.3	0.3	0.1	0.1	0.4	0.4	0.6	0.4	0.6	0.4	0.5	0.3	4.7	3.4
IT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Telecoms	0.3	0.4	4.3	4.1	1.9	0.2	0.0	0.0	0.0	0.0	0.2	0.0	1.1	2.6	0.0	0.0	0.0	0.0	9.0	7.7
Stations	5.4	5.4	1.5	1.6	2.8	2.7	0.2	0.2	0.2	0.2	1.6	1.7	2.2	2.2	1.0	1.1	0.0	0.0	15.2	17.0
Depots	1.7	1.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	n/a	0.0	0.0	0.0	0.0	2.3	1.6
Lineside bldgs	0.5	0.5	0.4	0.4	0.2	0.3	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	1.9	2.1
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0
Totals	71.0	52.4	57.5	55.8	46.6	38.4	28.2	16.5	4.9	4.6	17.9	17.6	22.1	23.3	11.3	10.8	14.3	15.9	276.8	237.9

Table A3. Midlands Region expenditure by route.

	By Route		By Region		Variance (Re-Ro)	
	Forecast (£m)	Actual (£m)	Forecast (£m)	Actual (£m)	Forecast (£m)	Actual (£m)
Track	127.5	124.2	128.0	124.4	0.5	0.2
Signalling	62.6	35.5	63.7	35.9	1.1	0.4
Structures	39.2	38.6	39.3	38.6	0.1	0.0
Electrification	12.3	9.2	12.6	9.2	0.3	0.0
Plant & machinery	4.8	3.5	4.7	3.4	-0.1	-0.1
IT	0.0	0.0	0.0	2.0	0.0	2.0
Telecoms	7.8	7.3	9.0	7.7	1.2	0.4
Stations	14.9	15.1	15.2	17.0	0.3	1.9
Depots	2.1	1.5	2.3	1.6	0.2	0.1
Lineside bldgs	2.0	2.1	1.9	2.1	-0.1	0.0
Other	0.0	0.0	0.0	-2.0	0.0	-2.0
Totals	273.8	235.3	276.8	237.9	3.0	2.6

Table A4. Midlands Region reconciliation of route with regional spend.

Route	1		8		10		11		12		13		32		33		34		35		36		45		Total Region	
	Forecast (£m)	Actual (£m)																								
Track	5.0	4.4	2.5	2.9	0.0	0.0	0.0	0.0	5.0	5.4	2.0	2.0	5.0	5.0	11.0	11.0	0.0	0.0	1.0	1.3	3.5	3.5	4.5	4.5	40.9	41.0
Signalling	1.2	0.3	1.1	0.2	0.0	0.4	0.0	0.0	5.0	2.1	1.5	1.0	1.1	1.2	7.2	5.0	1.8	2.3	2.2	3.1	0.0	0.2	0.5	0.0	21.8	16.5
Structures	0.0	0.3	2.2	1.7	0.0	0.0	0.3	0.2	6.2	5.9	0.9	2.1	2.0	2.0	9.9	8.4	5.4	3.0	5.3	4.2	3.0	6.8	1.8	1.5	40.9	40.3
Electrification	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	n/a	0.0	0.0	0.4	-0.2	0.3	1.0	n/a	n/a	n/a	n/a	0.0	0.0	0.0	0.0	0.7	0.8
Plant & machinery	1.2	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.7	1.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1	4.5	2.0
IT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Telecoms	0.3	0.3	0.2	0.3	0.0	0.0	0.0	0.0	0.7	0.3	0.0	0.0	1.7	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.6
Stations	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.3	0.4	0.4	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.0	5.6	5.6
Depots	0.0	0.0	n/a	n/a	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.9	0.6
Lineside bldgs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	1.1	1.7
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Totals	8.8	6.7	6.0	5.1	0.0	0.4	0.3	0.2	17.6	14.0	4.4	5.1	12.1	10.5	29.4	26.0	7.2	5.3	8.9	9.1	6.6	10.7	7.7	6.1	119.4	111.0

Note: Routes 31 & 38 in the North West Region reported zero forecast and actual for all asset categories and have been omitted from Table A5.

Table A5. North West Region expenditure by route.

	By Route		By Region		Variance (Re-Ro)	
	Forecast (£m)	Actual (£m)	Forecast (£m)	Actual (£m)	Forecast (£m)	Actual (£m)
Track	39.5	40.0	40.9	41.0	1.4	1.0
Signalling	21.6	15.8	21.8	16.5	0.2	0.7
Structures	37.0	36.1	40.9	40.3	3.9	4.2
Electrification	0.8	0.8	0.7	0.8	-0.1	0.0
Plant & machinery	4.2	2.8	4.5	2.0	0.3	-0.8
IT	0.0	0.0	0.0	0.0	0.0	0.0
Telecoms	3.0	1.8	3.0	1.6	0.0	-0.2
Stations	2.0	1.2	5.6	5.6	3.6	4.4
Depots	0.8	0.5	0.9	0.6	0.1	0.1
Lineside bldgs	0.1	0.2	1.1	1.7	1.0	1.5
Other	0.0	0.0	0.0	0.0	0.1	0.0
Totals	109.0	99.2	119.4	111.0	10.4	11.8

Table A6. North West Region reconciliation of route with regional spend.