Independent Reporter B
Annual Return 2003
Final Report

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Contents

1 Executive Summary

1.1 Independent Reporter B's Role & Opinion

Mouchel was appointed by the Office of the Rail Regulator (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.

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 2003 was examined and compliance with agreed procedures tested by the Reporter B team. The Annual Return 2003 covered activities and performance in the fiscal year 2002-03.

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.

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 auditing took place in parallel with the compilation of the Return by Network Rail.

Following the team's investigations, it was concluded that:

- Network Rail is substantially compliant with documented procedures agreed with the Regulator;
- Network Rail has provided a commentary within the Annual Return 2003 that explains any assumptions material to the figures reported for activities and performance in 2002-03;

- there were departures from the agreed procedures, the materiality of which was investigated and commented upon under the relevant section of this report;

- the procedures allow for interpretation by Regional staff, some discretion in the selection of the source of data used and in the method of analysis and calculation;

- while sampling on some asset types is behind schedule, the programme of sampling asset condition has substantially reached its mid-way point and it should be possible, therefore, for Network Rail and the ORR to agree an extrapolated target for those asset condition measures which have sufficient data to provide a statistically sound baseline. This seems particularly relevant to M8, M10, M13, M14, M15 and M16; and

- Network Rail afforded free and unfettered access to staff involved in the reporting process and to data on which reported figures are based.

Independent Reporter B acknowledges the co-operation of Network Rail and the ORR in the successful discharge of its duties for Annual Return 2003.

1.2 Scope of Audit

Independent Reporter B's view of Network Rail's Annual Return 2003 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 audit of the Return in 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 2003.

1.3 Audit Findings

1.3.1 Data Confidence Grades

Network Rail, the ORR and Independent Reporter B agreed that the reported data should be assigned a confidence grade. In the absence of a system developed specifically for the rail industry, the confidence grading systems employed by OFWAT for the water industry was used. In this, the second audit, a grade was given to each Region and also to the measure overall. This allowed the audit to capture the variability in the quality of data reported between Regions and to illustrate the impact that such variability had on the reporting of the measures nationally.

1.3.2 Data Quality and Confidence Grades for HQ, NW, Midland and GW Regions

The group of Regions assigned to Independent Reporter B have been assigned an overall grading in the table in Table 5 within Section 3.2. Of the 20 measures reviewed, we have assigned 6 at B2, 5 at B3, 3 at A2, 2 at C3, and 1 each at A1, B1, C4 and C5.

Thus the majority of the measures fall into A1, A2, B2 or B3 which are graded as data that is quite accurate with minor shortcomings. Only four measures are given an overall C grade for reliability, due to the smaller sample of data used.

It should be noted that the lower reliability grades have been applied to the condition measures, while the higher reliability grades have been awarded to the asset failure reporting. This is considered to reflect the challenge Network Rail faces in developing and reporting good quality survey information on asset condition.

1.3.3 Regional Variations

During the reporting period 2002-03, the Network Rail Regions were each managed through different organisational structures and the responsibility for collating and reporting certain measures in the Annual Return was given to people with varying backgrounds, skills and experience. This variation has undoubtedly contributed to the difference in data confidence between Regions, based as the grades are on evidence obtained by the Reporters.

Whilst headquarters had produced the Asset Reporting Manual (ARM) in which definitions and procedures were documented for most measures, the requirements allow for significant interpretation locally in some cases, and in others documented procedures were simply not followed, often for justifiable reasons.

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. The impact of this initiative on the quality of reporting in the Annual Return will be quantified in the 2004 audit.

1.3.4 Operational Performance

Many of the issues raised during the 2002 audit remained and were evident in 2003. It is noted that the interval between the report on AR 2002 and this report was eight months, thus allowing for some improvements in the robustness of processes which are noted in the main body of the report. However, the programme of system updates to address the concerns of Network Rail's internal auditors over the suitability of the systems used to record and attribute delays had not been fully implemented at the time of the audit. The tables of train delays reported in the Annual Return 2003 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 and would appear to be appropriate in relation to Network Rail's business objectives.

During the audit, the Reporter B team 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. Whilst no evidence of malicious manipulation of such codes by IMCs was identified during the audit, and the only reason given by Network Rail for IMCs wanting to alter codes was to improve the quality of the Operational Performance data, there was no formal process by which Network Rail was required to check and validate changes to codes within the I, J and W groups. Since delays attributed to these codes in 2002-03 accounted for over half of the top ten delay causes in each of the three Regions, the potential for changes to be made independently of Network Rail, and possibly without their knowledge, undermined Reporter B's confidence in the accuracy of delays caused by infrastructure failures resulting in a lower OFWAT confidence grade (B3) than might otherwise have been given.

1.3.5 Asset Condition & Serviceability

Broken & Defective Rails

The Reporter's concern over the inconsistent interpretation and reporting of wheel burns remained in the reporting year. Whilst steps had been taken with the revision of RT/CE/S/057 to clarify that individual burns <5m apart should be treated as multiple defects and burns >5m apart as isolated defects, this clarification was not made in time to ensure consistency in the 2002-03 data. Independent Reporter B would be disappointed if this was not implemented for the AR 2004.

Network Rail acknowledged the gaps and deficiencies in the reporting of defective rails in 2001-02. This was attributed primarily to the existence of bespoke systems in the IMCs many of which are not integrated into Network Rail's own systems. A major initiative was underway at the time of the audit to address this inconsistency. The initiative includes the updating of RT/CE/S/057 which has taken place over the last two years. Unfortunately, the Raildata system does not currently recognise the new defect codes, a situation which is making it difficult for IMCs to record data collected under the new standard. Auditors were told that the new standard and an updated Raildata system will be delivered in August 2003. Network Rail will need to manage the migration from the old to the new system very carefully and to ensure that all users have received adequate training on the new standard and system if the data inadequacies of 2001-03 are not to be repeated in 2003-04. Of particular concern to Reporter B is the way in which defects collected and coded between April and August 2003 will be handled.

Whilst Network Rail is to be commended on the steps taken to address this issue, no changes were implemented in time to impact on the quality of data reported in the Annual Return 2003. The reporting of defects that have been removed from track, rather than the reporting of all existing defects, remained a problem in 2002-03 but this should be corrected before the end of the 2003-04 reporting year.

Temporary Speed Restrictions

No material changes took place in the way that TSRs were reported in the period 2002-03 although the commentary noted that 'experience gained in the data collation process

has allowed enhancements to be made to data checking'. Evidence of such improved data validation and cleansing was apparent in the HQ spreadsheets used to calculate the numbers and severity scores for inclusion in the Annual Return. Input records were checked for missing fields, calculated fields were checked for spurious output and the imposed speeds were checked to ensure that they were less than the normal speeds for freight and passenger trains (where appropriate).

In each Region, auditors reported that management effort had focused on the removal of TSRs in 2002-03. This was interpreted as evidence to support the assertion in the commentary that Network Rail placed increased importance on reducing the impact of TSRs on their customers.

Analyses of an example of a TSR spreadsheet from one Region clearly demonstrated the sensitivity of the severity score to the formulae selected to represent the ratio of line speed to restricted speed. By changing the calculation of F to any one of three other, equally justifiable ratios, Reporter B was able to demonstrate that the severity scores varied significantly.

Investigations showed that the impact of the artificial closure of 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 not significant in 2002-03 in the Region that was selected as an example and there is no reason why this should be different across the network. The number of TSRs in the example was under reported by 3.5% in 2002 and the severity score by 0.01%. Reporter B remains of the opinion that this practice is undesirable. It is possible, due to the volatility of TSR occurrence, that the small impact in the example may be significantly increased under different, and entirely plausible, circumstances. Independent Reporter B will review such possibilities at AR04, with a view to making more recommendations on refining the process.

Slope Failures Causing Derailment

This measure is not useful in assessing the quality of Network Rail's stewardship of earthworks assets. The definition requires both a slope failure and the derailment of a passenger or freight train. These are rare events in isolation and very rare events when both are required for an incident to count. Only one incident was recorded in 2002-03. It is recommended that Network Rail formally commit to implementation of the risk-based scoring system for earthworks that is currently under development. The ORR should then consider replacing the existing measure with one that uses the scoring index in a similar way to that for structures (SCMI).

Bridge Condition Index

An external audit of the condition scoring surveys was commissioned by HQ during 2002-03. The independent assessor re-surveyed 169 bridges and found that:

- 108 required re-scoring as the independent survey showed that they had been originally marked outside the 63 marks in 100 tolerance specified in RT/ARM/M8DR;

- 166 had one or more discrepancies in the severity codes attributed; and
- 93 had one or more extent code differences between the original survey and the audit.

The implications of these findings are serious. Clearly the level of consistency achieved in Network Rail's assessment of bridges to date must be questioned. Of the 156 bridges found to require re-scoring after independent survey, 132 were assessed as being in poorer condition than the original survey indicated. Reporter B calculated that the average condition grade should be multiplied by a factor of 1.15 to adjust the original scores for this apparently optimistic assessment of their condition. If this factor was applied to the network average condition grade it results in a revised figure of 2.3. Thus, the recalculated average condition grade of 2.3 is outside the tolerance quoted for the measure based on the last reported grade of 2.0. Therefore, the implications of the re-scoring of assets for the reported network condition are significant and are considered to be a risk to the timely completion of the surveys of the remaining bridge population by the end of the control period.

Given that the cumulative sample, to the end of the reporting period, only represented 18.5% of the national population, there is a risk that Network Rail will not achieve the target of surveying all appropriate bridges by the end of the current control period.

Signalling - Condition & Failures

The number of signalling delays reported for 2002-03 exceeded the regulatory target by 3,971 (15.8%). This increase was outside of the tolerance allowed and therefore constituted a failure to meet the regulatory target for signalling failures causing delays.

Under the signalling condition measure, North West Region had made progress since the 2002 audit, with 77% of the Regional assets having received a pSICA assessment. The Region needs to commission and implement a contract for sSICA assessments as a matter of urgency. In the Great Western Region, changes in the national policy for SICA assessments have contributed to the achievement of only a 19% sample to date compared with over 50% achieved nationally. The Region should review its policy of using the same individual to undertake all SICA assessments as this may prejudice the surveying of all assets by the end of the current control period.

Electrification - Condition & Failures

The number of failures reported for both AC and DC power systems were within the tolerance limits allowed for the regulatory target.

The selection of sample sets for assessing contact system asset condition did not follow the documented procedure. Sample sets were not provided to the Regions by HQ. Reporter B has concerns over the degree to which the samples surveyed are representative of the population. In particular, equipment type does not seem to have been considered when selecting the sample for feeder stations, track sectioning points and substations. Auditors were also concerned that historical wear measurements of DC

contact systems were used with 'engineering judgement' to produce figures for asset condition in the reporting year. A re-gauging was underway at the time of the audit but the data reported for Midlands Region relied heavily on such judgements.

Stations – Condition & Facilities

The Reporter B team had intended to attend some surveys in early 2003-04 and to report on their findings in the report on Network Rail's Annual Return 2004. This intention was not realised in this reporting period because of the delayed introduction of hand held devices for surveying contractors. At the time of writing (July 2003) the programme of surveys remained under suspension. Reporter B is concerned that this significant delay will prejudice the quality and quantity of station condition data in the 2004 Annual Return. This issue will be addressed in the 2004 audit.

The Reporter B team analysed the summary spreadsheet used at HQ to calculate the figures reported in the Annual Return and has some serious misgivings over the quality of the data contained within it. Of the 2,499 station assessments, 103 were discovered to have "no survey date found" attached to the record, 774 contained a blank date record and 30 contained an erroneous survey date. The records over which Reporter B had serious concerns accounted for 36% of the network total and give rise to a reduction in the reliability grade applied to this measure.

It is the opinion of Independent Reporter B that there were significant and material gaps in the data used to calculate and report station condition in 2003. There was evidence that either the condition surveys for a number of stations had been cursory or the data relied upon was unsubstantial and out of date.

Light Maintenance Depot Condition Index

Network Rail had not achieved the milestone target required at the end of 2002-03 to ensure that all depots are surveyed by the end of the current control period. In addition, the introduction of hand held data recorders to facilitate depot surveys was delayed.

The contracting strategy adopted to sample depots was changed prior to the reporting period 2002-03. A single contractor will be employed nationally to undertake the surveys. Whilst this strategy should encourage consistency in the future, it raises the risk of a step change in results from 2001-02 to 2002-03. A planned independent audit of the contractor's work in 2002-03 had not been completed at the time of the audit (April 2003) providing some concern over the reliability of the data recorded against depot condition.

1.3.6 Activity Volumes

The reporting of Activity Volumes continues to give Reporter B cause for concern. Audits revealed variability in the quality of the audit trail maintained by those responsible for compiling data and reporting. This variability existed both between Regions and between individual measures within the same Region. Reporting would benefit from the adoption of best practice for all measures in all Regions.

The introduction of new measures covering culverts and retaining walls has raised a couple of issues surrounding the need to update the definitions and procedures documents and for the measure of culverts renewed to be unambiguously defined in the case of multiple bore culverts. The reporting of signalling renewals would benefit from the adoption of the Signalling Equivalent Unit (SEU) as the basis for reporting.

1.3.7 Network Capability

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 have met the target of no reduction in functionality. Reporter B has serious 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 2001-02 and 2002-03 to judge progress against the regulatory target.

Urgent action is required by Network Rail to improve the quality of data in the various systems now used to source data for the capability measures. In those Regions that have used the systems in the past to provide data to HQ for reporting, only minimal action will be required. However, in those Regions that have previously relied upon other sources (such as the Section Appendix), considerable effort may be required to bring the systems now in use up to date. The definition and procedure documents should be edited to reflect the changes in the way these measures are reported.

1.3.8 Reconciliation for 2002 NMS

The procedures for compiling the NMS Forecast, Regulatory Accounts (Appendix A) and the NMS 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 draft Regulatory Accounts Appendix A. The only material variance related to the spend on stations & depots and was the subject of a note in the commentary of the Annual Return. The reason given for the variance was that £35m of renewals expenditure had been included in the Regulatory Asset Base as enhancements and therefore excluded from the total renewals figure. This comment has not been checked by the Reporter but appears to be reasonable. The remainder of the variances were <1% of the figure quoted for each asset category in the Regulatory Accounts.

Reporter B was surprised to see that WCRM expenditure had not been reported separately in Appendix A to the Regulatory Accounts since this programme had been separated from the remaining business units for reporting purposes during the reporting year. The clarity of AR04 would benefit from separate accounting treatment for WCRM.

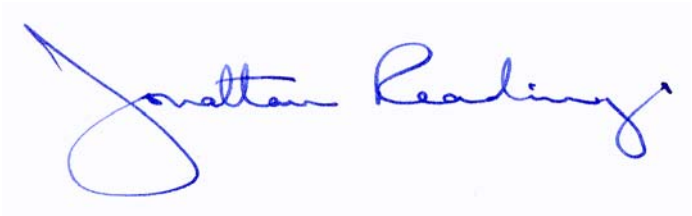
1.3.9 Customer Reasonable Requirements

The way that CRRs were monitored and reported was changed in 2002-03 with the implementation of a central database for CRRs which is 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. CRRs from Freight Operating Companies (FOCs) were also treated differently in 2002-03. EWS for example, reported an increase of 17 CRRs. These were previously part of the joint investment funding. It was decided that they should be incorporated into the reporting of CRRs.

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.

1.4 Audit Plan for Annual Return 2004

The audit of Network Rail's Annual Return 2004 will return to the issues raised during the 2003 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 Consulting Limited
as Independent Reporter B
August 2003

2 Introduction

This is Independent Reporter B's second annual report and covers the activities undertaken to verify the accuracy of the information reported in Network Rail's Annual Return 2003. The latter includes measures reported for the fiscal year 2002-03.

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).

2.1 Scope of Work for Reporter B

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.

2.2 Levels of Audit

Following lessons learnt during Reporter B's audit of the 2002 Annual Return, a workshop was held to discuss and agree the level of detailed required from the audit in 2003. Both Independent Reporters, the ORR and Network Rail were represented at this workshop.

The consensus was that four separate levels of audit were required to encompass the full range of measures reported in the Annual Return. The levels varied in the approach and

level of detail involved from a high level surveillance of changes to a transactional analysis of samples or source documents and data. The agreed levels of audit are described below:

- Level 1: Detailed Audit: Review findings from 2002 audit and undertake detailed analysis of all key issues identified including site visits and sampling of the full audit trail (transactional checks);
- Level 2: Review findings from 2002 audit with some site visiting (to check on-site processes) and a desk top analysis of data;
- Level 3: Full process audit (as for 2002 audit) for new measures; and
- Level 4: Review of 2002 findings & high level surveillance of changes.

Table 1 shows the level of audit agreed for each of the measures in the Annual Return 2003. Where responsibility for auditing was allocated to either Reporter A or B, the measure has been included in the table for completeness.

Group	Measure	Measure Name	Level 1	Level 2	Level 3	Level 4
Track	M1	Broken Rails		Linked to M2		
	M2	Rail Defects				
	M3	Track Geometry		Reporter A only		
	M4	Condition of Asset TSRs				
Earthworks	M6	Slope Failures Causing Derailments				Reporter B only
Bridges	M8	Structures Condition Marking Index (SCMI) - Bridge Condition				
Signalling	M9	Signalling Failures Causing Train Delays				
	M10	Signalling - Condition				
Electrification & Plant	M11	AC Traction Power Incidents Causing Train Delays				
	M12	DC Traction Power Incidents Causing Train Delays				
	M13	AC Traction Sub Station Condition				
	M14	DC Traction Sub Station Condition				
	M15	AC Traction Contact System Condition				
	M16	DC Traction Contact System Condition				
Stations	M17	Stations Condition				
	M18	Stations Facilities				
Depots	M19	LMD Condition		Reporter B only		
Activity Volumes	M20	Rail Renewals				
	M21	Sleeper Renewals				
	M22	Ballast Renewals				
	M23	Number of Bridge Elements Renewed				
	M24	Signalling Renewals				
	M25	Number of S&C Renewals				
	M26	Culvert Renewals				
	M27	Retaining Wall Renewals				
Capability	C1	Linespeed Capability				
	C2	Gauge Capability				
	C3	Route Availability				
	C4	Electrified Track Available				
Financial		NMS Reconciliation & Regulatory Accounts				
CRRs		Customer Reasonable Requirements				
Operational Performance		Operational Performance				

Table 1. Agreed Levels of Audit for the Measures in the Annual Return 2003.

2.3 Structure of this report

This report has been prepared to facilitate reading in conjunction with the Annual Return 2003. In the sections which follow:

- Section 3 contains 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 against those targets, confidence grades that Reporter B has assigned to the reporting of each measure and comments on the co-operation received by the Reporter's team during the audits;
- Section 4 summarises the 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;
- Sections 5-17 describe Reporter B's audit findings under convenient groupings of measures. In each case, the scope of the audit, Annual Return results, findings and recommendations are covered;
- Section 18 contains a summary of conclusions and recommendations made by grouping of measures. The recommendations considered to be of the highest priority have been highlighted; 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 Section 16 reconciliation for 2002 NMS.

3 Opinion on Compliance

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, the confidence grade which Reporter B has attributed to the reporting of each measure and observations on the planning of the audits and the co-operation received from Network Rail staff.

Generally, Reporter B is satisfied that Network Rail was compliant in the preparation and reporting of information contained in the Annual Return 2003. Where audits have exposed examples of poor data quality or failures to adhere strictly to written procedures, these observation have been noted under the appropriate sub-section of this report covering the measure and Region (or HQ) concerned.

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 2003 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.

3.1 Baseline Outputs in the Periodic Review

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.

Table 2 contains a summary of the monitoring targets taken from Table 14.1 of the review. The column titled 'Performance 2002-03' 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 or exceedance of the target (green); failure to meet the target (red), or partial achievement (yellow).

Asset Type	Measure	Monitoring Target	Performance 2002-03
Track	Serviceability:		
	TSRs	Number & severity to reduce from 2001 reference position	Both the number & severity of track TSRs decreased in 2002-03.
	Broken Rails	Target for 2002-03 = 705	The 444 reported was significantly better than the target.
Earthworks	Serviceability:		
	TSRs	Number & severity to reduce from 2001 reference position	Whilst the number of earthworks TSRs decreased, the reported severity score increased
Signalling	Serviceability:		
	Failures delay mins.	Number to reduce from 2001 reference position	Increase of 4.2% year on year. Reported figure is +15.8% over the target and is outside tolerance limits.
	Age	Age profile should not worsen 2001-06	Small increase in average condition grade (based on age) is at tolerance limit.
Electrification	Serviceability:		
	DC 3rd rail	Number of incidents no worse than 2001	Number of incidents decreased slightly.
	AC OHL	Number of incidents no worse than 2001	Number of incidents increased slightly. Total reported was 15.9% over target but within tolerance limits.
	Condition:		
	AC TFS & SP	Profile of assessed condition should not worsen 2001-06	Significant improvement in average condition reported (outside tolerance limit).
	DC substations	Profile of assessed condition should not worsen 2001-06	Slight improvement in average condition reported (inside tolerance limit).
	AC OHL	Profile of assessed condition should not worsen 2001-06	No change in average condition grade reported.
	DC 3rd rail	Profile of assessed condition should not worsen 2001-06	No change in average condition grade reported.
Structures	Serviceability:		
	TSRs	Number & severity to reduce from 2001 reference position	Both the number & severity of structures TSRs decreased in 2002-03.
	Condition	No worse than 2001 subject to baseline sampling of reference position.	Poor reliability highlighted in audit of condition surveys. Slight improvement in reported condition within tolerance limit.
Stations	Condition	Meet & exceed Network Rail's own targets for average condition & distribution between categories & condition bands.	Very small reduction in average condition grade reported (within tolerance limit).
Depots	Condition	No worse than 2001 position.	Significant increase in average condition grade reported (outside tolerance limit).

Table 2. Summary of Performance against Periodic Review Targets.

3.2 Confidence Gradings

It was agreed with the Regulator, in the absence of a more suitable alternative, that the OFWAT classification of confidence grades would be applied to Network Rail's reported figures. Grades were assigned for each measure to each of the three Regions for which Reporter B is responsible (where appropriate). A grade was also assigned at the national level, capturing the Reporter's confidence in network-wide reporting and the processes managed from HQ.

The OFWAT confidence grade system has been established to provide a reasoned basis for auditors to characterise information in terms of its reliability and accuracy. The band descriptions for reliability and accuracy are set out in the Tables 3 and 4.

Reliability Band	Description
A	Sound textual records, procedures, investigations or analysis properly documented and recognised as the best method of assessment.
B	As A but with minor shortcomings. Examples include old assessment, some missing documentation, some reliance on unconfirmed reports, some use of extrapolation.
C	Extrapolation from limited sample for which Grade A or B data is available.
D	Unconfirmed verbal reports, cursory inspections or analysis.

Table 3. OFWAT Reliability Bands.

Accuracy Band	Accuracy to or within 6	but outside 6
1	1%	-
2	5%	1%
3	10%	5%
4	25%	10%
5	50%	25%
6	100%	50%
X	accuracy outside 6100 %, small numbers or otherwise incompatible (see table below)	

Table 4. OFWAT Accuracy Bands.

The confidence grade combines elements of reliability and accuracy. For example, A2 would indicate data based on sound records and estimated to be within 65%.

Table 5 shows Reporter B's opinion of the confidence that can be attached to the data contained in the Annual Return 2003.

Measure Code	Measure	OFWAT Confidence Grade			
		North West	Midlands	Great Western	Overall Impression
	Operational Performance				B3
M1	Broken Rails	A2	A2	A2	A2
M2	Defective Rails	B3	B3	B3	B3
M4	TSRs	B3	B4	B3	B3
M6	Slope Failures				A1
M8	Bridge Condition	B4	B3	C3	B3
M9	Signalling Failures	B2	A2	A2	A2
M10	Signalling Condition Index	B4	B2	C1	B2
M11 & 12	Electrification Failures	B1	B1	C1	B1
M13 - 15	Electrification Condition	B3	B3	C3	B3
M16	DC Contact Systems Condition		C5		C5
M17	Station Condition	B2	A2	B2	B2
M18	Station Facilities	B2	B2	A2	B2
M19	LMD Condition Index				C3
C1-4	Capability	D4	C3	C3	C4
M20-27 (note 1)	Activity Vols – Structures	B3	C2	B1	B2
	Activity Vols – Signalling	B3	B1	A1	B2
	Activity Vols – Track	B3	C4	B3	C3
	NMS Reconciliation				B2
	Customer Reasonable Requirements				A2

Note 1: The WCRM business unit was attributed a confidence grade of C3 for activity volumes.

Note 2: The 'Overall Impression' confidence grade is based on the evidence from the three Regions audited by Independent B, and from HQ and is influenced by the lowest confidence grade for each measure.

Table 5. National & Regional Confidence Grades.

3.3 Audit Planning, Preparation & Co-operation

Following feedback from Network Rail on Reporter B's proposed audit programme, visits to the Regions were delayed until at least four to six weeks after the end of the reporting year. This was to allow staff in the Regions to finalise the collation of the data to be reported to HQ for the 2002-03 reporting period. Unfortunately, Network Rail had planned for a reorganisation of the Regions to take place in June 2003. Under the reorganisation, a consistent template structure was to be imposed in each Region to facilitate consistency between the Regions and to promote transparency. Many of the key staff with which the Reporter B team had established a working relationship moved to different roles at some time during June 2003. The uncertainty, stress and additional workload that the reorganisation created had a significant and negative impact on the arrangements for the Regional audits.

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 mute point. It is the opinion of Reporter B that future audits should be programmed at least six months in advance and an instruction issued to key staff requiring them to attend when required.

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.

4 Summary by Region

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.

4.1 North West Region

Auditors observed an example of best practice in the cluster analysis of broken and defective rails in the Manchester Area's IMC offices.

In the area of bridge condition assessment, the Region needs to address urgently the poor quality of the examination contractor's assessments according to re-survey evidence collected by the independent auditor. The time taken for SCMI assessments to be reported to the Region should also be shortened.

A contractor to undertake sSICA assessments should be commissioned immediately to avoid falling too far behind in the surveying of signalling assets.

Care should be exercised to ensure that the correct version of the definition and procedure documents are used. Auditors discovered that the incorrect version of the document covering bridge renewals had been used in 2002-03.

4.2 Midlands Region

Examples of best practice were observed in the audit of the station condition measure. Regional staff had conducted an internal audit of the examination contractor's organisation and had not suspended the programme of surveys when the introduction of the hand held data recorders was delayed.

Areas requiring improvement include the treatment of isolated defects with a start and finish chainage (where these are used merely to indicate an approximate location rather than a continuous defect), the continuing use of the AMP definitions for renewal volumes and the errors of transposition exposed during the audit of TSR records in tracing transaction to and from the WON.

4.3 Great Western Region

Evidence of exemplary record keeping was observed during the audit of structures activity volumes. The planning and co-ordination of the audits was well handled by the Regional staff.

Areas requiring attention include the lack of formal record keeping in the case of electrification failures because the region has relatively few such incidents. The Region has endeavoured to meet the national target for SICA assessment after an initial problem created when the Network Rail policy on such assessments changed. The Region should

continue to focus on undertaking the sSICA assessments to avoid failing to reach the target set for the end of the current control period. Action is required to reduce the time taken for SCMI assessments to be reported to the Region by the examination contractor. Auditors raised the apparent lack of resilience in the track team of the Exeter Area IMC as a potential cause for concern that the Region should manage.

5 Operational Performance

5.1 Scope of Audit

Independent Reporter B proposed a level 4 audit of Section 1 of the Annual Return covering Operational Performance. This was to comprise a review of any changes in procedures implemented after the 2002 audit and monitoring of actions taken to address the issues raised in Reporter B's report. 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.

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.

5.2 Annual Return 2003 Results

The network total delays attributable to Network Rail increased by 9.6% to 14.7 million minutes in 2002-03. The expected improvement in performance caused by Network Rail's improved focus on the management of TSRs and on increased volumes of renewals to replace life-expired assets did not materialise. Delays caused by rolling contact fatigue decreased by 75% whilst those caused by points, track circuits and signalling failures increased by 18%. Weather related delays increased by 72% with the delays per train km for codes 110 external weather impact, 111A wheel slip due to leaf fall, 150 NR share of leaf fall/adhesion delays and 305 track circuits failures – leaf fall, up by 36.8%.

5.3 Findings

In the commentary, Network Rail claimed that changes to data processes in the area of dispute resolution actually meant that the true year on year change was approximately 7% rather than the 9.6% reported. No evidence to support this claim was provided to Reporter B during the audit. This has led Reporter B to conclude that Network Rail may have compared the unadjusted figures for 2001-02 with an approximate figure for 2002-03 (after removing impacts estimated to have been caused by the data processing changes) when calculating this percentage. Caution is urged when interpreting the 7% figure.

Delays attributable to trespass and suicide at stations increased by 30%. This was due primarily to a change in data processing. It was decided that such situations were the responsibility of the network manager rather than of individual operators.

5.3.1 Progress Against Regulatory Target

The regulatory target for Operational Performance concerns the delay minutes per 100 train km for passenger trains only. The target for 2002-03 was 1.35 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 figure for 2002-03 was 2.90, an increase of 5.8% on the figure of 2.74 reported for 2001-02. No regulatory target was set for delays to freight trains.

5.3.2 Understanding of & Compliance with Definitions & Procedures

During the audit, the Reporter B team 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. Whilst no evidence of malicious manipulation of such codes by IMCs was identified during the audit, and the only reason given by Network Rail for IMCs wanting to alter codes was to improve the quality of the Operational Performance data, there was no formal process by which Network Rail was required to check and validate changes to codes within the I, J and W groups. Since delays attributed to these codes in 2002-03 accounted for over half of the top ten delay causes in each of the three Regions the potential for changes to be made independently of Network Rail undermines Reporter B's confidence in the accuracy of delays caused by infrastructure failures.

5.3.3 Regional Findings

Table 6 shows the trends in the number of train km, total train delays and delays per 100 train km reported in 2001-02 and 2002-03. Also shown in brackets is an index which was based on the figures reported for the North West Region in 2001-02.

Region	Train km		Total Delay mins.		Delays per 100 train km	
	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03
North West	50,343,836 (100)	52,104,225 (107)	1,499,216 (100)	1,463,731 (98)	2.98(100)	2.81 (94)
Midlands	75,630,262 (150)	74,245,756 (147)	2,936,360 (196)	3,106,982 (207)	3.88 (130)	4.18 (140)
Great Western	64,909,087 (129)	67,034,101 (133)	1,880,957 (125)	1,887,580 (126)	2.90 (97)	2.82 (95)

Table 6. Regional Traffic and Total Delays 2001-02 & 2002-03.

Table 6 clearly shows that traffic volumes increased in all three Regions whilst the total train delays decreased in North West and increased in both Midlands and Great Western Regions. The normalised delays (mins/100 train km) decreased in Great Western and North West Regions and increased in the Midlands. The former two Regions reported a figure below that for the network average (2.90). The latter reported the highest figure for

the three Regions in both 2001-02 and 2002-03 and, at 4.18, the reported figure for 2002-03 was considerably higher than the network average.

Table 7 summarises the top ten train delay causes for the Midlands Region in 2002-03.

Delay Code	Category	(%)	Cumulative (%)
301B	Track circuit failures	9.3	9.3
104B	Broken rails/track faults	9.0	18.3
101	Points failures	8.9	27.2
106	Other infrastructure	8.7	35.9
104A	TSRs due to condition of track	7.2	43.1
502C	NR Commercial – dispute take back	6.0	49.2
501	NR production responsibility	4.5	53.7
301A	Signal failures	4.1	57.8
104C	Gauge corner cracking	3.4	61.2
503	External fatalities & trespass	3.3	64.5

Table 7. Midlands Region Top Ten Delays 2002-03.

The top five delays in 2002-03 were all in the top six reported in 2001-02. Gauge corner cracking showed a decrease to 3.4% from 10.3% in the previous year. Rails, points and track circuits accounted for 27.2% of the total reported Regional delays. Table 8 shows the comparable data for the Great Western Region.

Delay Code	Category	(%)	Cumulative (%)
104B	Broken rails/track faults	13.0	13.0
301B	Track circuit failures	12.4	25.4
101	Points failures	8.7	34.1
110	External weather impact	7.0	41.1
502A	NR Commercial – train planning	6.9	48.0
503	External fatalities & trespass	6.4	54.4
501	NR production responsibility	5.1	59.5
302A	Signalling system & power supply failures	3.9	63.4
301A	Signal failures	3.7	67.0
104A	TSRs due to condition of track	3.4	70.4

Table 8. Great Western Region Top Ten Delays 2002-03.

The same causes (points, rails and track circuits) accounted for 34.1% of the reported total and were the top three causes in this Region as well. Gauge corner cracking also decreased in Great Western Region and did not appear in the top ten for 2002-03. TSRs due to condition of track appeared in the top ten of all three Regions but in the North West, it was the biggest cause of delays (11.2% of total) as shown in Table 9.

Delay Code	Category	(%)	Cumulative (%)
104A	TSRs due to condition of track	11.2	11.2
104B	Broken rails/track faults	9.0	20.2
301B	Track circuit failures	7.8	28.0
101	Points failures	6.5	34.5
601	Unexplained	5.8	40.3
502C	NR Commercial: dispute take back	5.5	45.8
501	NR production responsibility	4.7	50.5
402	External infrastructure damage – vandalism /theft	4.5	55.0
104C	Gauge corner cracking	4.2	59.1
150	NR share of leaf fall/adhesion delays	4.1	63.3

Table 9. North West Region Top Ten Delays 2002-03.

The causes accounting for the next three places in the top ten were however, broken rails/track faults, track circuit failures and points failures respectively. As in 2001-02, 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. Reporter B has not yet discovered the reason for such reporting in North West Region. The network total delays per 100 train km under the unexplained code decreased by 20% to 0.08 in 2002-03.

The existence of the code 502C Network Rail Commercial; dispute take back, in the top ten for Midlands (6.0%) and North West Regions (5.5%) was probably a result of a change in process under which, any delay that was disputed and formed part of a PEARS edit set, was assigned to this cause. Such disputed delays would have previously been allocated to either the TOC or to 601 unexplained. Network Rail considers the revised process to have increased the accuracy of reporting.

Many of the issues raised during the 2002 audit remained and were evident in 2003. The concerns expressed by Network Rail's internal auditors over the suitability of the systems used to record and attribute delays had not been addressed. The tables of train delays reported in the Annual Return 2003 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. A national confidence grade of B3 was considered appropriate.

5.4 Recommendations

- That Network Rail introduces a robust procedure for monitoring the alteration of delay codes by IMCs. This procedure should result in commentary that should be included in future Annual Returns and which should include the magnitude of the changes expressed both as the number of incidents (as a % of total in each I, J & W) code and the impact on reported delay minutes under those codes (also as a %).
- The systems in use for reporting are close to or beyond their useful life. Network Rail should rationalise and improve the systems that are used for delay attribution and reporting.

6 Broken & Defective Rails

6.1 Scope of Audit

It was agreed that the broken rails measure would receive a level 2 audit and that defective rails would be investigated further, as part of a level 1 audit. The former audit was to include a review of previous findings and any corrective actions taken, visits where appropriate to check processes in-situ and a degree of desktop analysis of supporting, data whilst the latter was to include transactional checks of data records and site visits where appropriate.

The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2003 under Section 2, Number of Broken Rails (M1) and Rail Defects (M2). The investigations undertaken as part of the audit were intended to revisit the issues raised during the audit of the 2002 Annual Return and to examine in greater detail samples of defective rail records. The latter also involved transactional analysis of records in the defective rail databases operated by IMCs, reporting to, and processing by, the Region, recording and reporting by the Region to HQ and finally publication in the Annual Return.

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

- RT/ARM/M1DF (issue 2 16 March 2001);
- RT/ARM/M1PR (issue 3 14 December 2001);
- RT/ARM/M2DF (issue 3 14 December 2001); and
- RT/ARM/M2PR (issue 3 14 December 2001).

The audit included North West, Midlands and Great Western Regions as well as HQ. Within the Regions auditors interviewed both Network Rail and a sample of IMC staff responsible for identifying and reporting broken and defective rails.

6.2 Annual Return 2003 Results

No material changes took place in the way that broken and defective rails were reported in the period 2002-03. The commentary recognised the issues that had been 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 are fully aware that this inadequacy resulted in gaps and inconsistencies in the data reported for 2002-03. Whilst a series of actions were reported in the commentary as ‘currently underway’ (as at July 2003), it is likely that the impact of the improvements being taken will not be realised for a full reporting year until 2004-05.

The reported network total for broken rails was 444 compared with 535 reported in the previous year. In each of the three Regions for which Reported B is responsible, reported broken rails fell, and have been falling consistently since 1999-00. The improvement in 2002-03 compared with 2001-02 was 4% in Great Western Region and 8% in both Midlands and North West Regions.

The trend in the number of broken rail 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 three years covered by the data.

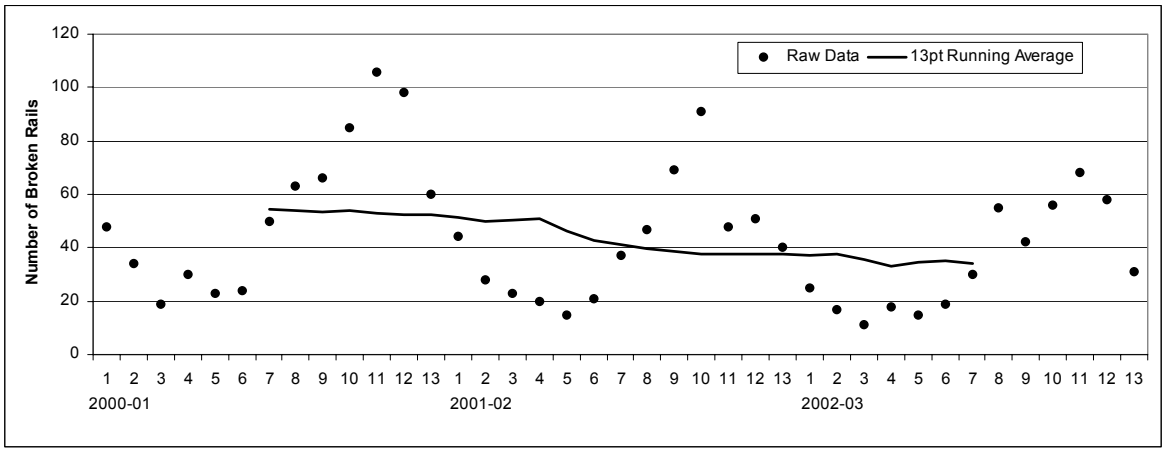


Figure 1. Trend in the Number of Broken Rails Identified.

The network total number of isolated rail defects reported at 2001-02 year end was corrected in the Annual Return 2003. The figure reported previously (33,658) was discovered by Network Rail to have been understated by 416 (1.2%). Significantly, the number of unclassified defects was reduced by the correction from 1,637 to 455 (-72%). The number of defects remaining at the end of the year was reported as 34,964; 890 more than the total corrected figure for 2001-02.

The figure reported in 2002 for continuous rail defects was also corrected. The correction amounted to a reduction of 3.4% and a corrected total of 1,573km. The defective rail remaining at year end was reported as 1,583km, an increase of 10km (0.65%) over the adjusted figure for the previous year.

6.3 Findings

The reported improvement in the number of broken rails should be considered together with the significant renewals activity reported for plain line track. Despite the fact that the rail renewed was 11.6% below that forecast in the 2002-03 NMS, the reported length was nearly 3% greater at 1,010km, than that reported for 2001-02. The figure for 2002-03 was acknowledged as not including the full extent of 'minor' re-railing work undertaken in some Regions.

6.3.1 Progress Against Regulatory Target

The reported network total for broken rails of 444 exceeded the regulatory target (maximum of 705) by –37%. The reported figure was also better that the tolerance allowed for this measure (613.7% or 692 broken rails on the target of 705).

No regulatory target has been set for the number of defective rails.

6.3.2 Understanding of & Compliance with Definitions & Procedures

Network Rail acknowledged the gaps and deficiencies in the reporting of defective rails in 2001-02. This was attributed primarily to the existence of stand alone bespoke systems in the IMCs. A major current initiative was underway to address this inconsistency. The initiative includes the updating of RT/CE/S/057 which has taken place over the last two years. Unfortunately, the Raildata system does not currently recognise the new defect codes which is making it difficult for IMCs to record data collected under the new standard. Auditors were told that the new standard, and an updated Raildata system will be delivered in August 2003. Network Rail will need to manage the migration from the old to the new system very carefully and to ensure that all users have received adequate training on the new standard and system if the data inadequacies of 2001-03 are not to be repeated in 2003-04. Of particular concern to Reporter B is the way in which defects collected and coded between April and August 2003 will be handled.

Whilst Network Rail are to be commended on the steps taken to address this issue, no changes were implemented in time to impact on the quality of data reported in the Annual Return 2003. The reporting of defects that have been removed from track, rather that the reporting of all existing defects remained a problem in 2002-03 but should be corrected before the end of the 2003-04 reporting year.

The Reporter's concern over the consistent interpretation and reporting of wheel burns remained in the reporting year. Whilst steps had been taken with the revision of RT/CE/S/057 to clarify that individual burns <5m apart should be treated as multiple defects and burns >5m apart as isolated defects, this clarification was not made in time to ensure consistency in the 2002-03 data.

6.3.3 Regional Findings

North West Region

Audit meetings in North West Region were held with both the Regional staff responsible for the collation and reporting of broken and defective rails, and representatives of the IMC responsible for the Manchester Area.

Regional staff confirmed that inconsistent interpretation of the treatment of wheel burns persisted in 2002-03. It was hoped that the revision to RT/CE/S/057 will clarify their treatment and promote improved consistency in the future.

SPERRY sticks and the ultrasonic train were introduced in the Region during the reporting year. It was estimated that these techniques were only deployed for testing

between January and March 2003 and in only one of three Areas in the Region. Their impact on the defects reported in the Annual Return 2003 will not have been as significant as the commentary to the Annual Return 2002 would suggest.

During the audit, a sample of reports was observed. Whilst all IMCs reported using a similar form, there were variations in fine detail between contractors. The Regional staff did not consider such variations to be as problematic as the lack of compatibility between IMCs database systems and Raildata. The Technical Clerk in the Region sense-checked all incoming data and raised apparent discrepancies with the IMC concerned. On occasion, the Technical Clerk undertook site visits to resolve outstanding concerns.

The broken rail report used by IMCs contains a field in which a pre-existing defect may be identified. The IMC visited as part of the audit, investigated the possible link between broken and defective rails using a map of the Area showing broken and defective rail sites. The planning of the re-railing programme utilised this map of clusters to highlight areas requiring most urgent attention. Sudden changes in the pattern of defects and/or rail breaks triggered further investigation. Wheelchex data was also reviewed.

The auditors viewed the IMC's defective rail data base in operation. A number of records were selected at random and a transactional check made of the source report from the ultrasonic or visual inspector. The IMC's records proved robust in the audit and the staff enthusiastic to share evidence of sound practice with the auditors.

Based on the meeting with Regional staff and the one Area IMC visited, the data quantifying the number of broken rails was attributed a confidence grade of A2. Reporting of defective rails continued to suffer from ambiguous definitions, delay in the introduction of the latest testing technologies and compatibility problems with the databases used to manage the data. A confidence grade of B3 was considered appropriate.

Midlands Region

Audit meetings in Midlands Region were held with both the Regional staff responsible for the collation and reporting of broken and defective rails, and representatives of the IMC responsible for the East Midlands Area.

During the audit in the Regional offices, two issues were identified concerning the definitions of defective rails in 2002-03. The misinterpretation of continuous and isolated defects was evident in the reporting year and, because the testing cycle on some lines involves inspection every two years, it may be some time before the mis-reported data is corrected. A second problem was discovered in one IMC's database. Every entry with a start and finish mileage was recorded as a continuous defect even if the mileages had been intended simply to estimate the location in the absence of a suitable chainage marker near to the site. Another potential source of erroneous defect data arose from the labelling of known defective welds (identified during casting) as defective. The records were then deleted when the weld was repaired but the Annual Return may contain a number that are awaiting repair.

During the reporting year, the majority of testing had been undertaken using ultrasonic techniques with a smaller number of visual inspections. The SPERRY train had been active in the Region during the reporting year. When exploring the potential link between defective and broken rails, the Region reported that no regular systematic cluster or causal link analysis was undertaken. An existing known link between Class 168 trains, corrugations and squat defects was mentioned. A Track Management Systems Audit Report of one of the IMCs Area offices was studied by auditors. The report showed that there were seven technical and supervisory vacancies in the Track Engineer's organisation at the time of the audit. This raised concerns in the mind of the Reporter over the capacity of the IMC to provide adequate detection and management of rail defects.

The treatment of known defective welds, incorrect handling of isolated defects with a start and finish chainage, and the ubiquitous ambiguity over the treatment of wheel burns has resulted in Reporter B attributing a B3 confidence grade for defective rails. Evidence of more robust procedures for reporting broken rails led reporter B to consider A2 appropriate for M1.

Great Western Region

Audit meetings in Great Western Region were held with both the Regional staff responsible for the collation and reporting of broken and defective rails, and representatives of the IMC covering the Exeter Area.

Regional staff confirmed that approximately 95% of testing for defective rails in the Region was undertaken using conventional techniques in 2002-03. SPERRY equipment and the ultrasonic train were in the process of being introduced during the year and were used when availability allowed.

The recurring confusion over the definition of isolated and continuous defects at wheel burn sites was reported in Great Western Region. Whilst steps have been taken to revise the standard and to eliminate this confusion, care must be taken when reviewing the 2003-04 data as the updated standard was not formally issued before the start of the reporting year. Assuming that it is successfully implemented before April 2004, the data reported for 2003-4 will still require careful adjustment to ensure that the databases do not contain defects recorded under two differing standards.

When the issue of cluster analysis and of investigating the possible connection between defective and broken rails was discussed, the Regional staff explained that they 'investigate' and keep their eye on local developments. No evidence of mapping of defective or broken rails was provided and the Reporter's team concluded that a more rigorous approach by the Regional staff would probably yield benefits. The auditees explained that broken rails at the site of identified defective rails were rare. On further investigation, it transpired that approximately 20-25% of repaired wheel burns eventually lead to a broken rail. It is understood that the broken and defective rail report forms contain a field for site history. It is not clear how frequently this field is used. In the 2001-02 audit, this field was reported as largely unused.

During the IMC audit, defective rail records selected at random from the database were matched successfully with the information provided on the report forms. One record however, showed a removal deadline of 01/03/03. When asked, staff confirmed that the defect had not yet been removed. Further investigation showed that the Area had 744 outstanding defects at the time of the audit. These were defects remaining in track after the required date for removal.

Auditors enquired about the process for uploading data from the IMC's database to Network Rail's Regional offices. This was handled via email and that data was not automatically uploaded.

The Exeter Area has not experienced many broken rails in the past and so little, if any, work had been done to investigate the link between defective and broken rails. Auditees explained that they had undertaken a form of cluster analysis when providing information to support the development of the rail renewals programme. Unfortunately, no copy of the cluster analysis had been retained.

The issues surrounding the definition of wheel burns and the treatment of re-railed GCC sites were discussed. The former were treated as a continuous defect when the length was '1 yard or longer'. No explanation was offered of the differentiation between isolated and multiple defects. Auditors were told that although 'some re-railed sites still exist as a record in Railflaws but did not have any affect on reported quantities'. No evidence was provided to support this assertion.

During the audit, the reliance of the Area Track Team on individuals with unique experience of systems and databases was noted. This demonstrated a lack of resilience to auditors and resulted in a concern for data quality in the medium to long term.

Concern over the lack of cluster and causal link analysis for broken and defective rails together with a lack of resilience in the IMC visited and the problems associated with the treatment of wheel burns has resulted in a confidence grade of B3 for defective rails in Great Western Region. Broken rails were attributed an A2 confidence grade.

National confidence grade of A2 and B3 were considered appropriate for M1 and M2 based on the quality of the data supplied by the Regions and collated for insertion into the Annual Return.

6.4 Recommendations

- That Network Rail produces an action plan for the implementation of the new version of RT/CS/S/057 and the updated Raildata system in the Regions. The plan should include dates for the formal release of the standard, training for Regional and IMC staff and the migration of data relating to the early part of the 2003-04 reporting year to the new system.

- The scope of any routine internal audits concerning the handling of broken and defective rail data in either the Regions or in the IMCs should be modified in 2003-04

to focus on validating the accurate migration of data into the new systems and on checking that the new definitions of isolated and multiple defects have been correctly applied across the network.

6.5 Best Practice

Best practice in the analysis of clusters and causal links for broken and defective rails should be shared between Regions and IMCs. All should be actively encouraged to adopt best practice in the preparation of proposals for future re-railing programmes.

North West Region's IMC First Engineering has an ongoing process of investigating the pattern of failures using a GIS map of the area which allows rapid triggering of investigations if a pattern of defects appears. They also use Wheelchex data for analysis of failure patterns. This type of proactive management of failure patterns is to be commended.

7 Temporary Speed Restrictions

7.1 Scope of Audit

It was agreed that this measure would receive a level 2 audit. Such an audit was to include a review of previous findings and any corrective actions taken, visits where appropriate to check processes in-situ and a degree of desktop analysis of supporting data.

The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2003 under Section 2, Temporary Speed Restrictions (M4). The investigations undertaken as part of the audit were intended to revisit the issues raised during the audit of the 2002 Annual Return and to examine in greater detail samples of TSR applications. The latter involved transaction analysis of applications from production in the IMCs, via receipt and processing by the Region to publication in the WON, recording and reporting by the Region to HQ and finally publication in the Annual Return.

The references for the definition and procedure for this measure are:

- RT/ARM/M4DF (issue 4 16 March 2001); and
- RT/ARM/M4PR (issue 5 16 March 2001).

The audit included North West, Midlands and Great Western Regions as well as HQ. Within the Regions, auditors interviewed both Network Rail and IMC staff responsible for preparing and processing TSR applications.

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.

7.2 Annual Return 2003 Results

No material changes took place in the way that TSRs were reported in the period 2002-03 although the commentary noted that 'experience gained in the data collation process has allowed enhancements to be made to data checking'. Evidence of such improved data validation and cleansing was apparent in the HQ spreadsheets used to calculate the numbers and severity scores for inclusion in the Annual Return. Input records were checked for missing fields, calculated fields were checked for spurious output and the imposed speeds were checked to ensure that they were less than the normal speeds for freight and passenger trains (where appropriate).

Nationally, the reported results showed a decrease in the number and severity score of condition of asset TSRs on the network. Track TSRs decreased by 15% in number and 23% in severity score between 2001-02 and 2002-03 compared with 25% and 55% reductions in structures TSRs and a 6% reduction in the number of earthworks TSRs.

The severity of earthworks TSRs increased by 6% over the same period with Great Western, London North Eastern, Midlands and Scotland Regions all showing significantly increased severity scores. Further investigation of the 156% increase in severity score reported for Midlands Region revealed that this was the result of protective speed restrictions imposed south of Anyho junction on the Chiltern Line under the WCRM blockade works at Ledburn Junction.

In Great Western Region the number and severity of all TSRs reported under this measure decreased in 2002-03 by 27-44% and 24-52% respectively, where the range of percentages quoted is bounded by the smallest and greatest decrease reported. North West Region reported reduced numbers and severity of structures and earthworks TSRs (50-80% and 57-89% respectively) but an increase in the number of track TSRs (15%). This was attributed to changes to work plans to benefit from the West Coast renewals programme. The severity score for track TSRs in North West Region decreased by 28%.

The trend in the number of TSRs from period 8 2000-01 to period 13 2002-03 is shown in Figure 2. The solid line on the graph is a 13-point running average of the raw data. The initial volatility in the data has reduced and the trend shows a decrease in the running average from over 800 to below 700. The number of TSRs reported in period 13 of 2002-03 was below 600.

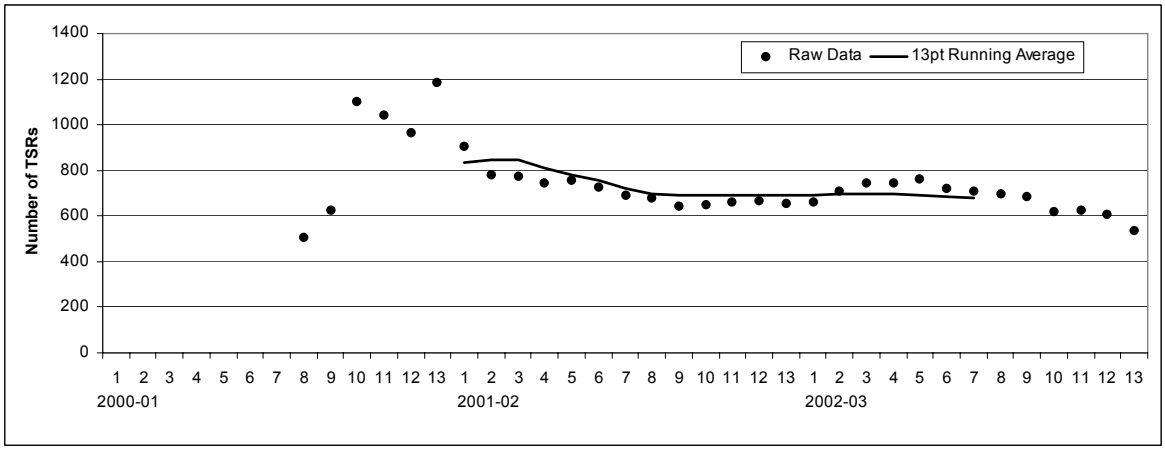


Figure 2. Trend in the Number of TSRs Reported.

The significance of condition of track TSRs was demonstrated by the presence of delay code 104C in the top ten causes of train delays in all three Regions. It was the largest cause of delays in the North West, accounting for 11.2% of the total delays reported. In Great Western Region in was the 10th largest delay code (3.4%) and 5th in Midlands Region (7.2%) (see Section 4).

Under the heading of condition of asset TSRs, Network Rail was only required to report those attributed to track, structures and earthworks. Regions actually collected TSRs caused by degradation in the condition of other assets including OLE gantries and equipment, and signal gantries and equipment. These, together with TSRs caused by renewals works, improvements to level crossing safety and the protection of staff on operational property, were recorded in an 'Others' category. In the Great Western

Region, this category accounted for 46 TSRs with a severity score of 66, in the North West Region it was 87 and 404 and in Midlands it was 80 and 112. In each case the number of 'Other' TSRs was greater than both the number reported for structures and earthworks. Indeed the number involved in each region was of the same order of magnitude as the national figures reported for these categories.

7.3 Findings

In each Region, auditors reported that management effort had focused on the removal of TSRs in 2002-03. This was interpreted as evidence to support the assertion in the commentary that Network Rail placed increased importance on reducing the impact of TSRs on their customers.

Given the significant number of TSRs recorded by the Regions under the 'Other' category, consideration should be given to including these figures in the Annual Return next year. The data is already collected by the Regions and reported to HQ. Inclusion in the Annual Return would provide a more complete picture of the state of condition of asset TSRs on the network.

Analyses of an example of a TSR spreadsheet from one Region clearly demonstrated the sensitivity of the severity score to the formulae selected to represent the ratio of line speed to restricted speed. By changing the calculation of F to any one of three other, equally justifiable ratios, Reporter B was able to demonstrate that the severity scores varied significantly.

Investigations showed that the impact of the artificial closure of 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 not significant in 2002-03 in one Region (selected as an example). The number of TSRs in the example was under reported by 3.5% in 2002 and the severity score by 0.01%. Reporter B remains of the opinion that this practice is undesirable. It is possible, due to the volatility of TSR occurrence, that the small impact in the example may be significantly increased under different, and entirely plausible, circumstances.

7.3.1 Progress Against Regulatory Target

There are no regulatory targets in place for TSRs. This is to avoid creating the disincentive for Network Rail not to apply a TSR in situations where one is prudent for safety reasons.

7.3.2 Understanding of & Compliance with Definitions & Procedures

Two areas of weakness were discovered. Firstly, the definition and procedure covering structures TSRs did not list those structures included (and excluded) for reporting purposes. Despite several attempts to understand exactly what the Regions had interpreted as a structure in 2002-03, Reporter B was not satisfied that certain types had not been omitted, or others that should not have been, had been included. The second was a failure of IMCs to comply consistently with the requirement that a standard form be used to submit applications for TSRs. Whilst this failure may not have had a material

impact on the numbers reported in the Annual Return, it does make the job of checking and data validation more difficult and increases the risk of misreporting of information.

7.3.3 Regional Findings

North West Region

In the North West Region, auditors were shown evidence of incoming requests for TSRs and of thorough checking (with the Sectional Appendix) that the information provided was correct. A sample of several records was viewed and an example of a TSR with the cause 'condition of bridge and track' examined closely.

A change in key personnel during the year created a significant problem in the Region. Whilst every effort was made to overcome the impact of this, it has made it difficult for the Region to assure the quality of the data collected during the first three quarters of the year. It was estimated that approximately 140 of the 154 TSRs recorded were accurately reported. This would suggest that around 9% could have been misreported. As a result, a confidence grade of B3 was awarded.

Midlands Region

In the Midlands Region, a number of transactional analyses were undertaken. A series of TSRs were randomly selected from the database and source documents retrieved to validate data-entry and processing. The correct entry of information in the WON was also checked. A number of discrepancies were identified including incorrect transposition of imposition and removal dates from the WON to the spreadsheet. Since duration is a key variable in the calculation of the severity score, such errors are significant even if their materiality was not established. Further evidence of inaccurate transposition was exposed when it was not possible to cross-reference entries in the spreadsheet with the original WON record.

As a result of the evidence of transposition errors in the TSR spreadsheet and the difficulties encountered when trying to cross-reference records with the source information in the WON, a confidence grade of B4 was considered appropriate for Midlands Region.

Great Western Region

Despite the documented procedure, in the Great Western region an estimated 50% of applications for a TSR were received in a non-standard format via email or fax transmission. Transactional analysis was undertaken and evidence provided to Independent Reporter B that the TSR information was correctly transcribed from the TSR application to the WON and also to the TSR reporting spreadsheet. The significant proportion of applications for a TSR received using non-standard methods has resulted in a reliability score of B being awarded. Evidence of correct processing of applications and consistency with the WON and spreadsheet was reassuring but the possibility that some condition of asset TSRs may have been categorised incorrectly has resulted in an accuracy score 3.

Based on the confidence attached to data supplied by the Regions, Reporter B considered a national grade of B3 appropriate.

7.4 Recommendations

- Remind all IMCs of the correct form to be used when applying for a TSR.
- Insist that all IMCs use the correct form.
- Amend the procedure so that TSRs active at the end of the reporting year are not artificially ended and a new one started in the following year.

7.5 Best Practice

No obvious best practice was found relating to the measure as prescribed

8 Slope Failures Causing Derailments

8.1 Scope of Audit

A level 4 audit was required for this measure. Such an audit was to be limited to a review of the findings of the 2002 audit and of any changes to the definition and procedures that had been implemented in 2002-03.

The reported data was based entirely on information extracted from the National Incident Log at HQ. It was therefore unnecessary to visit the Regions to audit the measure.

8.2 Annual Return 2003 Results

During the period covered by the Annual Return 2003, only one slope failure causing derailment was reported. This occurred on 1 January 2003 at Merstham Cutting in Southern Region. Heavy rainfall caused gravel and weathered material to be washed from above the cutting onto the track. A passenger train was derailed and >750 minutes of train delays resulted.

8.3 Findings

8.3.1 Progress Against Regulatory Target

No regulatory targets have been set for this measure.

8.3.2 Understanding of & Compliance with Definitions & Procedures

Reporter B is satisfied that Network Rail has accurately reported the number of qualifying incidents under the existing definition of the measure. A confidence grade of A1 was therefore awarded.

The small number of incidents (one in each of 2001-02 and 2002-03) was however, partly a result of the rarity of the event necessary for inclusion under the definition of this measure. Only incidents of slope failures that cause a derailment and which lead to train delays of >750 minutes were reported.

Whilst the small number of incidents reported may be seen as positive, it is debatable whether it demonstrates the ‘quality of (Network Rail’s) stewardship of the earthworks asset’. Any measure that only results in one or two reported incidents in a year will not necessarily provide an insight into the effectiveness of maintenance and renewal interventions involving the assets.

Whilst the 750 minute delay report is mentioned in the procedure, and Network Rail has interpreted the measure to only include those derailments caused by embankment or cutting failure and which result in more than 750 minutes of delay, the procedure does not explicitly define the measure as such. If the measure were to continue to be reported, the wording of the procedure should be tightened to state clearly that derailments causing delays less than 750 minutes are excluded from the measure.

It is the view of Reporter B that any measure used to assess stewardship of earthworks assets should focus on ensuring that detection of failures is as likely as is reasonably possible (to prevent incidents that will damage assets and put lives at risk) and that the chances of incidents occurring is minimised as far as is reasonably possible. The present M6 measure does not achieve either of these objectives. The proposed risk-based assessment of national earthworks assets seems to be better focused on asset stewardship. Its implementation and adoption across the Regions should be encouraged and Network Rail asked to provide a programme for its implementation. The Annual Return measure M6 should be revisited when the procedure for the assessment is released. It is likely that a measure better suited to monitoring the quality of asset stewardship can be formulated and adopted based on Network Rail's future assessment programme.

8.3.3 Regional Findings

Since the Regions were not involved in reporting this measure, it was decided that no visits were necessary and that a Regional analysis of reported incidents was superfluous.

8.4 Recommendations

- That Network Rail and the ORR conclude discussions concerning the assessment of earthworks assets using a risk-based methodology and that Network Rail produce formal definition and procedures for the agreed methodology.

- That Network Rail releases an implementation plan for adoption of the risk-based assessment of earthworks. The plan should include dates to which Network Rail commit to achieving certain milestones in the application of the revised measure in the Regions.

- That the risk-based assessment procedure be adopted for reporting in future Annual Returns as soon as possible.

8.5 Best Practice

No obvious best practice was found relating to the measure as prescribed

9 Bridge Condition

9.1 Scope of Audit

It was agreed that this measure would receive a level 2 audit. Such an audit was to include a review of previous findings and any corrective actions taken, visits where appropriate to check processes in-situ and a degree of desktop analysis of supporting data.

The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2003 for M8 the Bridge Condition Index. The investigations undertaken as part of the audit were intended to revisit the issues raised during the audit of the 2002 Annual Return and to examine the processes involved in sample selection and in undertaking condition surveys. The latter involved auditors observing condition surveys.

The references for the definition and procedure for this measure are:

- RT/ARM/M8DF (issue 3 14 December 2001); and
- RT/ARM/M8PR (issue 3 14 December 2001).

Both documents refer to the Structures Condition Marking Index rather than the Bridge Condition Index.

The audit included North West, Midlands and Great Western Regions as well as HQ. Technical specialists attended a sample of asset condition surveys covering all three Regions for which Reporter B was responsible.

The meetings and site visits took place during April, May and June 2003. 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.

9.2 Annual Return 2003 Results

The Annual Return reported that 6,691 bridges had been surveyed by the end of the reporting period. Based on information provided during the audit, this figure represented 18.5% of the network population (36,185). The average condition grade was reported as 2.0. This was the same as the figure reported in 2001-02.

The distribution of scores in bands 1 to 5 were as follows: 22.4% of the cumulative bridges surveyed fell into band 1, 59.0% in band 2, 17.2% in band 3, 1.4% in band 4 and <0.1% in band 5.

9.3 Findings

Given that the cumulative sample, to the end of the reporting period, only represented 18.5% of the national population, there is a risk that Network Rail will not achieve the target of surveying all appropriate bridges by the end of the current control period. It is noted that the network total of 36,185 quoted above may include some bridges that do not require an SCMI examination.

During the audit at HQ, the issue of staff competence was raised. Although not required under the current definition and procedure, both Network Rail staff and Reporter B agreed that staff receiving SCMI data from contractors should be demonstrably competent to do so. This would be facilitated if they were to be accredited to units nine and ten of RT/CE/S/047. These units cover the preparation of examination pro formae and sketches, and the scoring of bridge elements respectively.

An external audit of the condition scoring surveys was commissioned by HQ during 2002-03. The independent assessor re-surveyed 169 bridges and found that:

- 108 required re-scoring as the independent survey showed that they had been originally marked outside the 63 marks in 100 tolerance specified in RT/ARM/M8DR;
- 166 had one or more discrepancies in the severity codes attributed; and
- 93 had one or more extent code differences between the original survey and the audit.

Of the 156 bridges found to require re-scoring, 132 were assessed as being in poorer condition than the original survey indicated. Reporter B calculated that the average condition grade should be multiplied by a factor of 1.15 to adjust the original scores which results in a revised average network condition of 2.3. This is outside the tolerance quoted for the measure based on the last reported grade of 2.0. The implications of the re-scoring of assets are significant and are considered to be a risk to the timely completion of the surveys of the remaining bridge population by the end of the control period.

9.3.1 Progress Against Regulatory Target

The regulatory target for the condition of bridges is for no deterioration from a baseline average condition grade that will be established once a sufficient sample is achieved. No such baseline had been established by the end of the reporting period. A tolerance for the bridge condition index was reported in the Annual Return as 60.1 on the target. Reporter B noted that the recalculated average condition grade of 2.3 was outside the tolerance quoted for the measure. Therefore, the implications of the re-scoring of assets for the reported network condition is significant.

9.3.2 Understanding of & Compliance with Definitions & Procedures

Issues surrounding non-compliance and with data quality identified during the audit are best considered separately for each Region for this measure. The Regional findings are included in the sub-sections which follow.

9.3.3 Regional Findings

North West Region

During a visit to observe an SCMI examination in the North West, a number of issues were raised. The surveyor explained that the usual practice was for the sketch and form to be produced by the surveyor and not necessarily prior to the survey. Apparently, it was also usual practice for the SCMI results to be recorded in the comfort of a vehicle or nearby building rather than on-site. None of these practices are explicitly outlawed by the SCMI procedure for conducting examinations defined in the SCMI Manual, but they are considered by Reporter B to be bad practice.

Based on figures reported by the independent auditor's examination of structures in the North West, data in the Annual Return from the Region may have been over optimistic in is reporting of bridge condition by a factor of 1.31. An adjusted average condition grade for the Region of 2.0 would be more appropriate than the 1.52 reported to HQ using the original scores. Of the three Regions for which Reporter B is responsible, North West performed least well in the independent audit of SCMI examinations. A confidence grade of B4 was attributed by Reporter B.

An issue that would have tended to lead to pessimistic condition assessments was revealed during the audit of the Midlands Region. During the meeting Regional staff confirmed that no adjustment was made to SCMI scores following works undertaken as part of maintenance, renewals or enhancement programmes. Normal practice was to leave the existing SCMI score unaltered and to wait until the next examination as determined by the appropriate standard.

Midlands Region

Once again in Midlands Region, observations made during an SCMI examination showed that it was usual practice to score the bridge after returning from the site rather that whilst the surveyor was on-site. Regional staff agreed with Reporter B's team that this practice was prejudicial to the quality of the condition assessment. Another issue exposed was the length of time elapsed between the SCMI examination and the receipt of the SCMI scores by Regional staff which was typically two to three months. Efforts should be made to reduce this delay.

The Reporter B team analysed the bridge types contained in the cumulative sample assessed to the end of the 2002-02 in the Midlands Region and the correlation between bridge type and SCMI score. The two bridge material types with the largest numbers of structures yet to be examined were found to have received the worst condition score in surveys to-date. In conclusion, the average condition grade for Midlands Region calculated as 2.3 (based on data provided during the audit) is likely to increase

significantly in the future as more bridges in a poor condition state are surveyed. This conclusion is based on the assumption that the remaining bridges in each bridge material type category have similar condition states to those included in the cumulative sample to the end of 2002-03. Reporter B considered a confidence grade of B3 appropriate.

Great Western Region

The independent check of SCMI scoring in Great Western Region resulted in a smaller net adjustment to the original scores. This was because 12 bridges were found to have been under-scored, nine had been over-scored and four had their scores confirmed. The adjustment factor calculated by Reporter B was 1.03 which resulted in a +0.1 change to the average condition grade to 2.9. This was the smallest adjustment indicated by the independent check for any of the three Regions audited by Reporter B.

During the observation of an SCMI examination, the auditor noticed that the examiner had no prepared forms or sketches and that he took notes on-site with the intention of completing the scoring later after his return to the office. These practices were not conducive to consistency of scoring in the opinion of Reporter B.

Great Western Region was found to have a significant backlog of examinations. The Region accounted for 35% of the national backlog but auditors did not discover whether this was due to a delay in the reporting of examinations that had already taken place, or because the assessments had not been undertaken. A confidence grade of C3 was attributed to the Region.

Based on the significant differences between the original scores from Regional assessment contractors and those generated by an independent auditor, a confidence grade of B3 was considered appropriate by Reporter B.

9.4 Recommendations

- That Network Rail adopts the recommendations contained in the independent auditor's report of SCMI condition assessments.
- Where these recommendations were specific to a Region, that a specific action list is produced for that Region. The region should then be audited against the actions after a suitable number of condition assessments had been undertaken.
- In particular, urgent action is required to improve the accuracy of the scoring by examiners.
- That ORR set a baseline target for M8.
- Midlands and Great Western Regions should take urgent steps to address the unacceptable delays typically experienced between the SCMI condition assessment and receipt of the results by Regional staff.

- North West Region should ensure that examiners are aware of the findings of the independent auditor and insist that they prepare an action plan to correct the deficiencies outlined in the report.

9.5 Best Practice

The move within Midland Region to combine the reporting processes on the Detailed Examination and the SCMI should be carefully observed and implemented across the network if it is successful. In theory this practice provides for more cost effective reporting than the present practice.

10 Signalling – Failures & Condition

10.1 Scope of Audit

It was agreed that these measures would receive a level 2 audit. Such an audit was to include a review of previous findings and any corrective actions taken, visits where appropriate to check processes in-situ and a degree of desktop analysis of supporting data.

The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2003 under measures M9 and M10 covering signalling failures and asset condition. The investigations undertaken as part of the audit were intended to revisit the issues raised during the audit of the 2002 Annual Return and to examine in greater detail evidence of incidents and of condition surveys and sampling. The latter involved auditors observing surveys of signalling assets.

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

- RT/ARM/M9DF (issue 4 12 November 2002);
- RT/ARM/M10DF (issue 3 14 December 2001);
- RT/ARM/M9PR (issue 2 16 March 2001); and
- RT/ARM/M10PR (issue 3 14 December 2001)

The audit included North West, Midlands and Great Western Regions as well as HQ. Within the Regions, auditors interviewed Network Rail staff and observed the attribution of delays within Regional Control Rooms. Technical specialists also attended a sSICA survey in July 2003.

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.

10.2 Annual Return 2003 Results

10.2.1 Signalling Failures

The Annual Return reported an increase of 4.2% to 29,077 in the number of signalling failures causing cumulative total train delays of >10 minutes. The national trend masked wide variations between the Regions with Great Western reporting a 1.9% increase, Midlands a 7.8% rise and North West a decrease of 15.6%.

10.2.2 Signalling Condition

A cumulative total of 1,032 interlockings had been assessed using pSICA or sSICA by the end of 2002-03. According to the commentary in the Annual Return, this accounts for approximately half of the national asset base. Significantly, some 250 of the assets that had been reported in the 2002 Annual Return had been removed from the cumulative figures in 2003 because the assets had not been assessed using the approved procedure. The corrected figure for the cumulative number of assets assessed to 2001-02 was 'around 800'. The average condition grade was reported to have increased by 0.1 since 2000-01 to 2.4.

10.3 Findings

10.3.1 Signalling Failures

The commentary in the Annual Return stated the following as reasons for the increase in the number of incidents reported:

- A significant increase in the number of trains using the network. Each failure therefore affected more trains and reduced the opportunity for a timely repair of the failed assets;
- The adoption of more cautious driving styles since 2000-01;
- The continuing difficulties in restoring a normal timetabled operation following an incident;
- The introduction of TPWS negated a decrease in the number of failures recorded in the Network Rail Failure Management System (FRAME) ;and
- Since December 2002-03, access to the track was more difficult due to the introduction of RIMINI.

It is Reporter B's view that some of the reasons given should be treated with caution. The impact of the introduction of RIMINI for example, will only have had a minimal impact on the number of reportable delays as it was introduced three quarters of the way through the reporting period. Data presented in the Operational Performance section of the Annual Return support the assertion that the delays attributable to TPWS increased in 2002-03 by 121% to 53,092 minutes for passenger trains and that the network has seen a growth in traffic over the same period of 2.2% as measured by passenger train km. Data provided during the Regional audits however, showed that the number of incidents caused by TPWS on track represented a small fraction of the total number of incidents attributed to signalling failures in the period. In the North West Region, TPWS incidents accounted for only 2.0% of the total, with figures in Great Western and Midlands Region of 2.1% and <0.1% respectively.

It is the opinion of Reporter B that a more complete picture of the impact of signalling failures on the operation of the network would be achieved if both the number of incidents

and the cumulative delay in minutes were reported. As Network Rail collect both items of data it would not be difficult to combine them in the Annual Return.

Figure 3 includes a 13-pt running average and the raw number of signalling failures over the period 2000-03. The figure shows considerable volatility in the raw data and a clear trend for the number of failures causing a delay of >10 minutes to increase over the period shown.

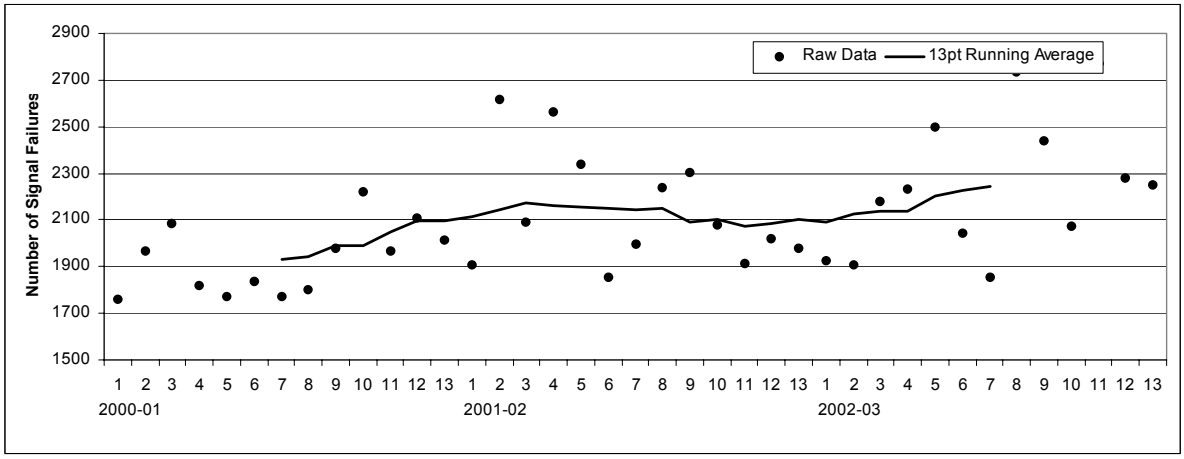


Figure 3. Trend in the Number of Signal Failures.

The accuracy of the data for this measure was almost entirely dependent upon the correct identification of the root cause of delays and the correct attribution of those delays to the appropriate code. The data transfers once this exercise had been undertaken were all electronic and barring formula errors in spreadsheets used to filter the data, of which Independent Reporter B found no evidence, the data was not susceptible to the introduction of inaccuracies or corruption beyond this initial attribution stage.

10.3.2 Signalling Condition

No material changes took place in the way that the M10 measure was reported in 2002-03. The commentary in the Annual Return referred to a number of condition assessed interlockings that had been erroneously reported in the 2002 Annual Return and which had been removed from the data contained in the 2003 Annual Return. As a result, there appeared to have been a slight reduction in the total number of assets assessed to date. It is the view of Independent Reporter B that Table 29 in the Annual Return should be changed and the adjusted figures included for 2000-02 with a note explaining why it was necessary to reduce the number of interlockings reported in 2002.

No audits were conducted by HQ during 2002-03 despite the need to quantify variability between the Regions and to actively encourage consistency. Audits were also a stated requirement in the written procedure. Primarily as a result of this failing, a national confidence grade of B2 was considered appropriate.

10.3.3 Progress Against Regulatory Target

A regulatory target of no deterioration from the network total of 25,106 delays reported for 2000-01 applies to M9. A tolerance of 67.3% was agreed when the target was set.

The number of delays reported for 2002-03 exceeded the regulatory target by 3,971 (15.8%). This increase was outside of the tolerance allowed and therefore constituted a failure to meet the regulatory target for signalling failures causing delays.

A regulatory target of no deterioration from a baseline average condition grade has been set for M10, the signalling asset condition measure. According to the Annual Return, the baseline will be established during the second control period (2001-2006) once a sufficiently representative sample size has been achieved. A tolerance of 60.1 has been agreed for the signalling condition measure.

Whilst no regulatory target has yet been set, the year on year change in the average condition grade from 2000-01 to 2000-03 was reported to have increased by 0.1 (i.e. the average asset condition was poorer). This change was at the limit of the tolerance allowed for this measure and should therefore be considered significant.

10.3.4 Understanding of & Compliance with Definitions & Procedures

Issues surrounding non-compliance and with data quality identified during the audit are best considered separately for each Region for this measure. The regional findings are included in the sub-sections which follow.

10.3.5 Regional Findings

Under the signalling failures measure, Midlands Region was shown to have experienced a consistently higher number of incidents during 2002-03 than either of the other two regions audited. Evidence showed however, that this Region was more successful at resolving disputed delay causes than the other two. Great Western in contrast, experienced a smaller proportion of disputed delays (1.1% compared with 14.7% for Midlands) but was unable to resolve them by the day 42 threshold. The pattern of failure codes was consistent between the three Regions.

North West Region

In the North West Region, auditors tracked a sample of incidents that had been re-attributed or disputed. Each of the records selected showed an adequate explanation of the changes in TRUST. The number of incidents reportable at the end of the period was also compared with the comparable figure at the 42 day refresh. This analysis showed that the number of incidents reportable under M9 decreased by 13% with a reduction in the number of disputed incidents of 14% over the same period. Of the total number of incidents attributed to signal failures, 65% in the North West Region caused train delays of >10 minutes supporting the assertion made in then commentary that secondary impacts were rapidly compounded. A confidence grade of B2 was considered appropriate given the evidence of issues surrounding the resolution and re-attribution of delays between the end of the period and the 42 day refresh.

Midlands Region

During the audit of the Midlands Region, auditors discovered that only 0.5% of incidents were removed from those codes reportable under M9 between the end of the period and the 42 day refresh. By contrast, 49% of the disputed delays had been resolved over the same period. Evidence was provided of a thorough training programme for new performance assistants and of one person currently receiving training at the time of the audit. On the basis of the evidence provided and the responses given to questions during the audit, Reporter B is satisfied that the reporting of signalling condition in the Region during 2002-03 merited an A2 confidence grade. This finding is subject to the caveat that changes to the delay codes made by IMCs may have been flagged in TRUST but there was no systematic and formalised way in which the Region, or any of the others, checked that changes were robust and adequately scrutinised.

Great Western Region

The audit in Great Western Region investigated the training and competence of attribution team members and verified data quality. The Region produced evidence of thorough training and monitoring practices. Based on data provided, no incidents were re-attributed between the end of the period and the day 42 refresh and there was no change in the number of incidents disputed. This finding is probably more indicative of a balanced relationship between parties to the delay process than to actions or behaviour exclusive to the Region. The small number of disputed incidents did however indicate to Reporter B that the attribution of delays was either more equitable in this Region or that third parties had not felt the need to dispute incidents because they were favoured under the current arrangements. Whilst it is likely that the former is the case, Reporter B did not obtain any evidence to disregard the latter. A confidence grade of A2 was considered appropriate for Great Western Region.

North West Region

During the signalling condition audit in the North West Region, evidence of significant progress was observed. Over 77% of the asset population in the Region had received a pSICA assessment and the reporting of results to the Region by the examination contractor had improved.

The average condition grade for assets in the Region had increased significantly over the last two reporting years from 3.1 to 2.0. Investigations by Reporter B have been unable to shed light on the reason for this improvement other than the logical assumption that assets sampled in 2001-02 were in a poorer condition than those sampled in 2002-03. Without any auditing of examination contractor performance, it is impossible to discount variability through time as a result of a learning curve effect but no evidence of this possible cause was found.

The Region had not completed any sSICA assessments on those assets requiring one by the end of the reporting year. Guidance states that all assets receiving a pSICA grade of 4 have an indicative residual life of <3 years and should be re-assessed using sSICA. Since 20 assets in the Region had received such a grading in 2001-02, this failure

represents a material non-compliance with the SICA Manual. As a result, a confidence grade of B4 was deemed appropriate.

Midlands Region

During the audit in the Midlands Region, evidence was produced of improvements made since the 2002 audit to the handling of SICA data. The master log containing details of SICA assessments was updated regularly with the most recent data and Regional staff were diligently following the written procedure. Auditors traced a number of entries in the reporting spreadsheet to the original condition assessment data provided. No discrepancies were observed.

Based on data provided by the Region, Reporter B attempted to reproduce the distribution of grades for Midlands Region provided during the audit at HQ. This process involved adjusting the nominal residual life for the time that had elapsed since the last SICA assessment. Reporter B was unable to reproduce the figures provided by HQ. In fact, Reporter B calculated that four assets should have been reported in grade 5 ('at end of life'). This apparent discrepancy may have arisen because the assets had been renewed or been the subject of intensive maintenance works. No such information was provided in the spreadsheets used to record and report signalling condition.

On balance, a confidence grade of B2 was considered appropriate for the M10 measure in the Midlands Region.

Great Western Region

In the Great Western Region, all SICA assessments have been undertaken by the same individual within the examination contractor's organisation. The Regional staff were confident of the consistency and accuracy of the condition assessments. All assessments reported have been undertaken to the sSICA standard. Partly as a result of this, the Region had only achieved a cumulative sample of 19% of the total assets compared with over 50% achieved nationally. This was a direct result of changes in Network Rail's policy for SICA assessments at a time when Great Western Region had forged ahead. Consequentially, a considerable amount of work on signal asset condition assessment proved to be abortive. Whilst the quality and accuracy of the work is commendable, will the approach taken by the Region prejudice the surveying of all signalling assets by the end of the current control period? A confidence grade of C1 was considered appropriate.

10.4 Recommendations

- That the ORR sets a regulatory target and tolerance for the signalling asset condition measure.

- Audits of asset condition assessments should be undertaken during 2003-04. These should be aimed at quantifying variability between Regions, to promoting consistency and to providing evidence that the data reported to-date is accurate.

- That North West Region urgently commission a sSICA assessment for all those assets that have received a grade of 4 under pSICA.

- That the spreadsheets used to record and report signalling asset condition are updated to allow comments to be inserted when renewals and maintenance works are undertaken to extend the residual life of an asset.

- That the progress of condition assessments in the Great Western Region be monitored closely and appropriate actions taken if necessary to ensure that all assets are surveyed by the end of the current control period.

10.5 Best Practice

Great Western Region has a commendably thorough approach to the training of TRUST staff regarding signal failures, as well as a sound internal auditing process that identifies levels of competence and skill gaps.

11 Electrification - Failures & Condition

11.1 Scope of Audit

It was agreed that these measures would receive a level 2 audit. Such an audit was to include a review of previous findings and any corrective actions taken, visits where appropriate to check processes in-situ and a degree of desktop analysis of supporting data.

The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2003 measures M11 to M16 covering contact and power system failures and asset condition. The investigations undertaken as part of the audit were intended to revisit the issues raised during the audit of the 2002 Annual Return and to examine in greater detail evidence of incidents and of condition surveys and sampling. The latter involved auditors observing surveys of electrification assets.

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

- RT/ARM/M**DF (issue 2 16 March 2001) for M11 to 16;
- RT/ARM/M**PR (issue 2 16 March 2001) for M11 & 12; and
- RT/ARM/M**PR (issue 3 14 December 2001) for M13 to 16

The audit included North West, Midlands and Great Western Regions as well as HQ. Within the Regions, auditors interviewed Network Rail staff and observed the attribution of delays within Regional Control Rooms. The audit trail was completed with a visit to the National Control Room at HQ. The technical specialist also attended an asset condition survey covering traction substation condition.

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.

11.2 Annual Return 2003 Results

The 2003 Annual Return reported 104 AC Traction Power Incidents for the year 2002-03, a 2.8% decrease on the number reported for 2001-02. The number of DC Traction Power Incidents had increased to 36 in 2002-03, a 20% rise on the figure reported for 2001-02.

Asset condition for AC traction feeder stations and DC sub stations was reported to have improved as indicated by a 0.2 reduction in the average condition grade for the former to 1.9 and 0.1 for the latter to 2.1. The reported figures were based on a cumulative sample of 61% of the total asset base for feeder stations, 44% for track sectioning points and 59% of DC substations. The reporting year 2002-03 was year three of the current control

period and, to ensure complete coverage of the national asset base within the control period, approximately 60% of assets should have been surveyed by the end of 2002-03.

Asset condition for AC contact systems was reported to have improved slightly as indicated by a 0.1 reduction in the average condition grade to 1.8. The average condition grade for DC contact systems was unchanged at 1.8. The reported figures were based on cumulative samples said to be representative of 88% of the Southern Region's network and 100% of that in the Midlands Region. According to figures quoted in the Annual Return, these Regions account for 93.3% of the national DC network. The reporting year 2002-03 was year three of the current control period. Network Rail plan to survey a sample of 20% of the AC network by the end of the control period. Providing the sampling strategy is robust, Network Rail was well placed to meet the surveying target by the end of 2005-06.

11.3 Findings

Figures 4 & 5 include a 13-pt running average and the number of AC and DC power system failures (causing train delays >500 minutes) over the period 2000-03. The figures shows significant volatility in the periodic (four-weekly) data. A slight trend of increasing AC failures and decreasing DC failures can be seen in the running average although neither of these trends appears strong.

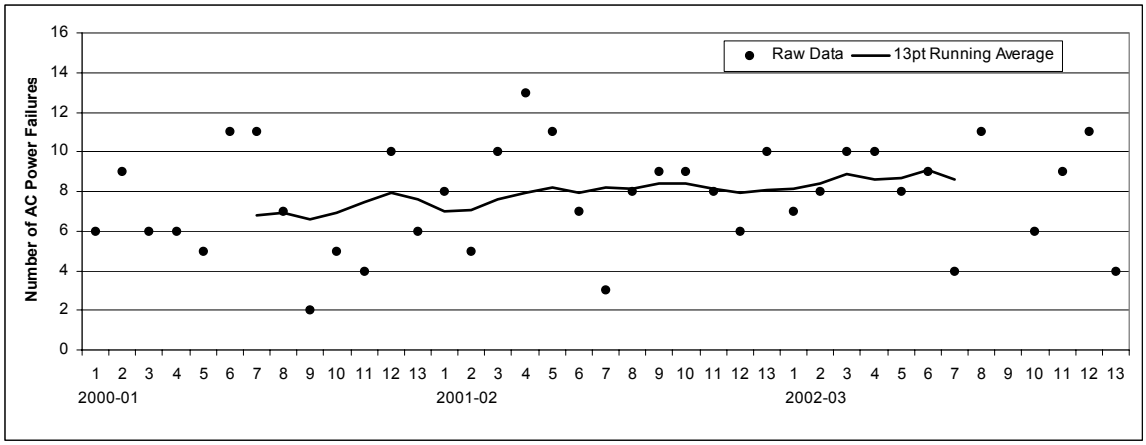


Figure 4. Trend in the Number of AC Power System Failures.

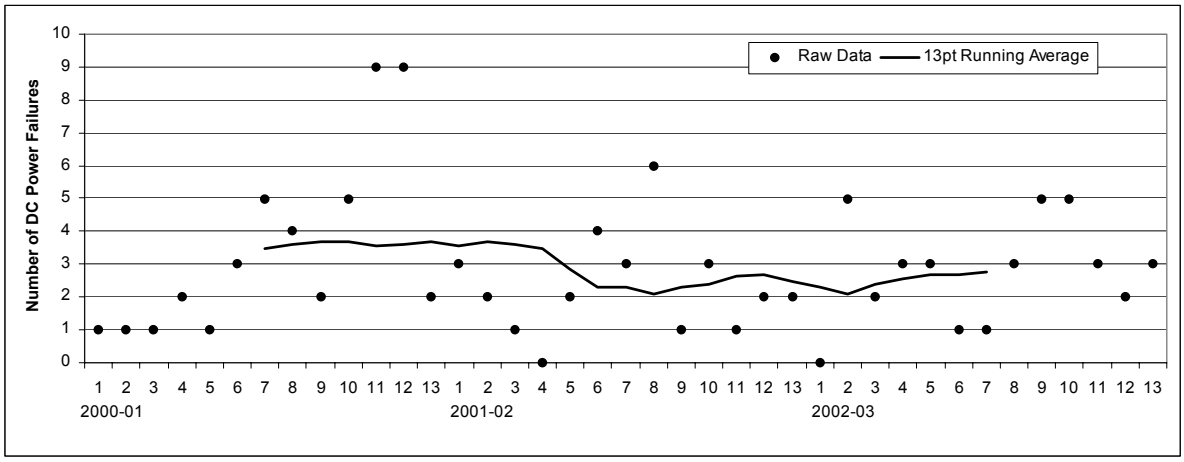


Figure 5. Trend in the Number of DC Power System Failures.

11.3.1 Progress Against Regulatory Target

The regulatory target for M11 and M12 is for no deterioration from the number of incidents reported in 2000-01. The figures reported in that year were 88 and 45 respectively. The AC incidents measure failed to meet the regulatory target (by 18.2%) but the DC incidents measure achieved the target (by –28.9%). It is noted that neither of these findings were significant according to the statistical tolerances quoted of 628% and 647% respectively.

The regulatory target for the condition of feeder stations and substations is for no deterioration from a baseline average condition grade that will be established once a sufficient sample is achieved. No such baseline had been established by the end of the reporting period. The same situation existed for the contact systems condition measures.

11.3.2 Understanding of & Compliance with Definitions & Procedures

Following criticisms of the procedures and practices in Reporter B's previous report, improvements had been made to the way that failures were reported. Data was sourced from the National Log but Regions were asked to confirm acceptance of the figures or to accept responsibility for providing an alternative with a justification for the change. A workshop was held with Regional representatives to discuss the findings of previous audits and to ensure that all the necessary staff were aware of the reporting procedures. The controlled copies of the updated definitions and procedures need to be updated urgently to reflect these recent improvements.

For the asset condition measures, Independent Reporter B identified a number of errors in the M14 data produced at HQ and reported in the Annual Return July submission. These included arithmetic errors and errors in the allocation of equipment types and asset condition scores. Most significantly, it was discovered that some of the Midlands and Southern data reported in 2001-02 was based on a questionnaire that had incorrectly summated scores. As a result, the extrapolation for 2002-03 included the incorrect 2001-02 figures and this impacted on the Southern, Midlands and national totals reported.

Analysis of the corrected data revealed that the pattern of scores for the extrapolated data reflected that of the sample data. However, each equipment type had an individual score profile which was not always consistent with the summary data reported in the Annual Return. It is suggested that in future, the differences between equipment types be explored in the commentary presented in the Annual Return. Also, the Annual Return reports an 'average condition score', which is a weighted average of the extrapolated data. Independent Report B is of the opinion that this 'average condition score' is not wholly reflective of the actual average of the condition scores and is insensitive to changes in the asset base condition. An average of the actual ECAP scores would provide a more accurate picture.

Auditors found evidence that equipment type had not been considered when the sample set schedule had been produced at HQ for feeder stations, track sectioning points and substations. This resulted in a sample set that is not as representative of the asset population as it could have been. No evidence was found for any auditing of the condition surveys undertaken during the reporting year. It is likely that there was variability between surveyors and hence between Regions. It has not been possible, in the absence of any independent checks of the surveys conducted, to quantify the variability.

11.3.3 Regional Findings

Reporter B observed significant differences between the Regions audited.

North West Region

During the audits of failures incidents caused by electrification failures, evidence of sound records of each electrification incident was observed in the North West Region. These were readily filtered to provide the M11 and 12 data. The Region also analysed the data in detail by cause of incident and produced a periodic report for internal use and for transmission to HQ. In addition, following the recommendations made in Independent Reporter B's 2001-02 report, the correct person had authorised the period 13 sign-off and a data folder had been established, with an index referencing each incident file. However, the incident data provided by the Regional Control Room was entirely dependent on the correct attribution of the cause of the delay and exposed to potential changes in the cause by IMCs. The reporting champion may not have been aware of data quality problems from either of these sources. A confidence grade of B1 was considered appropriate for the North West Region.

Midlands Region

Similar evidence of incident records was observed in the Midlands Region and the same potential sources of errors existed. The 17.1% increase in the number of AC incidents in 2002-03 was explained by Regional staff by the increase in outside agency incidents and component failures. In the former category, WCRM accounted for 21% of all incidents whilst the number of old porcelain insulators failing increased by 34.2% in the reporting year. A confidence grade of B1 was considered appropriate for the Midlands Region.

Great Western Region

The Great Western Region contains few AC electrification assets and no DC assets. Indeed, in 2002-03 there were no incidents for either measures reported in the Annual Return. Consequently, the Regional Electrification and Plant Engineer (REPE) did not maintain any records specifically for the Annual Return reporting cycle. It is Reporter B's opinion that the Region should at least maintain a spreadsheet of incidents meeting the M11 and M12 criteria, so that data subsequently sent from HQ for authorisation can be verified robustly. A reliability band of C was appropriate for the Great Western Region checks of the HQ M11 and M12 data in 2002-03. As there were no AC or DC incidents reported in 2002-03, an accuracy score of 1 was attributed.

A national confidence grade of B1 was considered appropriate for the electrification failures measures (M11 & M12) and B3 for those measures concerned with the condition of electrification assets (M13 to M15).

North West Region

During the audit of contact systems, North West Region demonstrated that the tension length target of 10% had been sampled and that 59% of substations had been surveyed to the end of 2002-03 compared with a cumulative target of 60% of the Regional population. Despite the written procedure, the Region did not receive a sample set from HQ for the feeder and substation surveys. An analysis of the cumulative sample to-date revealed that slightly less than the target of GEC XE2/X82 type Metalclad substations had been surveyed. This type accounted for 45% of the regional population. The Region should ensure that this is addressed in the near future surveys. Auditors observed a substation survey and noted a high level of confidence in the scoring and accuracy of commentary. No audits were conducted by HQ during the reporting year and therefore variability between surveyors (and Regions) cannot be quantified. A confidence score of B3 was attributed to North West Region.

Midlands Region

In the Midlands Region auditors were shown evidence of sound record keeping. During 2002-03 however, no sample set was received from HQ and Regional staff had not considered equipment type when selected the sample for the year. As a result, only 33% of the SMOS equipment type Regional population had been surveyed compared whereas the Regional total across all equipment types was much closer to the target of 60% for feeder stations and 50% for track sectioning points. Surveying of substations in the Region had exceeded the 60% target by 3.6%. Auditors discovered that if a survey of AC contact systems was conducted but no wire measurement was made, then the Region allocated a score of zero in the questionnaire which will have affected the final ECAP score. A confidence grade of B3 was considered appropriate given the sampling issues and ECAP scoring issues identified.

Great Western Region

In the Great Western Region, staff had overlooked the need for a condition survey of the few electrification assets within the Regional boundaries until March 2003 when all six

surveys were hurriedly arranged and completed. Whilst this ensured that the Region met the target for tension lengths to be surveyed in 2002-03, the scores were received at HQ too late for inclusion in the Annual Return 2003. A confidence grade of C3 was attributed to the Region.

Of the three regions audited by Reporter B, only Midlands Region reported any DC contact systems condition information in 2002-03. The data provided for the Annual Return was extrapolated from 1996-97 wear measurements. A wear allowance was applied for each route based on engineering judgement. The IMC had completed 30% of the re-gauging programme during 2002-03 and the remaining 70% should be complete by the end of 2003-04. All of the re-gauging results should be reported in the 2004 Annual Return. A confidence grade of C5 was considered appropriate for the Region's reporting of M16 in 2003.

11.4 Recommendations

- That the ORR set a baseline target for M13 to M16, the measures reported based on surveys of asset condition.

- Ensure that all definitions and procedures are updated to reflect the recent changes to the way data is collected, processed and reported.

- That Great Western Region improves the local record keeping for electrification incidents. This should enable the Region to reliably verify data supplied by HQ for authorisation as part of the reporting process.

- That HQ prepares a sample set annually for the surveying of electrification asset condition in accordance with the written procedures. This sample set should consider how representative the cumulative samples to the end of 2002-03 are and to ensure that progress towards targets for the current control period is maintained.

11.5 Best Practice

The HQ workshops to review the reporting and analysis of electrification failures should be considered as promoting best practice.

12 Stations - Condition & Facilities

12.1 Scope of Audit

It was agreed that the station condition measure would receive a level 2 audit whilst the facilities measure would only receive a level 4 audit. The former was to include a review of previous findings and any corrective actions taken, visits where appropriate to check processes in-situ and a degree of desktop analysis of supporting data. The latter was to a restricted scope including only a review of findings from the 2001-02 audit and a high level investigation of any changes to the measure implemented during 2002-03.

The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2003 under Station Condition Index (M17) and Station Facility Score (M18). The investigations undertaken as part of the audit were intended to revisit the issues raised during the audit of the 2002 Annual Return and to observe the surveying of station condition.

The references for the definition and procedure for this measure are:

- RT/ARM/M**F (issue 2 16 March 2001) for M17 & M18;
- RT/ARM/M17PR (issue 3 14 December 2001); and
- RT/ARM/M18PR (issue 4 16 March 2001).

The audit involved visits to North West, Midlands and Great Western Regions as well as to HQ in May and June 2003. It was not possible for auditors to observe any examples of station condition surveys as all such operations had been suspended at the end of the 2002-03 reporting period.

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.

12.2 Annual Return 2003 Results

12.2.1 Station Condition

The Annual Return included condition scores for 2,499 of the 2,507 Network Rail stations where trains make a timetabled stop. A total of 837 of these were scores added during 2002-03 either because a survey had been undertaken and processed during the year, or because surveys undertaken in 2001-02 had been processed late. The remainder of the scores (1,662) were based on surveys conducted over a number of years prior to 2001-02. The average condition grade for station surveys added during 2002-03 was 2.26 whilst the cumulative average for the 2,499 stations was 2.25. The commentary in the July submission of the Annual Return incorrectly referred to the 2001-02 year when reporting the current average condition grade.

12.2.2 Station Facilities

The network score for station facilities was reported to have increased by 1.06% in 2002-03 to 102.7 compared with the baseline of 100 set in 2000-01. The overall increase masked slight year on year decreases in the facility scores for access (-0.2%), comfort & convenience (-0.1%) and integrated transport (-1.4%). Improvements were restricted to information & communications (+6.6%) and safety & security (+1.7%).

12.3 Findings

The Reporter B team had intended to attend some surveys in early 2003-04 and to report on their findings in the report on Network Rail's Annual Return 2004. This intention was not realised because of the delayed introduction of hand held devices for surveying contractors. At the time of writing (July 2003) the programme of surveys remained under suspension. Reporter B is concerned that this significant delay will prejudice the quality and quantity of station condition data in the 2004 Annual Return. This issue will be addressed in the 2004 audit.

Network Rail staff explained to auditors that the sample of stations surveyed each year was selected by staff in the Regions based on business drivers. The aim is to survey approximately 500 stations each year. This is around 20% of the total population. From evidence collected during the audit, it is vital that the time elapsed since the last survey is taken into consideration when selecting the annual sample. The database shown to Reporter B included stations that were surveyed a considerable time ago and for which the quality of the data is now questionable. Improving the quality of data in the condition database should be a criterion used in the selection of samples otherwise the value of the measure will suffer and Network Rail will be unable to demonstrate progress against the regulatory target.

12.3.1 Progress Against Regulatory Target

The regulatory target for station condition is to maintain the average condition grade at the baseline level set in 2000-01. The baseline was set at 2.2 and was based on the surveys conducted over the three year period 1998-2001. A tolerance of ±0.1 on the target was set.

Whilst the average condition grade reported in the Annual Return was 2.25, both the regulatory target and the tolerance were defined to a single decimal place. If the 2.25 figure was rounded to 2.3, or the stations added during 2002-03 reported as 2.26 were rounded to 2.3, then the average condition reported for stations had reached the tolerance limit set.

It was assumed by Reporter B that the regulatory target and tolerance limits were set to one decimal place because of the inevitable subjectivity involved when surveying asset condition. If this were the case, then Network Rail should report average condition grade to the same level of precision. To report to greater precision inferred more precise measurement than the surveying methodology would support and, in future, may causes a potential ambiguity over whether the regulatory target has been met or not.

There is no regulatory target for the measure of station facilities.

12.3.2 Understanding of & Compliance with Definitions & Procedures

There were no significant changes to the way in which these measures were recorded or reported in 2002-03. Given the more detailed nature of the audit required, the following discussion relates primarily to the measure of station condition.

Data collected from surveying contractors in the Regions was supplied in batches to HQ throughout the year. The data was stored in a dedicated directory and macros used to extract data directly from the source documents. According to staff interviewed at HQ, errors and inconsistencies were rare.

The Reporter B team has analysed the summary spreadsheet used at HQ to calculate the figures reported in the Annual Return and has some serious misgivings over the quality of the data contained within it. Of the 2,499 stations, 103 were discovered to have no survey date attached to the record, 774 contained a blank record and 30 contained an erroneous survey date. The records over which Reporter B had serious concerns accounted for 36% of the network total.

The spreadsheet was found to contain instances of entries using mixed date formats. For example, dates were represented as dd/mm/yy, dd-mth-yyyy and mm/dd/yy. This has created a situation in which surveys were reported to have been completed but the date is a future one. This indicated to Reporter B that the data validation and cleansing procedure was lacking.

A number of entries in the spreadsheet were reported as having been surveyed on 30-Dec-1899. This was clearly erroneous and probably occurred as a result of the inappropriate transformation of an error or missing data flag (e.g. 0 or blank). This also indicated inadequate data validation and cleansing. One entry contained a survey date of 20/10/2009. This was impossible and was another indication of inadequate data checking and cleansing routines.

Furthermore, there were 15 stations for which there were no scores attributed for any of the 34 elements but for which an average condition grade had been attributed. This implied that no assessment had actually been undertaken on site in accordance with the written procedure. The indications were that of these 15 stations, five were very new and had been allocated a score of one. There is no provision in the procedure for dealing with new assets in this way.

It is the opinion of Independent Reporter B that there were significant and material gaps in the data used to calculate and report station condition. A number of gaps might be expected since not all 34 elements appear at every station. Category F stations for example (small unstaffed stations) would only contain a small minority of the 34 elements. There was evidence, however, that either the condition surveys for a number of stations had been cursory or the data relied upon was unsubstantial and out of date.

Under station facilities, Reporter B has identified a numerical error in the data reported in Table 40 of the July submission of the Annual Return which was identified because the network score quoted was not the sum of the scores reported for individual themes. The figure reported for information & communications for category A stations was 2,995 which was claimed to be 1.068 times the figure of 2,149 reported for 2000-01. The calculation 2,149 x 1.068 = 2,295 shows that the error may have arisen as a typographic mistake.

12.3.3 Regional Findings

North West Region

During the audit of North West Region, staff expressed concern over the impact that the delay to the implementation of the hand held data records will have on the delivery of surveys in the 2003-04 reporting period.

The Reporter B team was unable to verify the station condition information collected in the North West Region during 2002-03 because the spreadsheet supplied during the audit at HQ did not contain any records from the Region during this period. This finding did not in any way reflect on the performance of the Regional staff however, and a confidence grade of B2 was considered appropriate. A similar confidence grade was granted for stations facilities based on an observed survey and interviews with Regional staff.

Midlands Region

Surveys of station condition in the Midlands Region were not suspended by the delay in implementation of the hand held data recorders. During the reporting year, 46 of the 267 stations in the region were surveyed according to information provided by HQ. This equated to 17.2% of the Regional population, a slight shortfall on the 20% pa target.

Reporter B was provided evidence of an internal audit of station condition surveys which was undertaken during 2002-03. Whilst the internal audit did not produce a complete re-survey of the 5% of the sample visited, it was evidence of best practice and should be encouraged across all Regions in the future. Partly as a result of the evidence for internal auditing of surveys, a confidence grade of A2 was considered appropriate.

Only 21 stations were subject to a routine re-inspection of facilities during 2002-03. This was significantly below the target of 20%. For this reason, a confidence grade of B2 was considered appropriate for the stations facilities measure in the Midlands Regions.

Great Western Region

In the Great Western Region, auditors were shown evidence that Regional staff had uncovered during the reporting year of missing and erroneous data in the information held on station condition. Only 43% of stations in the Region were considered to have robust condition data. Evidence of zero scores for many elements and the application of gross estimates of average condition were discovered by the Regional staff. A reason given for this during the audit was that data had been supplied directly to HQ by the contractor and had not been checked by staff in the Region. Auditors were told that steps

had been taken to overcome the poor data quality by re-surveying as part of the annual 20% survey and to urgently address the complete lack of data for a significant number of stations. A confidence grade of B2 was considered appropriate in light of the poor quality of data exposed by Regional staff. Better data quality and evidence of best practice in recording changes to facilities led Reporter B to consider a confidence grade of A2 appropriate for the station facilities measure.

12.4 Recommendations

- That Network Rail should report average condition grade to the same number of decimal places as the regulatory target and tolerance limit set by the ORR.

- That Network Rail produces an action plan to implement the use of hand held data recorders across all Regions as a matter of urgency. This plan should include actions necessary to recover the time lost at the beginning of the reporting year and to ensure that all stations requiring a survey in 2003-04 are visited in time for the data to be reported in the Annual Return 2004.

- That a programme of consistency checks is organised to assess the variability between surveyors and hence between Regions. This programme should look to examples of such checks elsewhere in the reporting process. In particular, the independent verification of bridge condition scores should be seen as representing best practice in this area.

- That stations with unreliable or missing data in the national database should be targeted for re-assessment during 2003-04.

- That changes to the procedure should be considered to capture changes to station facility and condition when observed, rather than waiting for a full survey.

12.5 Best Practice

No obvious best practice was found relating to the measure as prescribed.

13 Light Maintenance Depot Condition

13.1 Scope of Audit

It was agreed that the light maintenance depot condition measure would receive a level 2 audit. This was to include a review of previous findings and any corrective actions taken, visits where appropriate to check processes in-situ and a degree of desktop analysis of supporting data.

The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2003 under Light Maintenance Depot Condition Index (M19). The investigations undertaken as part of the audit were intended to revisit the issues raised during the audit of the 2002 Annual Return and to observe the surveying of depot condition.

The references for the definition and procedure for this measure are:

- RT/ARM/M19DF (issue 2 16 March 2001); and
- RT/ARM/M19PR (issue 3 14 December 2001).

Since the contract for the management of the depot condition surveys, and the collation and reporting of data in the Annual Return were all handled by staff at HQ, it was agreed that the audit would involve meetings with HQ staff and observations of surveys on-site where appropriate. The audit at HQ took place in April 2003 and the site visit during May 2003.

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.

13.2 Annual Return 2003 Results

The Annual Return included condition survey results from an additional 41 depots in 2002-03. The cumulative average condition grade reported was 2.7, an increase of 0.3 on the previous year. The cumulative grade was based on a sample of 45% of the national population.

The average condition grade of the depots sampled in 2002-03 was 2.2.

13.3 Findings

The commentary in the Annual Return states that sampling of depots in the future will focus on ‘business driven inspections rather than an asset reporting exercise’. Reporter B is concerned that any change in the way that depots are sampled over the remainder of the current control period may seriously prejudice the consistent assessment of asset condition. Network Rail should not deviate from the strategy agreed with the ORR for the complete condition assessment of all depots during this control period. This will require

the annual sample to be selected in such a way that the depots that had not been surveyed to the end of 2002-03 are included in the period 2003-2006.

The cumulative shortfall of depot inspections required to meet the objective of 100% coverage by the end of the reporting year 2005-06 was six at the end of 2002-03. A delay in the introduction of hand held data recorders for surveyors at the beginning of 2003-04 will add to the shortfalls unless the rate of surveying and reporting can be increased.

The in-year average condition grade based on the 14 depots added to the cumulative sample in 2002-03 of 2.2 should not be misinterpreted. The apparent improvement in depot condition was probably a direct result of the sampling strategy adopted by Network Rail in the early years of the control period. Reporter B was told that those depots perceived to be in the poorest condition has been surveyed in 2000-01 and 2001-02. The apparent improvement may simply be a consequence of the sampling strategy rather than any real improvement in asset condition or the result of focused investment by Network Rail.

Reporter B also learnt during the audit that the organisation charged with surveying all depots had changed prior to 2002-03. Whilst use of a single national contractor should have ensured consistency between assessments undertaken in 2002-03 and moving forward, it raises the possibility of a step change between 2001-02 and 2002-03. A planned independent audit of the contractor's work in 2002-03 had not been completed at the time of the audit (April 2003).

13.3.1 Progress Against Regulatory Target

The Annual Return stated that the regulatory target is for no deterioration from a baseline average condition grade. No baseline was stated in the document. Reporter B has discovered that Network Rail understand that the baseline will be set when a sufficiently large sample size has been achieved and that discussions may already have begun with the ORR.

A tolerance of 60.1 has been set on the target.

13.3.2 Understanding of & Compliance with Definitions & Procedures

In order to audit compliance with the definition and procedure for this measure, Reporter B's technical specialist attended a depot survey in May 2003. The depot selected for audit contained all eleven of the main asset elements identified in the definition document.

The survey was thorough, data collection on-site and subsequent processing was seen to be compliant with the written procedures.

Reporter B noted however, that although the assessment was undertaken in May 2003 (i.e. in the reporting year 2003-04), results from the survey were included in the Annual Return 2003. Strictly speaking the Annual Return 2003 covered activities undertaken in the fiscal year 2002-03.

A confidence grade of C3 was considered appropriate by Reporter B.

13.3.3 Regional Findings

This measure is managed centrally by staff at HQ and national totals were reported in the Annual Return. It was agreed that the audit would not involve staff in any of the three Regions.

13.4 Recommendations

- That the ORR set a baseline target for M19.
- That Network Rail confirms its commitment to the sampling of all light maintenance depots during the current control period.
- Network Rail should produce an action plan showing the steps it proposes to take to recover the shortfall in the number of depots inspected compared with the five-year programme. The action plan should specifically address measures to be taken to tackle the delay caused by the late implementation of the hand held data recorders and the shortfall that existed at the beginning of 2002-03.
- The annual audit of the condition contractor's performance should be undertaken in accordance with the procedure. At least one of the depots surveyed in 2002-03 should be blind surveyed by the independent assessor immediately (if this has not already been done).

13.5 Best Practice

No obvious best practice was found relating to the measure as prescribed

14 Activity Volumes

14.1 Scope of Audit

It was agreed that these measures would receive differing levels of audit. The track-related activities (rail, sleepers, ballast and S&C units) were to be audited in detail with a level 1 approach. This was to include a review of the findings from 2001-02, a detailed analysis of all key issues identified during this audit, site visits where appropriate and a series of transactional checks. The bridges and signalling activity measures were to receive a slightly less detailed audit, without the transactional checks. The culverts and retaining walls renewed were new measures for 2002-03 and were therefore to receive a process audit.

The scope of the audit was to verify the accuracy of the data reported in the Annual Return 2003 under measures M20 to M27. The references for the definition and procedure for these measures are:

- RT/ARM/M**DF (issue 4 12 November 2001) for M20 to 22;
- RT/ARM/M23DF (issue 2 16 March 2001);
- RT/ARM/M24DF (issue 3 14 December 2001);
- RT/ARM/M25DF (issue 1 14 December 2001);
- RT/ARM/M26DF (issue 1 12 November 2002);
- RT/ARM/M27DF (issue 2 20 February 2003); and
- RT/ARM/M20PR (issue 3 14 December 2001).

The latter procedure covered all of the activity measures in place in December 2001.

The audit included North West, Midlands and Great Western Regions as well as HQ. Within the Regions, auditors interviewed Network Rail staff and representatives of IMC and renewals contractors. A meeting was held with staff from the WCRM team to verify the accuracy of the data reported for this business unit.

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.

14.2 Annual Return 2003 Results

14.2.1 Track Activities

The volume of track renewed across the network was reported as 1,010km compared with an NMS Forecast of 1,142km (-11.6%). The pattern was repeated in two of the three Regions and in the WCRM programme. Variances to the NMS Forecast were –7.1% for Great Western, -10.2% in North West and –52.4% for WCRM. Only in the Midlands Region did the actual volume exceed that forecast (by +14.9%).

The network total for sleepers renewed showed a +6.6% variance on the NMS Forecast, with positive variances reported for all three Regions (+40.9% Great Western, +22.5% Midlands & +12.9% North West). WCRM reported a variance of –17.5%. A similar pattern was reported for ballast renewed with the network total variance of –14.2%, positive variances for the three Regions (+4.0% Great Western, +60.8% Midlands & +1.6% North West) and negative for WCRM (-45.8%). Greater variability was reported in the figures for S&C units renewed. The network total variance was –14.5% with –53.7% on the WCRM programme. North West Region did not report any renewals (variance –2km) whilst Great Western and Midlands Regions reported +38.1% and +83.3% compared with the NMS Forecast.

14.2.2 Structures Activities

There was a –22.4% decrease in the number of bridges renewed between 2001-02 and 2002-02. Whilst this was not explained in the commentary, it was probably a result of the volatility in any capital works programme. A comment on the –45.8% decrease reported for the Midlands Region would have assisted the reader to appreciate such capital works volatility, or to explain the real reason for the reduction if it was different.

Measures concerning culverts and retaining walls renewed (M26 & M27) were new in 2002-03 and no commentary was provided in the Annual Return 2003 to explain the figures. Although there appeared to have been some confusion over whether the culverts measure required individual bores to be reported or watercourses (i.e. culverts), investigations during the audits has proved that the three Regions and WCRM were consistent in their reporting and that they reported watercourses and not bores.

The Annual Return 2003 commentary stated that enhanced guidance will be given to Regions in 2003-04 over how to report the renewal of multiple-bore culverts carrying a single watercourse.

14.2.3 Signalling Activities

Only two business units reported any signalling renewed in 2002-03. These were Midlands Region and WCRM. This was a direct result of the definition of signal volumes which explicitly excludes ‘piecemeal renewals where only part of the existing signalling is renewed’. Since most of the signalling renewals undertaken by the Regions was of individual or small groups of elements, the vast majority of it did not qualify as renewal volume under M24. The Annual Return included a reference to Signalling Equivalent

Units (SEUs) as an improved way of reporting the volume of signalling renewed under existing strategies.

14.3 Findings

The commentary in the Annual Return which sought to explain the –110km (-14.2%) variance in the quantity of ballast renewed, referred to the UK production capacity for ballast and the fact that Network Rail had used about 90% of the capacity 'in recent months'. On further investigation, Reporter B has discovered that the constraint was not the production capacity in UK quarries, but the logistic constraints surrounding haulage, storage at stock piles and materials handling at the time of use. This would be a more accurate explanation for the failure to meet the forecast volume in 2002-03.

14.3.1 Progress Against Regulatory Target

Although it was not stated in the Annual Return, there are no regulatory targets for any of the activity measures.

14.3.2 Understanding of & Compliance with Definitions & Procedures

The procedure for reporting M20-M27 does not refer to either of the newly introduced measures (M26 or M27). This omission should be rectified before Regions are required to undertake the period 11 check of reported figures in 2003-04.

The definition for M27 was ambiguous and should be edited to include clear guidance on the treatment of multiple-bore culverts in single watercourse as soon as possible.

14.3.3 Regional Findings

All three of the Regions audited lacked internal audit procedures for checking the reliability of the data provided for activity volumes by project teams and contractors. No audits by HQ staff had taken place in the reporting period.

Midlands Region

In the Midlands Region, the basis for reporting activity volumes used was not that stated in the definition and procedure. Instead the Region used AMP definitions and in consequence, the reported figure for re-railing included only those project with >180m of rail renewed. Evidence of a thorough handback procedure by the renewals contractor was observed in the East Midlands Area. Based on the information provided to Network Rail by the contractor, project records should have been accurately updated in GEOGIS (or the appropriate system) and an audit trail established to demonstrate that substantial completion had been reached (with the associated trigger for a milestone payment and the registering of an item of renewal for reporting to the ORR). A confidence grade of C2 was considered appropriate for the structures renewed measure, B1 for signalling and C4 for track.

North West Region

In the North West Region, a June 2002 version of the definition document for M23 structures renewed was shown to auditors who were told that the version had been used for the reporting of 2002-03 data. According to HQ, the March 2001 version should have been used as the later version had not been formally issued. This raised concerns in the auditors' minds about the robustness of Network Rail's document control process.

Evidence obtained during the audit of the North West Region showed that a Completion Certificate was required before those responsible for reporting were able to confirm the accuracy of the data reported, and to achieve a link to the project file for the renewal activity. The auditors were impressed by the exemplary records maintained and saw evidence that the data was well managed in 2002-03. The project teams and track renewals contractor however, had not been audited in 2002-03 and the incorrect definition document was used for bridge renewed (M23). A confidence grade of B3 was attributed for all activity volume measures.

Great Western Region

Great Western Region went to some lengths to produce an informative commentary explaining the reason for the movements in their renewals volumes. This information was not included in the Annual Return and the penalty paid is that the data reported and the commentary included raise a number of questions in the mind of the informed reader.

During the audit, an internal audit report was obtained. The internal audit found a lack of written procedures and no references to the supporting project files. Evidence of staff using their detailed knowledge of renewals projects and programme to provide information rather than accurately documented sources was collected during the audit of the track measures by Reporter B's team. A confidence grade of B3 was attributed to this measure.

Evidence of exemplary record keeping was observed during the audit of the structures renewed measure. A folder containing clear references to project files in which completion certificates were held for each project was available to auditors. Whilst the project records such as the completion certificates were audited internally during 2002-03, no audits covered the collation of activity volume information. Reporter B considered a confidence grade of B1 appropriate.

Great Western Region accurately reported no signalling renewals in the reporting period. A confidence grade of A1 was deemed appropriate for this measure although this finding should be tested in future audits if/when the region returns a non-zero activity volume.

14.4 Recommendations

- Network Rail should issue a revised definition of the definition of M26 Culverts Renewed. The revision should include clear guidance on how to deal with multiple-bore culverts on a single watercourse.

- Future Annual Returns should include figures for signalling renewals expressed in SEUs and reported for each Region (and for WCRM).

- The procedure RT/ARM/M20PR (issue 3 14 December 2001) should be re-written to include the newly introduced activity volumes for culverts and retaining walls.

14.5 Best Practice

No obvious best practice was found relating to the measure as prescribed

15 Network Capability

15.1 Scope of Audit

It was agreed that this measure would receive a level 4 audit. Such an audit was to be limited to a review of the findings of the 2001-02 audit and surveillance of any changes introduced during 2002-03.

The references for the definition and procedure for this measure are:

- RT/ARM/C*DF (issue 3 14 December 2001); for C1 to 4 and
- RT/ARM/C*PR (issue 3 14 December 2001) for C1 to 4.

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

15.2 Annual Return 2003 Results

Unlike the Annual Return 2002, the 2003 document made no attempt to report changes observed to any of the capability measures in the reporting year. Totals were reported for linespeed (31,766km), structures route availability (31,407km) and electrification (12,299km of electrified track).

15.3 Findings

In the absence of any reported changes or explanations for them, the data reported in 2001-02 and 2002-03 were compared by Reporter B. For linespeed, the changes to the network total in each band varied from –8% to +17%. For gauge capability it was –3% to +11%, and structures route availability –8% to +83%. The changes reported for electrified track were smaller (network total <2%) however, the 1500V DC OH category was removed completely from the capability table.

15.3.1 Progress Against Regulatory Target

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. No tolerance was quoted for the capability measures.

In the absence of any commentary or tables quantifying changes 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 below, Reporter B has serious 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 2001-02 and 2002-03 to judge progress against the regulatory target.

15.3.2 Understanding of & Compliance with Definitions & Procedures

During 2001-02, the Regions used different data collation methods and different sources of data, with varying accuracy (GEOGIS, MapInfo and the Sectional Appendix). As a result, the data reported in the Annual Return 2002 was unreliable and was calculated inconsistently between Regions. Independent Reporter B recommended the implementation of a consistent methodology and improving the quality and consistency of the source data.

In 2002-03, HQ assumed responsibility for data collation for the capability measures from the Regions in an attempt to rectify the issues identified in 2001-02. Consequently, a consistent method and sources of data were used in 2002-03. However, the 2002-03 audits have exposed the poor quality data in GEOGIS and MapInfo in some Regions, because they did not update these databases. Also, data analysis by the Reporter B team has revealed inexplicable changes in some Regions. For example, the East Anglian route availability showed changes from -85% (RA7-9) to +32,783% (RA10). It was unclear to the Reporter whether the reported changes were due to improvements in the reliability of data in GEOGIS and MapInfo (compared with 2001-02) or to actual changes to the network infrastructure.

HQ did not communicate regularly with the Regions during 2002-03 to explain where the data was to be sourced for the Annual Return. Consequently, although the Regions signed off the Period 13 Returns as instructed, the commentary often stated that they were unaware of why changes had occurred or speculative reasoning was provided. Indeed, some reasons demonstrated a lack of understanding of the definition of the measure. For example, in the North West Zone the improvement in sidings data in the Region has been cited as a reason for overall movements in data. This is inconsistent with the definition of Linespeed Capability which explicitly excludes sidings and depots.

The Annual Return 2003 quoted an overall tolerance level of 2%, which was explained during the audit as having been calculated by a comparison of that calculated by each Region (using their preferred method of calculation) with the figure calculated at HQ. On further investigation, Reporter B discovered that the calculation actually involved a comparison of the 2001-02 figure with the Region's signed-off 2002-03 figure. The changes were summed and the root mean square was taken as a percentage of the total within the band. In the Reporter's view, this does not provide a 'tolerance level', or a meaningful measure, particularly as the sets of data being compared may have the same or different, correct or incorrect source data. In addition, as a result of Independent Reporter B's questions following the audit, several arithmetic errors in the calculations of the 2% figure were discovered.

For the Annual Return 2003, It is Reporter B's opinion that a national confidence grade of C4 was appropriate. This is due to the apparent inaccuracies in the source data and the lack of understanding of the sources and measure definitions in the Regions.

15.3.3 Regional Findings

The capability measures were not reported by Region and it was clear during the audits that HQ had assumed responsibility for reporting these measures in 2002-03.

The figures calculated at HQ were checked by staff in both the Midlands and Great Western Regions. A confidence grade of C3 was considered appropriate for both Regions given the concerns already expressed over the quality of the source data and the lack of any reported changes under the network change procedure. For North West region, in addition to the issues highlighted above, a change in staff towards the end of the reporting period compromised the region's ability to verify the figures calculated at HQ. A confidence grade of D4 was considered appropriate.

15.4 Recommendations

- That Network Rail commits to an action plan for the improvement of 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.

- The definitions and procedures relevant to these measures require urgent re-writing to reflect the methodologies now being adopted and the responsibilities these methodologies infer on staff in the Regions and at HQ.

- 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.

- That in future Annual Returns, Network Rail quote the baseline against which the regulatory target should be assessed as well as a list of all changes authorised under the network change procedure.

15.5 Best Practice

No obvious best practice was found relating to the measure as prescribed

16 Reconciliation for 2002-03 NMS

16.1 Scope of Audit

The audit was intended to check the reconciliation of spend on renewals and maintenance reported in the Annual Return 2003. This validation was to include matching the Regional renewals spend with that reported by Route, the calculation of variances between the 2002 NMS Forecast 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 (Appendix A 'Zonal Expenditure Statement'). Where possible, Reporter B was asked by ORR to comment on significant differences between the actual spend in the three Regions audited.

The audit involved a desktop analysis of Section 5 of the Annual Return 2003 (July submission) and the draft Regulatory Accounts submitted by Network Rail on 10th June 2003. A number of meetings were held 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.

16.2 Annual Return 2003 Results

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 £m which resulted in a number of apparent errors in arithmetic that are a direct result of numerical rounding. Figures were reported in 2002-03 prices.

16.3 Findings

The reported national spend on the network for maintenance was £1,184m, a variance of £+72m on the NMS Forecast; whilst renewals spend was £2,421 (variance £-72m) and enhancements £746m (variance £-747m). The majority of the enhancements variance was explained in the commentary to have originated in the HQ/Central business unit. Table 10 shows the breakdown of the variance according to the commentary and includes a column showing the proportion of the total variance attributable to each cause.

Reported Cause	Variance (£m)	% of Reported Variance
Property	-36	4.8
MFAS	-76	10.2
IOS	-11	1.5
TPWS	-9	1.2
Southern Region Power Supply Upgrade	-98	13.1
Thameslink 2000	-74	9.9
Cat A SPADs	-21	2.8
Level Crossing Works	-38	5.1
Signalling Simulators	-6	0.8
Contaminated Land	-4	0.5
SMART	-2	0.3
Unallocated Contingency	-119	15.9
TOTAL	**£-494m**	**66%**

Table 10. Enhancement Variance Attributed to HQ/Central.

Of the remaining variance of £-253m, £-77m was reported in Southern Region (in addition to the Power Supply Upgrade Project variance referred to in Table 10) and £-75m attributed to WCRM.

16.3.1 Progress Against Regulatory Target

There are no regulatory targets for the NMS Reconciliation.

16.3.2 Understanding of & Compliance with Definitions & Procedures

The procedures for compiling the NMS Forecast, Regulatory Accounts (Appendix A) and the NMS 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 draft Regulatory Accounts Appendix A. The only material variance related to the spend on stations & depots and was the subject of a note in the commentary of the Annual Return. The reason given was that £35m of renewals expenditure had been included in the Regulatory Asset Base as enhancements and therefore excluded from the total renewals figure. The remainder of the variances were <1% of the figure quoted for each asset category in the Regulatory Accounts.

Reporter B was surprised to see that WCRM expenditure had not been reported separately in Appendix A to the Regulatory Accounts since this programme had been separated from the remaining business units for reporting purposes during the reporting year. The column titled 'Other' in Appendix A (Regulatory Accounts) included the WCRM renewals spend. Cross-referencing with Disclosure Statement 5 allowed Reporter B to separate the expenditure as shown in Table 11.

Renewals Category	Other (as reported) (£m)	WCRM (£m)	Residual Other (£m)
Track	305	296	9
Train Control	318	303	15
Electrification	118	118	0
Structures	44	44	0
Stations & Depots	7	0	7
Expenditure	139	0	139
Plant & Machinery	17	2	15
Other	(2)	(2)	0
Total Renewals	**945**	**761**	**185**

Table 11. Separation of WCRM Renewals Spend from 'Other'.

16.3.3 Regional Findings

Great Western Region

In Great Western Region, a maintenance expenditure of £181m was reported (variance £6m), total renewals amounted to £218m (variance £-13m) and enhancements £49m (variance £1m). The majority of the maintenance overspend was reported as having arisen from an HMRI enforcement notice on track defects, although an un-quantified amount was attributed to exceptionally high contract inflation rates. Of the £-13m

renewals variance, £-8m was accounted for by project delays and reprioritisation of spend on depots.

Midlands Region

Midlands Region reported a maintenance expenditure of £173m with a variance of £6m when compared with the NMS Forecast. Total renewals expenditure was £278m (variance of £-9m) and enhancements £59m (variance £-28m). Half of the maintenance variance was explained by the lack of allowance for inflation in the NMS Forecast. There were substantial variances reported in several of the renewal asset categories. These were material at £66m in categories with a forecast spend of only £6m to £13m. Depots accounted for both £+5m of variance at Banbury, Saltley and Walsall as well as £-6m at Neville Hill and because spend was transferred from the depots to stations. The enhancement variance of £-28m, whilst material (32% of NMS Forecast), was not explained in the commentary.

North West Region

In North West Region, a maintenance expenditure of £142m was reported. This represented a £4m variance on the NMS Forecast figure. Total renewals spend of £102m showed a variance of £-28m and the enhancement expenditure was £15m (variance £-9m). The maintenance variance was the subject of a budget increase during the reporting year to allow for works at Test Site A on behalf of WCRM. The renewals variances for signalling, electrification and plant & machinery were the most significant as a proportion of the forecast figures. The former underspend (£-9m or 47% of forecast) was attributed to an inability to deliver the signalling programme due to a severe shortage of suitable resources. The variance on the remaining asset categories was explained by the transfer of the 25kV substation renewals programme to WCRM and the deferral of HV plant renewal in the Crewe Area.

A detailed reconciliation of renewals expenditure by Region and by Route is included in Tables AX1 to AX6 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. They do not show the variance with the NMS Forecast which has already be discussed. 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 £61m, they may be explained by rounding errors. In the case of North West Region, the largest variances were material at £8m (15.4% of forecast spend by Region) for the NMS figures for track and £6m (60% of actual spend by Region) for the actual figures under stations. The total variance for the NMS Forecast was 12.3% of the figure reported for the Region and the actual expenditure was 7.8% of the reported Regional spend. The only material variances calculated for Midlands region concern the NMS Forecasts for signalling and structures (8.9% and 9.1% of the forecasts by region respectively). The figures referred to for North West and Midlands Region are 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.

Inter-regional comparisons of expenditure were a stated objective for Reporters in their investigations of the Annual Return 2003. In the areas of renewals and enhancements however, no robust methods for comparing Regional expenditure were identified. 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.

Table 12 shows the reported actual maintenance expenditure expressed a £ per train km in each of the three Regions and for the total network. Figures are based on those reported in the Annual Returns 2003 and 2002.

	Maintenance spend per train km (£/train km)		% change
	2001-02	2002-03	
Great Western	2.31	2.70	16.9
North West	2.66	2.73	2.6
Midlands	1.41	2.33	65.2
Network Total	2.06	2.53	22.8

Table 12. Regional Comparison of Maintenance Expenditure 2001-02 & 2002-03.

The analysis shows that the network total spend on maintenance per train km increased by 22.8% between 2001-02 and 2002-03. This is significantly greater than the rate of inflation over the same period. This indicates that Network Rail has increased the effort expended on maintenance in excess of that expected given the increase in the usage of the network over the same period. It is impossible to quantify from the information available whether the increase has masked an increase in the rates paid to maintenance contractors because the outputs from maintenance efforts are difficult to quantify.

Table 12 also shows that North West and Great Western Regions spent more than the network average on maintenance in 2001-02. This pattern was repeated in 2002-03 and as a result, the increase in expenditure calculated for both regions was smaller than that reported for the network as a whole. The increases were however greater than that for general inflation over the same period. Midlands Region under-spent on maintenance, according to this analysis, in 2001-02. It reported a significant increase in expenditure per

train km in 2002-03 (65.2%) and the most recent figures illustrated a rate of spend much closer to the network average.

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.

Given the level of auditing agreed for this section of the Annual Return, Reporter B did not consider it worthwhile to attribute a confidence grade for each Region. A single national confidence grade of B2 was attributed. This grade was intended to cover the NMS Reconciliation in general rather than specific aspects of Section 5 of the Annual Return or regulatory accounts. Specifically Reporter B is concerned over the reporting of maintenance spend by asset type which is not based on actual values recorded at the level of asset type.

16.4 Recommendations

- That the figures reported for each route be quoted to at least the nearest one half million and preferably to the nearest one hundred thousand pounds. This would reduce the magnitude of the rounding errors and provide a more appropriate breakdown of expenditure particularly for asset categories with lower values of expenditure.

- That a reconciliation is included in future Annual Returns showing the link between the renewals expenditure and the activity volumes achieved. This should be undertaken at the route and/or Regional level to allow meaningful benchmarking of high level unit costs.

- Network Rail should report the renewals figures for WCRM as a separate column in Appendix A to the Regulatory Accounts.

- Reporters should continue to develop methods for using the reported data to link expenditure with outputs and to compare performance at the project, programme and Regional level.

16.5 Best Practice

No obvious best practice was found relating to the measure as prescribed

17 Customer Reasonable Requirements

17.1 Scope of Audit

It was agreed that a level 4 audit was required for this measure. Level 4 audits involved a review of the findings from the 2002 audit and an investigation of any changes implemented to the way that information was gathered and reported.

The audit involved a meeting and correspondence with The Commercial Development Team at HQ. Since this team was responsible for maintaining a national database of Customer Reasonable Requirements (CRRs), it was decided that meetings in the Regions were unnecessary.

17.2 Annual Return 2003 Results

The Annual Return reported that a total of 161 CRRs remained at the end of the reporting year. A total of 44 new CRRs had been submitted and 286 either completed or withdrawn.

17.3 Findings

The way that CRRs were monitored and reported was changed in 2002-03 with the implementation of a central database for CRRs which is 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. CRRs from Freight Operating Companies (FOCs) were also treated differently in 2002-03. EWS for example, reported an increase of 17 CRRs. These were previously part of the joint investment funding. It was decided that they should be incorporated into the reporting of CRRs.

During the audit, Network Rail staff confirmed that of the 286 CRRs either completed or withdrawn, 202 had been withdrawn and 84 were completed.

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.

Table 75 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 2003 Return. This was replaced by the 'Process' category.

17.3.1 Progress Against Regulatory Target

There are no regulatory targets in place for CRRs.

17.3.2 Understanding of & Compliance with Definitions & Procedures

The origin of this measure stems from the change in the Network Licence in 1997 when the Regulator called on 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.

Section 6 of the 2003 Annual Return states that CRRs form an integral 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 Regulator.

17.3.3 Regional Findings

Table 12 summarises the number of CRRs for customers or funders in the three Regions for which Reporter B is responsible.

Region	Customer or Funder	No. Outstanding at Apr 2002	No. Withdrawn or Completed during Period	No. Submitted during Period	No. of Live CRRs at Apr 2003
Great Western	First Great Western	11	11	0	0
Great Western	Heathrow Express	18	11	0	7
Great Western	Thames Trains	61	50	3	14
Great Western	Wales & Borders	9	5	1	5
Great Western	Wessex	0	0	0	0
Midlands	Central Trains	19	7	0	12
Midlands	Centro	3	1	0	2
Midlands	Chiltern Railway	19	19	2	2
Midlands	Midland Mainline	12	9	1	4
Midlands	Silverlink	11	10	1	2
Midlands	Virgin Cross Country	0	0	0	0
Midlands	Virgin West Coast	16	13	0	3
North West	Arriva Merseyside	3	0	0	3
North West	First North Western	9	9	0	0
North West	GMPTE	8	1	0	7
North West	Merseytravel	6	1	0	5
North West	West Coast Railway	2	1	0	1
Totals		**207**	**148**	**8**	**67**

Table 12. Summary of CRRs for Customers in the Three Regions.

The figures in the table show that 71.5% of the CRRs outstanding at the end of 2001-02 were withdrawn or completed during the reporting year. Only a further eight were

submitted during the year leaving a balance of 67 carried forward into 2003-04. This pattern of a gradual decline in the number of CRRs was repeated across the network.

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.

The management of the CRRs database at HQ has reduced the opportunity for variability in data quality between the Regions. Given this change, Reporter B considered it appropriate to attribute a national confidence grade of A2 for this measure.

17.4 Recommendations

- That an updated means of capturing customer requirements is developed based on LOCs.

- That future Annual Returns adopt the updated measure and no longer include CRRs.

17.5 Best Practice

No obvious best practice was found relating to the measure as prescribed

18 Conclusions

This report has presented the opinion of Independent Reporter B on the accuracy of the information contained in Network Rail's 2003 Annual Return and on the quality of the process by which the information was compiled. The opinion formed was based on evidence collected during a series of structured interviews both at HQ and in the Regions. As well as Network Rail offices, a number of maintenance and renewals contracting organisations were visited.

In each of the preceding sections, findings from both the Regional and HQ interviews were summarised together with the results of any transactional analyses undertaken either during the audits or of data provided subsequently. The sections are arranged by measure to facilitate comparisons with the Annual Return document. Each section contains a series of recommendations relevant to the group of measures concerned.

In this section of the report, key findings and recommendations considered by Reporter B to require urgent attention have been reiterated. Any common themes have been highlighted in an attempt to assist in the prioritisation of actions to implement the recommendations.

18.1 Progress Observed Since 2002 Audit

Given the short time interval between the recent audit and that undertaken of the 2002 Annual Return, auditors were pleased to observe several instances in which individuals within Network Rail has acted upon specific comments and recommendations. Clear evidence of improvement was observed in the data cleansing and validation process for handling TSRs, the collection of data concerning power failure incidents and in record keeping in support of Activity Volumes for some measures in some Regions. It is hoped that this process will continue following publication of this report and that further evidence of improvement will be found during the 2004 audit.

18.2 Recommendations with the Highest Priority

In the preceding sections a number of recommendations were made for each group of measures. These recommendations include some which are critical to the robustness of the data contained in future Annual Returns whilst others are more indicative of steps which should be taken to improve house-keeping and the audit trail but which are of a lower priority and importance.

The following recommendations are highlighted by Reporter B as being key to improving the robustness and effectiveness of regulatory reporting by Network Rail. In the Reporter's opinion, they require immediate action by Network Rail to ensure the quality of data that will form the basis of the Annual Return 2004. Independent Reporter B would welcome opportunities to discuss the implementation of these actions with Network Rail and the ORR in a joint Annual Return improvement workshop. It is the Reporter's

intention to focus attention during the 2004 audit on actions taken in response to these recommendations and of evidence of improvement in data quality as a result.

18.2.1 Operational Performance

- Network Rail should aim to better understand the changes that the IMCs are making to delay codes. This should result in commentary that should be included in future Annual Returns and which should include the magnitude of the changes expressed both as the number of incidents (as a % of total in each I, J & W) code and the impact on reported delay minutes under those codes (also as a %).
- Network Rail should produce and implement a suitable plan for the rationalisation and improvement of the systems used for delay attribution and reporting that are close to, or beyond, their useful life. Network Rail should formally commit to achieving the implementation plan.

18.2.2 Broken & Defective Rails

- Network Rail should produce an action plan for the implementation of the new version of RT/CS/S/057 and the updated Raildata system in the Regions. The plan should include dates for the formal release of the standard, training for Regional and IMC staff and the migration of data relating to the early part of the 2003-04 reporting year to the new system.
- The scope of any routine internal audits concerning the handling of broken and defective rail data in either the Regions or in the IMCs should be modified in 2003-04 to focus on validating the accurate migration of data into the new systems and on checking that the new definitions of isolated and multiple defects have been suitably applied across the network.

18.2.3 Bridge Condition

- Network Rail should adopt the recommendations contained in the independent auditor's report of SCMI condition assessments.
- Where these recommendations were specific to a Region, a specific action list should be produced for that Region. The Region should then be audited against the actions after a suitable number of condition assessments have been undertaken.
- In particular, urgent action is required to improve the accuracy of the scoring by examiners and to make sure that there is no inherent bias (either way) in the scoring condition.
- Midlands and Great Western Regions should take urgent steps to address the unacceptable delays typically experienced between the SCMI condition assessment and receipt of the results by Regional staff.

- North West Region should ensure that examiners are aware of the findings of the independent auditor (Holmes Davies) and insist that they prepare an action plan to correct the deficiencies outlined in the report.

18.2.4 Signalling – Failures & Condition

- Audits of asset condition assessments should be undertaken during 2003-04. These should be aimed at quantifying variability between Regions, to promoting consistency and to providing evidence that the data reported to date is accurate.

- North West Region should commission a sSICA assessment urgently for all those assets that have received a grade of 4 under pSICA.

18.2.5 Stations - Condition & Facilities

- Network Rail should produce an action plan to implement the use of hand held data recorders across all Regions as a matter of urgency. This plan should include actions necessary to recover the time lost at the beginning of the reporting year and to ensure that all stations requiring a survey in 2003-04 are visited in time for the data to be reported in the Annual Return 2004.

- Stations with unreliable or missing data in the national database should be targeted for re-assessment during 2003-04.

18.2.6 Light Maintenance Depot Condition

- Network Rail should produce an action plan showing the steps it proposes to take to recover the shortfall in the number of depots inspected compared with the five-year programme. The action plan should specifically address measures to be taken to tackle the delay caused by the late implementation of the hand held data recorders and the shortfall that existed at the beginning of 2002-03.

- The annual audit of the condition contractor's performance should be undertaken in accordance with the procedure. At least one of the depots surveyed in 2002-03 should be surveyed and blind scored by the independent assessor immediately (if this has not already been done).

18.2.7 Activity Volumes

- The procedure RT/ARM/M20PR (issue 3 14 December 2001) should be re-written to include the newly introduced activity volumes for culverts and retaining walls.

18.2.8 Network Capability

- Network Rail should commit to an action plan for the improvement of 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.

- The definitions and procedures relevant to these measures require urgent re-writing to reflect the methodologies now being adopted and the responsibilities these methodologies infer on staff in the Regions and at HQ.

- The ORR and Network Rail should agree the details of the functionality baseline for each measure necessary for the appropriate regulatory target to be meaningful.

19 Annex 1 Reconciliation of Renewals Expenditure by Region and by Route

Table AX1 Great Western Region Expenditure by Route

Route	3		4		7		10		11		22		27		28		29		31		42		**Total Region**	
Renewals	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	**NMS (£m)**	**Act. (£m)**
Track	33	47	23	25	13	14	8	4	2	2	4	0	7	2	6	6	6	3	1	1	5	5	**108**	**109**
Signalling	19	22	3	4	1	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	**25**	**28**
Structures	13	19	16	20	21	8	2	3	0	1	1	1	3	4	2	2	2	1	0	0	2	2	**62**	**61**
Electrification	0	0	0	0			0	0			0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Plant & machinery	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	**3**
IT	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	**0**	**0**
Telecoms	4	2	0	0	3	1	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	**9**	**5**
Stations	1	2	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	**4**	**4**
Depots	10	6	1	0			0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	**14**	**6**
Lineside bdlgs	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**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**
Totals	**84**	**101**	**46**	**51**	**38**	**24**	**11**	**7**	**3**	**4**	**5**	**1**	**14**	**6**	**10**	**10**	**9**	**5**	**1**	**1**	**7**	**7**	**228**	**217**

Table AX2 Great Western Region Reconciliation of Route with Regional Spend

	By Route		By Region		Variance (Re-Ro)	
	NMS (£m)	Actual (£m)	NMS (£m)	Actual (£m)	NMS (£m)	Actual (£m)
Track	108	109	109	108	1	-1
Signalling	25	28	25	28	0	0
Structures	62	61	63	61	1	0
Electrification	0	0	1	0	1	0
Plant & machinery	4	3	4	2	0	-1
IT	0	0	0	0	0	0
Telecoms	9	5	8	5	-1	0
Stations	4	4	5	5	1	1
Depots	14	6	14	6	0	0
Lineside bldgs	2	1	3	2	1	1
Other	0	0	0	0	0	0
Totals	**228**	**217**	**232**	**217**	**4**	**0**

Table AX3 North West Region Expenditure by Route

Route	1		8		11		12		13		31		32		33		34		35		36		44		**Total Region**	
Renewals	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act.	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	**NMS (£m)**	**Act. (£m)**
Track	1	6	1	2	0	0	4	4	1	1	1	1	8	6	10	9	9	9	5	4	0	0	4	**3**	**44**	**45**
Signalling	1	0	2	1	1	0	1	1	2	1	0	0	2	1	5	4	1	1	3	1	1	0	1	**0**	**21**	**10**
Structures	2	2	2	2	0	0	5	5	2	2	0	0	4	3	2	2	2	1	2	2	6	6	2	**2**	**28**	**27**
Electrification	4	0	0	0					0	0	0	0	1	1	0	0					0	0	0	**0**	**5**	**1**
Plant & machinery	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	**0**	**4**	**1**
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**
Telecoms	2	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**1**	**3**	**2**
Stations	2	1	0	0	0	0	1	1	0	0	0	0	2	1	2	1	0	0	0	0	0	0	0	**0**	**7**	**4**
Depots	0	0			0	0	0	0			0	0	1	1	1	1	0	0	0	0	0	0	0	**0**	**2**	**2**
Lineside bdlgs	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	**0**	**2**
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**
Totals	**14**	**9**	**5**	**5**	**1**	**0**	**11**	**12**	**5**	**4**	**1**	**1**	**20**	**15**	**20**	**17**	**12**	**11**	**10**	**7**	**7**	**6**	**8**	**7**	**114**	**94**

Table AX4 North West Region Reconciliation of Route with Regional Spend

	By Route		By Region		Variance (Re-Ro)	
	NMS (£m)	Actual (£m)	NMS (£m)	Actual (£m)	NMS (£m)	Actual (£m)
Track	44	45	52	46	8	1
Signalling	21	10	19	10	-2	0
Structures	28	27	28	27	0	0
Electrification	5	1	5	1	0	0
Plant & machinery	4	1	6	2	2	1
IT	0	0	0	0	0	0
Telecoms	3	2	4	2	1	0
Stations	7	4	11	10	4	6
Depots	2	2	3	2	1	0
Lineside bldgs	0	2	2	2	2	0
Other	0	0	0	0	0	0
Totals	**114**	**94**	**130**	**102**	**16**	**8**

Table AX5 Midlands Region Expenditure by Route

Route	1		5		7		9		11		25		30		31		43						**Total Region**	
Renewals	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)	NMS (£m)	Act. (£m)					**NMS (£m)**	**Act. (£m)**
Track	22	19	26	27	69	70	6	4	2	3	6	5	7	7	5	5	3	5					**146**	**145**
Signalling	24	16	4	8	4	11	4	3	11	13	0	0	0	0	4	2	0	0					**51**	**53**
Structures	2	0	6	8	4	4	1	2	2	3	6	10	5	8	1	1	3	3					**30**	**39**
Electrification	11	5	1	0	0	0	0	0					0	0			0						**12**	**5**
Plant & machinery	1	0	1	2	0	3	0	0	0	1	0	0	1	1	0	0	0	0					**3**	**7**
IT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					**0**	**0**
Telecoms	3	1	5	4	2	1	0	0	0	0	0	0	2	1	0	0	0	0					**12**	**7**
Stations	8	10	4	3	1	1	1	1	0	0	1	1	1	1	0	0	0	0					**16**	**17**
Depots	2	0	3	0	0	0	0	0	0	0	0	0			0	0	0	0					**5**	**0**
Lineside bdlgs	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0					**2**	**2**
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					**0**	**0**
Totals	**74**	**52**	**51**	**53**	**80**	**90**	**12**	**10**	**15**	**20**	**13**	**16**	**16**	**18**	**10**	**8**	**6**	**8**					**277**	**275**

Table AX6 Midlands Region Reconciliation of Route with Regional Spend

	By Route		By Region		Variance (Re-Ro)	
	NMS (£m)	Actual (£m)	NMS (£m)	Actual (£m)	NMS (£m)	Actual (£m)
Track	146	145	145	146	-1	1
Signalling	51	53	56	53	5	0
Structures	30	39	33	39	3	0
Electrification	12	5	12	5	0	0
Plant & machinery	3	7	2	7	-1	0
IT	0	0	0	0	0	0
Telecoms	12	7	13	7	1	0
Stations	16	17	17	18	1	1
Depots	5	0	6	0	1	0
Lineside bldgs	2	2	3	3	1	1
Other	0	0	0	0	0	0
Totals	**277**	**275**	**287**	**278**	**10**	**3**