Annual assessment of Network Rail 2006-07

September 2007

OFFICE OF **RAIL REGULATION**

Contents

Contents *continued*

Overview

This is our fourth annual assessment of Network Rail's performance in operating, maintaining, renewing and developing the mainline rail network, and covers the period from April 2006 to March 2007. It expands on recent publications issued by ORR, including the quarterly Network Rail monitor, and draws on the Railway Safety Statistical Report for 2006. It relies on the accuracy of data provided by Network Rail in its annual returns. Following the audit of the annual return for 2007, the independent reporter confirmed that this data is largely accurate and the systems behind it are generally robust, although a number of potential minor improvements were identified.

Overall Network Rail continued to improve its stewardship of the network. Three years into the current control period it is on course to achieve the targets set in the access charges review of 2003 (ACR2003).

Safety performance continued to improve, although the year was overshadowed by the derailment of a passenger train in Cumbria, in which one passenger died and 22 were injured. Fatalities and injuries at level crossings were the lowest for over a decade and there were no reportable deaths amongst the workforce.

Network Rail delay to train services was marginally worse than in 2005-06. Although it met the ACR2003 target for the year, it failed to achieve the more demanding target in its business plan. There was a reduction in delay from infrastructure causes, but we have concerns over the number of track faults, the continuing high level of points failures and electrification/power supply issues.

There are signs of improving customer and supplier relations, although the train operators still have a negative perception overall.

The company is on target to achieve the overall improvement in unit cost efficiencies of 31% assumed in ACR2003.

Based on progress to date Network Rail is broadly on target to achieve the overall 31% unit cost efficiencies built into the CP3 revenue allowance.

Network Rail breached its licence in relation to poor planning and risk assessment of the Portsmouth resignalling scheme. We announced the breach and financial penalty in 2007-08.

Scotland

PPM for Scotrail improved significantly and Scotland was the only Network Rail route to record an overall reduction in numbers of infrastructure incidents causing delay. Asset condition improved in line with the network as a whole. Expenditure on operating, maintaining and renewing the network in Scotland was £511 million against a budget of £511 million and an indicative ACR2003 determination of £463 million.

Health and safety

The year was overshadowed by the derailment of a passenger train in Cumbria, in which one passenger died and 22 were injured. Investigations continue.

Level crossings are the single biggest contributor to railway catastrophic risk, but overall the risks are well managed. During 2006-07, five pedestrians died in accidents at level crossings and there were 11 collisions between trains and vehicles. There were no deaths of vehicle occupants. These figures are at their lowest for at least a decade.

Asset management remains a key area of interest for us. Sound asset policies and their implementation through management systems by competent staff, together with rigorous monitoring of performance are essential. We are encouraged by falling levels of broken rails on the network, but find higher than normal problems elsewhere such as earthwork failures.

The accident frequency rate for Network Rail's workforce and contractors shows a steady reduction across the business with the greatest improvement for maintenance and renewals. There were no reportable deaths in the workforce during the year. The greatest level of improvement is in Network Rail's renewals business and reflects their emphasis in working with their contractors in establishing safe systems of work. Significant improvements in workforce safety have been achieved in maintenance and across the business.

Competence and risk control are our two other key themes. We have been in discussion with Network Rail about a backlog in re-certification of signalling staff by the Institute of Railway Signal Engineers (IRSE). The company has plans in place to address the backlog, which we will monitor.

Train performance

Public performance measure (PPM) in March 2007 was 88.1%, better than Network Rail's own target of 87.6%. This compares with 86.4% in March 2006 and represents a reduction of 12% in the number of trains arriving late. Delay attributed to Network Rail in 2006-07 increased by 0.7% in comparison to 2005-06. Despite this increase, Network Rail achieved the ACR2003 target for the year of 10.6 million minutes.

Although there was a reduction in delay in areas such as track circuit failures and temporary speed restrictions, this was outweighed by increased delay from electrified line and signalling systems and the impact of adverse weather and cable theft.

There was significant improvement in Scotland, where Network Rail delay minutes fell by 18.4% in 2006-07.

Timetable planning

Network Rail generally fulfilled its licence requirement to give sufficient advance warning of temporary changes to the timetable in 2006-07.

Strategic planning

Network Rail fulfilled its Network Licence requirement to adopt the strategic planning role for the industry. During 2006-07 it published three RUSs. It has since published one further RUS in final form and two others in draft, and is developing six others.

Customer satisfaction

Network Rail's latest customer satisfaction survey shows that the perceptions of train operating companies (TOCs), freight operating companies (FOCs) and owning groups have improved, but they remain marginally negative for TOCs and are now neutral for FOCs.

Network capability

Network Rail continued to deal with discrepancies between actual and published infrastructure capability in accordance with its recovery plan, following the licence breach declared in 2006.

Asset management

Network Rail has a high level of motivation and commitment to delivering improvements in its asset management objectives, at both corporate and individual levels.

It has made good progress towards a coherent and holistic asset management regime. Many processes align well with good asset management principles.

In the reporter's opinion, Network Rail's maturity in asset management is at least comparable to that of other major infrastructure owners in the UK.

Nonetheless, there are many potential opportunities for improving the asset management regime. The reporter made 48 specific recommendations, of which the most important was the need for Network Rail to further develop its asset policies. Such development can deliver significant savings in capital and operational expenditure.

Some processes need to be more integrated and aligned across Network Rail's organisation.

Infrastructure condition

Network Rail has succeeded in reducing the overall amount of delay attributed to infrastructure causes during 2006–07, although it is not yet back to pre-Hatfield levels, and it has made notable progress in reducing delays caused by track circuit failures, signalling failures and temporary speed restrictions.

Elsewhere however Network Rail has not met the challenges to continue to improve infrastructure reliability. There has been an increase in the number of infrastructure incidents this year, the first under Network Rail's management. Of particular concern are the number of track faults, the continuing high level of points failures and issues relating to electrification and power supply equipment.

Network Rail has demonstrated that it *can* deliver improvements in certain asset categories and on some routes. It now has to do more to turn partial success into wider improvement in all aspects of its delivery.

Asset knowledge

Network Rail continued the development of its asset information strategy with all key tasks due to be completed by 30 September 2007. This will be subject to thorough audit to confirm full compliance with Licence Condition 24.

Activity volumes

Track renewal volumes remained at high levels in 2006-07 and signalling renewals continued to increase. However in other areas such as structures the level of measured activity volumes in 2006-07 was more mixed.

1. Executive summary

Expenditure and efficiency

In 2006-07 Network Rail marginally overspent on controllable non-West Coast route modernisation (WCRM) operating, maintenance and renewals (OMR) by £54 million, (1%), compared to the ACR2003 assumption. However it has underspent by 5% in the first three years of CP3.

We attribute around £60 million to outperformance (additional efficiency compared with the ACR2003 assumption) on controllable opex and maintenance, offset by an overspend on non-WCRM renewals expenditure of £114 million.

The cumulative position over the first three years of the control period is one of outperformance on controllable operating and maintenance expenditure by £306 million and performance broadly in line with the ACR2003 assumptions on renewals expenditure, albeit with overspends on some asset categories, particularly track.

Based on progress to date Network Rail is broadly on target to achieve the overall 31% unit cost efficiencies built into the CP3 revenue allowance.

This assessment includes an element of judgement, as Network Rail does not have a full set of unit cost data for 2006-07. The independent reporter and Network Rail both felt that a number of unit cost measures, although available, were not sufficiently robust to be included this year. Network Rail is taking steps to improve the accuracy and robustness of unit cost data.

Finance and income

Net debt was £1.3 billion lower than the ACR2003 assumption, largely due to underspend in the first three years of CP3 on operating, maintaining, renewing and enhancing the network, financing costs and an outperformance of the Schedule 8 regime.

Major investment projects

Network Rail spent around £400 million on the delivery of a wide range of enhancement schemes in 2006-07. It has improved its development, delivery and reporting processes for many of the major schemes, although it still needs to be more consistent in its management of these schemes and needs to continue to develop and deliver smaller schemes, particularly the NRDF Programme, where it faces a considerable delivery challenge in 2007-08 and 2008-09.

Network Rail underspent overall on enhancement schemes included in ACR2003 by £71 million: it spent £255 million against the allowance of £326 million.

Network Rail made progress in delivering the remaining WCRM enhancements required for the December 2008 timetable. However the scope delivered in the year was less than forecast by the project team at the beginning of the year, resulting in project expenditure in 2006–07 of 23% below budget.

Environment

During 2006-07 Network Rail continued its light maintenance depot (LMD) pollution prevention programme in order to secure compliance with the Control of Pollution (Oil Storage) Regulations and the Groundwater Regulations. This work is due to be completed by October 2007.

Network licence compliance

At the start of the year we confirmed the penalty of £250,000 for Network Rail for its failure to rectify the discrepancy between actual and published capability of the network.

We also found two further licence breaches for the year 2006-07. In the first case Network Rail volunteered to us that it had disposed of some land at East Grinstead without our formal consent. We did not consider a penalty appropriate in this case.

In the second case, between September and December 2006, Network Rail breached its licence in relation to poor planning and risk assessment of the Portsmouth resignalling scheme. We announced the breach and financial penalty in 2007-08.

Looking forward

Annex B summarises the recommendations for Network Rail. We will monitor the company's progress with achieving these, with particular reference to:

- raising customer satisfaction;
- maintaining improvements with train performance, particularly on those routes below the network average;
- sustaining improvements in the condition of the infrastructure, with particular regard to track faults and points failures; and
- providing robust measures to assess progress with achieving an improvement in efficiency, required by the end of the control period.

A key requirement of Network Rail in the current year is to continue to work with stakeholders (train operators and others) to develop its plans to inform the periodic review in 2008 (PR2008). In particular we expect Network Rail to continue work on improving asset management and the development of asset policies and develop the understanding of the scope for efficiency improvement in control period 4 (CP4).

2. Introduction

Purpose of the document

2.1 This is the fourth published annual statement by the ORR to assess Network Rail's performance in operating, maintaining, renewing and developing the mainline national rail network. It covers primarily the year from April 2006 to March 2007, year three of the current control period, but also highlights any significant developments since 31 March 2007. It consolidates our analysis of Network Rail's performance during the year and provides the company's customers, funders, members, users and other stakeholders with our view on the company's performance.

2.2 The assessment reflects:
- our monitoring of Network Rail throughout the year;
- consideration of Network Rail's Annual Return 2007[1] to ORR against its Business Plan 2006 and the ACR2003[2] determination;
- the audit of Network Rail's Annual Return 2007 by the independent reporter, available on ORR's website[3];
- the requirements of the Network Licence; and
- issues highlighted in last year's assessment.

2.3 Readers should note that, alongside this annual assessment, ORR monitors Network Rail's on-going progress against a range of key performance indicators (KPIs) in the *Network Rail monitor*[4], available quarterly on our website, which serves to provide an up-to-date picture of Network Rail's business performance.

2.4 The majority of expenditure figures in this annual assessment are derived from Network Rail's audited Regulatory Accounts for 2006-07 and its Annual Return 2007. As the expenditure data used in the Network Rail monitor is not audited, there are minor differences between the data reported in the fourth quarter (Q4) Network Rail monitor published in June 2007 and the data reported here, due to amendments following the audit process.

Monitoring of Network Rail

2.5 Monitoring Network Rail's performance is a key role for ORR, in order to ensure that the company:
- is properly responding to incentives to deliver the required outputs specified in the most recent review of track access charges (ACR2003); and
- has sufficient information to carry on its business efficiently and to inform future periodic reviews of access charges.

Targets

2.6 Specific targets for Network Rail for the period April 2004 to March 2009 were set out in the final conclusions of the most recent review of access charges in December 2003 (ACR2003). For some measures there are annual targets, whereas for others the target is for the end of the control period.

2.7 In addition to the specific requirements of ACR2003, we monitor the company's outputs against its business plans, as these contain detailed plans for achieving its own internal targets and ACR2003 targets.

2.8 The measures, associated targets and achievements for 2006-07 are set out in full in Annex A.

---

[1] Annual Return 2007. Network Rail, July 2007.

[2] Access charges review: Final conclusions. Office of the Rail Regulator, December 2003

[3] [Independent Reporter A, Annual Return 2007 Final Report. Halcrow Group Limited, September 2007.]

[4] Visit http://www.rail-reg.gov.uk/server/show/ConWebdoc.7027 to see the Network Rail monitor.

Scope of the assessment

2.9 As in previous years, our assessment of Network Rail's performance covers expenditure, maintenance, renewal, enhancement, asset knowledge, train operations, train performance and timetabling. We have, however, widened the scope of the assessment this year to reflect the widening of our role.

2.10 Following the enactment of the Railways Act 2005, ORR became the combined safety and economic regulator, with effect from 1 April 2006. On that date, the rail safety function carried out by Her Majesty's Railway Inspectorate (HMRI) and the Rail Policy Division was transferred from the Health and Safety Executive (HSE) to ORR. The annual review[5] of rail safety performance, previously published by HSE, is now published by ORR. This assessment does not seek to duplicate the safety report.

2.11 Network Rail is now leading strategic planning for the industry. This role is in its infancy. While we examine developments in 2006-07, we will review more fully in years to come.

Structure of the document

2.12 The initial focus of this document is on the outputs that Network Rail is expected to deliver. **Chapter 3** highlights relevant aspects of Network Rail's health and safety performance. We assess Network Rail's performance using inspection intelligence alongside industry numerical data.

2.13 **Chapter 4** assesses the impact of the company's operation and management of the network on train services provided by its customers. We also assess possessions management and consider the extent of customer satisfaction.

2.14 **Chapter 5** assesses the extent to which Network Rail demonstrates it is meeting the ACR2003 target of broadly maintaining the capability of the network as it stood on 1 April 2001.

2.15 **Chapter 6** examines the extent to which Network Rail is managing the condition of the infrastructure of the network in terms of the reliability of the physical assets and their quality. It is imperative that the company has detailed and accurate knowledge of those assets and we assess progress with the development of systems and processes for capturing and maintaining asset data.

2.16 Physical assets eventually wear out and need to be replaced. **Chapter 7** examines the extent to which the projected level of renewal activity to maintain the network at a defined level has been carried out.

2.17 As a monopoly supplier, Network Rail does not have the pressure of competition to drive increases in efficiency. We made assumptions in ACR2003 about levels of expenditure and increases in efficiency. **Chapter 8** compares expenditure with ACR2003 allowances and assesses the extent to which Network Rail is achieving the efficiency assumptions.

2.18 **Chapter 9** looks at the financial health of the company, with particular emphasis on levels of net debt in relation to the regulatory asset base (RAB).

2.19 **Chapter 10** focuses on the major investment projects that Network Rail was engaged in during the year and assesses the extent to which the company is delivering the outputs specified.

2.20 **Chapter 11** considers Network Rail's delivery of its environmental commitments published in the business plan, along with its obligations under Condition 8 of its Network Licence.

2.21 **Chapter 12** reports on a 'by exception' basis on Network Rail's performance in relation to the other requirements of its Network Licence.

----

[5]   Railway safety statistical report 2006, ORR July 2007.

2.22 **Annex A** sets out the measures, associated targets and outputs in 2006-07. **Annex B** brings together our recommendations for Network Rail. A plan will be developed and agreed with Network Rail to put in place robust and measurable actions to ensure that these recommendations are delivered. Progress in delivering the plan will be monitored and reported in the 2008 assessment.

Independent reporter

2.23 Independent reporters play an important role in the monitoring of Network Rail and the validation of information provided to ORR. Reporters were first appointed in 2002 and have audited Network Rail's annual returns since then.

2.24 The reporter, Halcrow, has confirmed[6] that data in the Annual Return 2007 is generally robust, reliable and accurate, although the audit report makes a number of recommendations to Network Rail on how accuracy and reliability can be improved. We are monitoring Network Rail's progress with implementing these recommendations during the current year.

2.25 Reports produced by the independent reporters are published on ORR's website. Where appropriate, we refer in this assessment to findings and recommendations in the audit report on Network Rail's Annual Return 2007, and progress with implementation of recommendations from audits in previous years.

Feedback

2.26 Comments on the content of this fourth annual assessment are welcome and can be sent to: brian.hatfield@orr.gsi.gov.uk.

----

[6] Independent Reporter A Annual Return Audit 2007 Final Report

The year was overshadowed by the derailment of a passenger train in Cumbria, in which one passenger died and 22 were injured. Investigations continue.

Level crossings are the single biggest contributor to railway catastrophic risk, but overall the risks are well managed. During 2006-07, five pedestrians died in accidents at level crossings and there were 11 collisions between trains and vehicles. There were no deaths of vehicle occupants. These figures are at their lowest for at least a decade.

Asset management remains a key area of interest for us. Sound asset policies and their implementation through management systems by competent staff, together with rigorous monitoring of performance are essential. We are encouraged by falling levels of broken rails on the network, but find higher than normal problems elsewhere such as earthwork failures.

The accident frequency rate for Network Rail's workforce and contractors shows a steady reduction across the business with the greatest improvement for maintenance and renewals. There were no reportable deaths in the workforce during the year. The greatest level of improvement is in Network Rail's renewals business and reflects their emphasis in working with their contractors in establishing safe systems of work. Significant improvements in workforce safety have been achieved in maintenance and across the business.

Competence and risk control are our two other key themes. We have been in discussion with Network Rail about a backlog in re-certification of signalling staff by the Institute of Railway Signal Engineers (IRSE). The company has plans in place to address the backlog, which we will monitor.

Introduction

3.1 Assessing Network Rail's performance relies on information from both quantitative and qualitative sources. The industry has developed a number of useful data measures involving key performance indicators such as accident rates, train accidents, asset defects and adverse public behaviours. These are analysed in the safety risk model by the 'Precursor indicator model' (PIM), but the latter only considers major accident or system risk and does not look at worker risks. These data sources alone cannot provide the whole picture since the numbers of accidents are generally small and changes may not be statistically significant. Network Rail reports its performance in the 'Safety and environment assurance report' (SEAR), compiled every four weeks during the year.

3.2 We extract accident and injury data from reports made to us under the legal obligations of the 'Reporting of injuries, diseases and dangerous occurrences regulations' (RIDDOR) 1995. Our field inspectors' findings provide an accurate evidence-based means of measuring the performance of management systems, from policy level to front line delivery on the ground. This scrutiny of management systems is crucial to understanding the reasons for the incidents shown in the statistics.

3.3 Since the establishment of the 'Rail accident investigation branch' (RAIB), we have also had additional information on the causes of accidents from its comprehensive reports. This has been valuable in supplementing our own work.

3.4 We therefore judge Network Rail's performance here using inspection and investigation intelligence alongside our own and industry data.

3.5 It should be noted that ORR's role in health and safety regulation is inevitably to seek failures of statutory duty and that is the nature of the material that inspectors gather. Inspection plans deliberately focus on areas of high hazard and potential weakness, and we concentrate on any poor performance we find. We acknowledge that this lends itself to negative reporting, but we also do recognise that good standards and effective management structures predominate in Network Rail, even though the inspection findings may not reflect this.

Public safety

3.6 The death of one passenger, and injury to 22 others in the derailment of a passenger train in Cumbria in February 2007 overshadowed passenger safety performance and we monitor Network Rail's response to the recommendations. Nevertheless, the industry sustained a good safety record for accidental injuries to passengers.

3.7 Public misuse of level crossings is the single biggest contributor to railway catastrophic risk, but overall the risks are well managed. In 2006-07, five pedestrians died in accidents at level crossings and there were 11 collisions between trains and vehicles. There were no derailments as a result, and no deaths of vehicle occupants. These figures were the lowest for at least a decade and coincided with the launch of a media campaign by Network Rail in 2006 on the safe use of level crossings by the public. Additionally, there is a focus on better maintenance of user-worked crossings. ORR supports Network Rail's interaction with local authorities who have an influence on level crossing risk through their planning decisions.

3.8 Overall, progress by the industry in tackling trespass and vandalism has been good, with steadily decreasing accident/incident trends since 2000. However, since 2004-05 there has been a significant upturn in accidental trespass deaths, reversing the previous downward trend. In 2006-07 there was a reduction in child trespass deaths, with two children under the age of 16 killed while trespassing on the railway, down from five in 2005-06. The reduction in child deaths coincides with initiatives by Network Rail to address child trespass issues through a programme of educational visits to schools, No-messin' events and participation in community safety partnership groups.

Safety Index

3.9 Figure 1 shows that the index of all accidental fatalities and injuries was around 0.25 equivalent fatalities per million train miles during

2006-07, an improvement from 2005-06. Network Rail reported over 280 other major and over-3-day injuries, as defined by RIDDOR, to ORR. These reports show that the main causes of injury to workers are slips and trips and falls from a height of less than 2 metres, assaults to staff, and manual handling operations associated with moving loads.

Figure 1: All accidental fatalities and injuries (expressed as equivalent fatalities), excluding actual and attempted suicides[7].
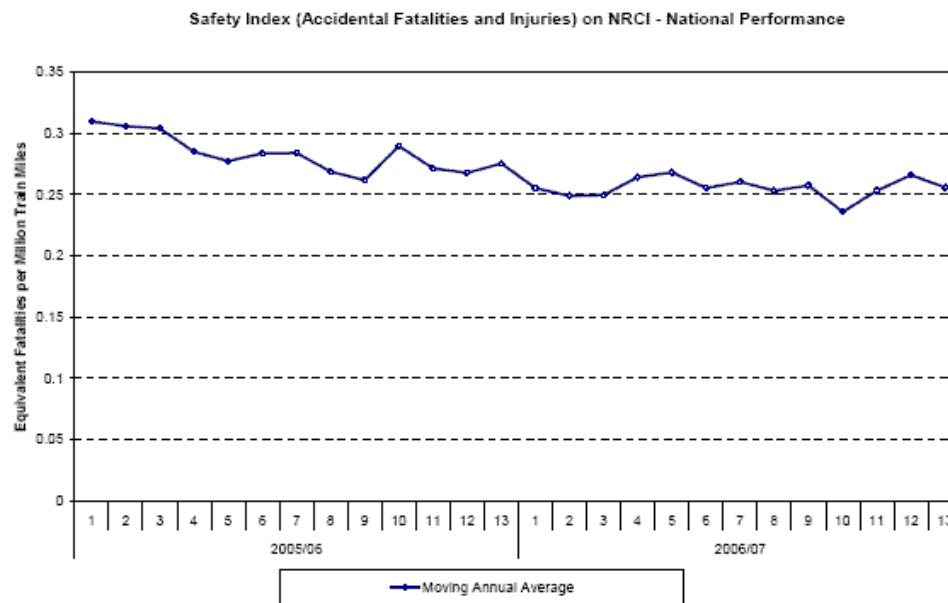
Source: Network Rail's SEAR, period 13, 2006-07

[7] Note: the actual figure is for fatalities and injuries that occurred on Network Rail infrastructure only, and therefore shows a lower rate than the measure produced by RSSB for the Railway Group as a whole.

Network Rail health and safety performance 2006-2007

Workforce safety

3.10 There were no fatal accidents to workers and contractors working on Network Rail controlled infrastructure during 2006-07. The accident frequency rate moving annual average (MAA) for Network Rail employees and contractors was 0.263 reportable accidents per 100,000 hours worked, continuing the downward trend of the previous two years. This is below Network Rail's target (Figure 2).

3.11 An analysis of risk shows that, for Network Rail controlled operations, track workers are most at risk of fatal injury, with the risk of being struck by a train the most significant contributory factor. Electric shock is also a significant contributor. The company has addressed these risk areas through communications campaigns and other initiatives involving their own track workers and suppliers of contract labour.

Workforce occupational health

3.12 It is difficult to assess Network Rail's performance on occupational health risk management. We have a little data from RIDDOR however we believe that there is much under-reporting in common with most other industry sectors. The Company say that they are working with healthcare providers to use the data available from medicals and other sources to more effectively target health issues. They are also developing an "employee well-being" KPI to track improvement.

3.13 Network Rail has identified that 'Hand arm vibration syndrome', musculoskeletal disorders, exposure to hazardous substances and mental health are the principal health risks.

Figure 2: Workforce accident frequency rate for Network Rail workforce and contractors, normalised per 100,000 hours
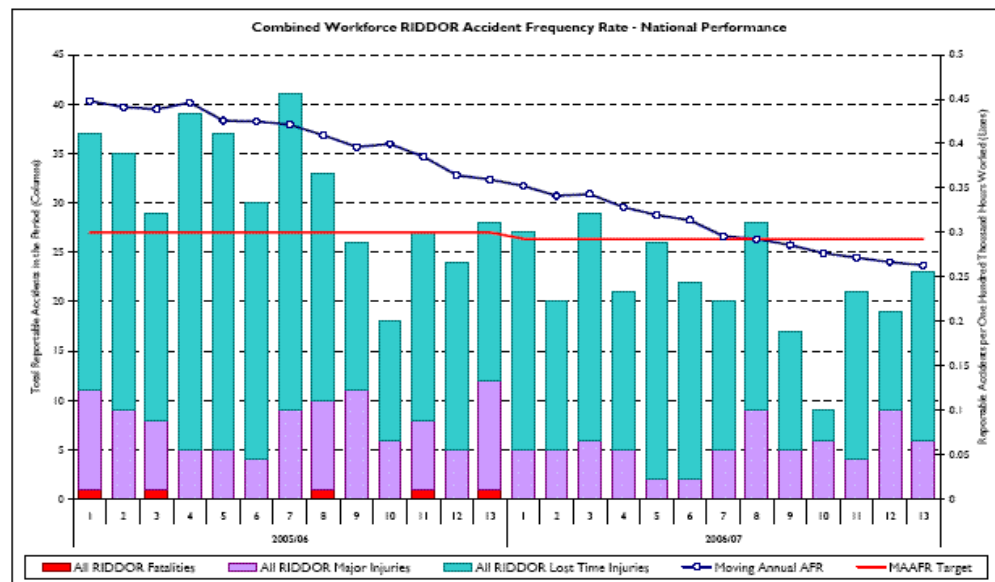
Source: Network Rail's SEAR, period 13 2006-07

HMRI inspection findings

3.14 During the year, HMRI inspectors and Railway Inspectorate contact officers (RICOs) carried out a planned programme of interventions coordinated through our Network Rail delivery plan. The plan is the means by which we implement our strategy for the regulation of health and safety on the railway. It provides assurance to us, and consequently workers and the general public, that Network Rail is maintaining and, as necessary, improving the standard of health and safety risk control. The plan also sought to address HMRI's long-term themes for its work with Network Rail of risk control, competence and managing assets.

3. Health and safety

3. Health and safety ORR logo

3.15 Significant findings for 2006-07 include:

- Network Rail has made significant improvements in the design and implementation of **MIMS/Ellipse** since it was introduced, although there is still work to be done to improve consistency of registering assets and recording defects, and in monitoring the outputs;

- Network Rail appears to be managing **sites where track is known to be in poor condition** to the required standards in some territories, which is an improvement on previous inspection findings. However there were still problems in other territories;

- the **post-renewal track-back** process was broadly sound. The post-maintenance NR/SP/TRK/001 process for re-opening the line after engineering work was found to be limited;

- in relation to the **competence of signalling maintenance technicians**, HMRI is concerned that Network Rail may not currently be complying with Railways (and other guided transport systems) Regulations 2006 (ROGS) Regulation 24, the duty to assess, record and manage staff competence. We expect Network Rail to ensure compliance with this regulation;

- evidence of an improved **User-worked crossing maintenance** regime, attributable to the introduction of the new, dedicated area level-crossing teams;

- **maintainability following traffic increases**: new train paths were accommodated within the working timetable and sold to an operator; subsequently Network Rail was unable to deliver a maintenance regime to sustain the additional traffic. This is a key concern to us;

- Network Rail's campaign to improve the standard of **safety communications** through the SAF6 programme, and increased recording and monitoring, is acknowledged by HMRI to be a strong initiative, and we found that managers were committed to making improvements;

- **Network Rail's duties to maintain TOC-run stations:** despite an improved management process, we found a large backlog of work, some designated as urgent months previously; and there were insufficient area site managers to oversee delivery of works by contractors;

- **track worker safety from trains**: Network Rail did not adequately protect the safety of track workers, and non-compliance with rules giving rise to risk was common. Network Rail is addressing these issues;

- certain **manual handling** operations, such as cable pulling, were unacceptably hazardous, and the risk from lever-pull operations was not well managed;

- HMRI was not convinced that Network Rail corporately or at territory level grasped just how much continuing work will be needed in order to manage **asbestos in buildings**;

- both the **SAF5 and ORG5** (reorganisation programmes) changes were demonstrated to be capable of success. A key issue for Network Rail will be to ensure that managers have sufficient time to undertake their new duties fully. The Company says that this aspect is captured in their post-implementation reviews;

- A number of **earthworks failures** were triggered by heavier than normal rainfall and a number had third-party work as a contributory factor. Network Rail should consider how it manages these factors; and

- there was a significant improvement in the management of **work-related violence** and Network Rail's performance was consistent with good practice.

3. Health and safety

Enforcement for 2006–07

3.16 A total of 13 enforcement Notices were served on companies working on Network Rail controlled infrastructure during the year. Six of these were served on contractors, two of which were Prohibition Notices for risks during construction works.

3.17 Improvement Notices served on Network Rail included actions to improve planning of maintenance processes in Scotland, better security at yards, more effective communications between York integrated control centre and users of the railway, and work to improve the brakes of road-rail vehicles.

Health and safety management

3.18 Reports from our inspections, and from investigations, liaison and other work with Network Rail, provide a broader view of Network Rail's ability to manage safety. Our view of Network Rail's safety management system is that it is sound, delivering passengers safely through the network nearly all of the time, on infrastructure that is in safe condition, and with an improving record on workforce safety. Not surprisingly, our inspections and investigations also indicate to us that the system is not in all cases robust, and is in places vulnerable to failures. Although systems for controlling catastrophic risk incorporate a high level of redundancy, we found occasional evidence of complacency when one element under-performs, be it a track component, a system for maintaining competence or a routine maintenance process. The danger is that if several layers of protection fail in the same place at the same time, a major accident may result.

3.19 High-performing companies in other industrial sectors with equivalent high-consequence, low-frequency, risks are zealous in seeking compliance with their safety-related systems and understanding their weaknesses. In this respect, Network Rail is examining investigation reports about the explosion at BP's Texas City refinery to establish if there are any lessons to be learned by the company. It is looking at a number of organisations that have

had accidents, and why, and also at those that have excellent track records, and why.

3.20 The SEAR and related asset data show asset performance was improving. This is borne out by inspections that mostly showed assets in a better condition than they were in previous years. However, we found evidence of vulnerability to the breakdown of asset management systems, where several safety processes could under-perform simultaneously, as described in paragraph 3.18.

3.21 We found that first- and second-line supervision was stretched in relation to the control of a number of risks, including track maintenance, signalling and telecoms maintenance and track worker safety. Recent Network Rail re-organisation (SAF5 and ORG5) has followed good health and safety practice, though at the front line they place a higher demand on supervisors, who do not all have the resource to respond fully. The effect of stretched supervisory resource may be felt in terms of compliance to Network Rail processes (where there was evidence of some issues). Non-compliance can lead to front-line deficiencies, e.g. in competence, where we have identified a backlog in IRSE re-certification of signal maintenance staff.

3.22 From the top of the organisation, and throughout, staff professed a good attitude to safety and its priority. Competent and intelligent managers at all levels seek to promote a strong safety culture, and Network Rail undertakes excellent safety initiatives such as SAF6 on safety communications. There is nevertheless significant pressure for non-compliance, seen by inspectors in hard-pressed maintenance operations, and in some instances of poor safety critical communication.

3.23 Finally, inspectors described examples of functions acting in a blinkered fashion, to the cost of the organisation as a whole. This include engineering standards that maintenance teams struggle to

implement, and the letting of train paths by the commercial arm of the organisation without sufficient consideration of maintainability. We are discussing the factors that affect the capability of Network Rail's management system with them on an ongoing basis.

Other statutory work during the year

Rail accident investigation branch (RAIB)

3.24 RAIB inspectors investigate accidents and incidents on the railways to identify root causes and make recommendations for actions to prevent recurrence. Their recommendations are directed to us for our consideration prior to us sending them on to relevant parties. Their reports presented over 80 recommendations that were relevant to Network Rail. Of these around 60 related to a national issue; the remainder were about local matters within a territory.

Railways (and other guided transport systems) Regulations 2006 (ROGS)

3.25 Network Rail submitted its application for the safety authorisation under ROGS in February 2007. The submission was assessed by HMRI and accepted for the due date of 25 May 2007. The initial submission met most of the requirements and there were only two substantive issues, which Network Rail addressed satisfactorily in co-operation with HMRI. The first issue related to the interpretation of what was 'so far as is reasonably practicable' in making decisions on investments affecting safety. The second was to reflect the changes in the industry with the transition from the safety case regime to the requirements of ROGS. Other issues raised by HMRI and those from affected parties within the industry were also addressed. The submission was a clear and well-structured statement of Network Rail's safety management system.

3.26 Following the authorisation, Network Rail submitted the first annual safety report to us, required under ROGS. This reported on safety performance in the calendar year 2006.

3.27 HMRI also started supporting work on ROGS. This involves on-going validation of the Network Rail safety management system and intelligence on the duty of co-operation between Network Rail and other duty holders. This validation is carried out in the course of HMRI's inspection work of Network Rail in a proactive programme of interventions and from the investigation of incidents, and assessed from other sources of information. Other work with Network Rail and ROGS is on safety verification, which is the way major changes to the infrastructure and rolling stock are managed by Network Rail to ensure safety on the railway in so far as it is within their responsibility. This work by HMRI will be to verify that the organisation is in place, and then tested with the inspection of a sample of schemes.

Recommendations

3.28 This document is written as a summary, omitting the detailed outcomes of inspections and the actions necessary as a result. The latter is supplied to Network Rail managers at local level as each inspection initiative is completed.

3.29 We also pursue national issues arising from these inspections at a corporate level with Network Rail. It follows that no specific recommendations are made here because Network Rail and ORR are already engaged in appropriate action.

Train performance

> PPM in March 2007 was 88.1%, compared to 86.4% in March 2006 and better than Network Rail's own target of 87.6%. This represents a reduction of 12% in the number of trains arriving late.
>
> Delay attributed to Network Rail in 2006-07 increased by 0.7% in comparison to 2005-06. Despite this year-on-year increase, Network Rail achieved the ACR2003 target for the year of 10.6 million minutes.
>
> Although there was a reduction in delay in areas such as track circuit failures and temporary speed restrictions, this was outweighed by the impact of adverse weather and cable theft.
>
> There was significant improvement in Scotland, where Network Rail delay minutes fell by 18.4% in 2006–07.

Public performance measure (PPM)

4.1 PPM combines punctuality at final destination and cancellations for franchised passenger train services. It excludes freight and it assesses punctuality by a simple pass/fail threshold of lateness at train destination. Network Rail's role is to lead whole industry performance improvement, so PPM is a key measure of this, as well as how the passenger sector is performing as a whole. Figure 3 shows how this measure has steadily improved over the past five years. The long-term improvement in PPM is evident, although this improvement levelled off in the second half of 2007-08.

4.2 Actual PPM for the end of 2006-07 was 88.1%, 0.5 percentage points better than the industry target of 87.6%. This represents a reduction of 12% in the number of trains arriving late. PPM for Scotrail was 88.8%, a 3.2 percentage point improvement.

4.3 The improvement in PPM over the year was principally due to strong performance by train operating companies (TOCs). Delay minutes attributed to TOCs fell by 18% over the year, whereas Network Rail delay minutes actually increased by 0.7%.

Figure 3: PPM by four-weekly periods, 2000-01 to 2006-07
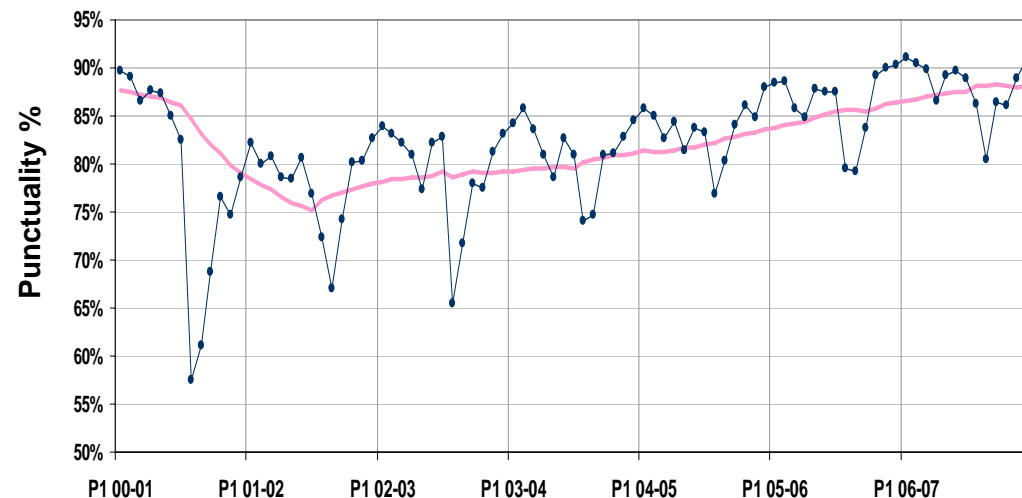
Source: Network Rail's Network performance period report

Figure 4: PPM by four-weekly periods, 2000-01 to 2006-07
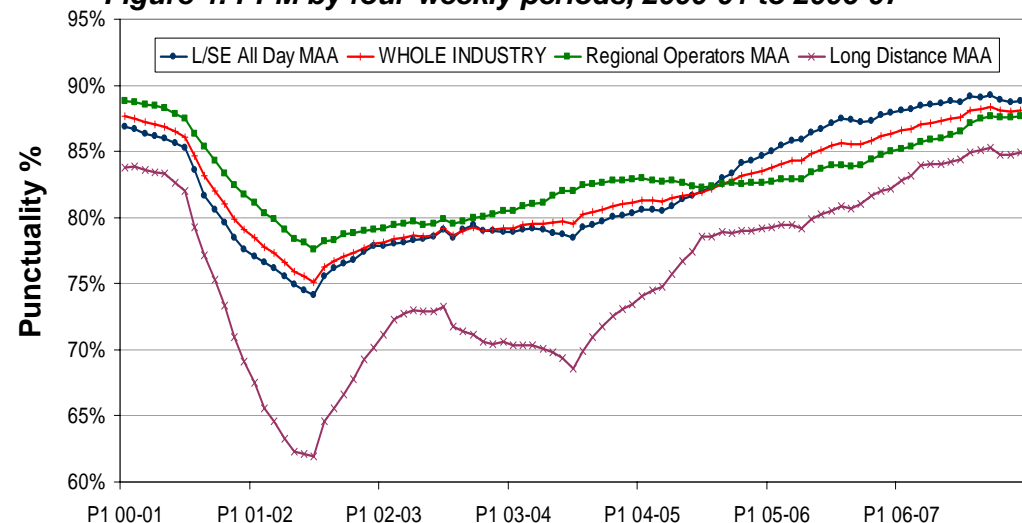
Source: Network Rail's Network performance period report

4.4 Figure 4 looks at PPM by market sector:

- PPM in the long distance sector continues to lag behind the others. After a prolonged period of convergence, the gap widened in 2006-07. Within the long distance sector there was considerable variation between the best performing train operator, (Midland Mainline at over 90%) and the worst performing operator (First Great Western high speed services at below 80%);

- Regional sector performance improved in the last year. This was driven by notable improvements by Arriva Trains Wales and Central Trains; and

- Network Rail's Business Plan target for 2007-08 is for PPM nationally to reach 89.5% by March 2008.

First Great Western

4.5 PPM for First Great Western (FGW) services at the end of 2006-07 was poor at 83.2%. Although there was an improvement, it did not keep up with PPM for the rest of the network (it improved by just 0.4% in 2006-07). In particular:

- following our investigation in the summer of 2006, a more ambitious 'Joint performance improvement plan' (JPIP) was agreed between Network Rail and the TOC in August 2006. However, in the period December to March performance fell well below the JPIP trajectory partly due to signal and points failures and adverse weather and partly due to TOC fleet and operational problems;

- we scrutinised the JPIP for 2007-08 and in our view the plan appeared realistic. It projects an improvement in the PPM to 86.2% by March 2008, which will bring real benefits to passengers. We are monitoring delivery of the JPIP initiatives and performance closely in 2007–08 and we expect Network Rail to respond quickly if the trajectory is not being achieved; and

- in the first quarter of 2007-08, Network Rail delivered most of the specific initiatives it included in the JPIP. However, as a result of a series of major incidents, particularly in the Thames Valley, Network Rail delay was 15 - 25% above the JPIP trajectory for each of the three periods in the quarter. The excess has since become much greater with disruption due to flooding in July and there is no sign yet of the promised improvement in PPM. Coming after the failure to meet last year's JPIP targets, and given the history of poor performance on the route, this is exceptionally disappointing. We have subsequently met the Chief Executive of Network Rail to seek assurance that everything possible is being done to turn the situation round quickly and we are considering Network Rail's response. Progress will be monitored closely and reported in the Network Rail monitor.

Delay minutes attributable to Network Rail

4.6 Figures 5-7 illustrate the impact of Network Rail's management of the network on its customers. Key points are:

- delay attributed to Network Rail in 2006-07 was 10.53 million minutes, compared to 10.45 million minutes in 2005–06, an increase of 0.7%;

- despite this year-on-year increase, Network Rail achieved the ACR2003 target (10.6 million minutes) for 2006-07, but failed to achieve its own business plan target (9.8 million minutes);

- the ACR2003 target for 2007-08 is 9.8 million minutes. To achieve this Network Rail will need to reduce delay minutes by 7%; to achieve its more demanding business plan target of 9.1 million delay minutes for 2007–08 it will need to reduce delay by 13%. JPIPs with individual TOCs set out how Network Rail intends to achieve these reductions;

Figure 5: Delays attributed to Network Rail all services 1999-00 to 2006-07, and ACR2003 annual targets
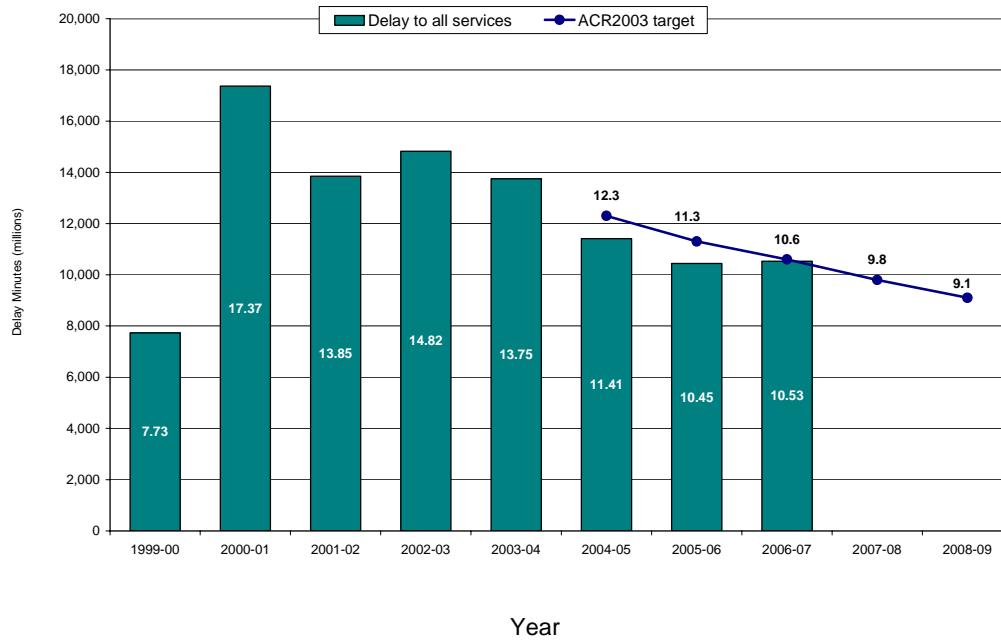
Figure 6: Annual delay attributed to Network Rail per 100 train kilometres (franchised passenger services only) 1999-00 to 2006-07, and ACR2003 annual targets
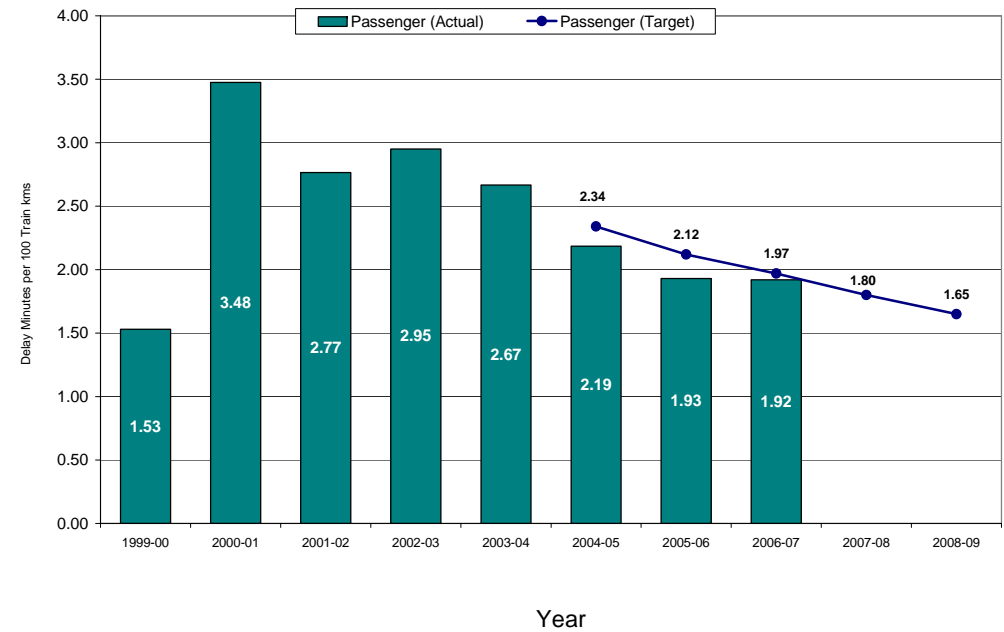
Source: Network Rail data and ACR 2003

Source: Network Rail data and ACR 2003

- in examining why Network Rail delay increased in 2006-07, the reductions in delay from those factors which are under Network Rail's direct control are masked by increases in delay from those factors which are not. Despite a reduction in areas such as track circuit failures and temporary speed restrictions, this was outweighed by increased delay from electrified line and signalling systems and the impact of adverse weather and cable theft;

- although the storm of 18 January caused almost 240,000 delay minutes for Network Rail, generally weather events in 2006-07 were not unduly severe and may well recur. Hence Network Rail's attention to weather resilience generally, in terms of rail stressing, drainage, point heaters and lightning protection, for instance, must continue;

- when normalised for train kilometres, delay to passenger services was marginally lower in 2006-07 compared to 2005-06, but delay to freight services increased by 3% compared to 2005-06. Network Rail implemented a number of initiatives in the year to improve freight train performance and we expect to see the benefits of this in 2007–08;

- there was significant improvement in Scotland. Network Rail delay minutes fell by 18.4% in 2006–07, despite severe flooding which affected all areas. This improvement follows consistent delivery of performance improvement plans;

- delay minutes in the previously well-performing Wessex route area increased by 10.5% over the year. Most of this increase was caused by adverse weather and over-running engineering works; and

- delay minutes in London North Eastern route (LNE) area increased by 4.5% over the year. Much of this was caused by the theft of signalling equipment cables.

Figure 7: Annual delay attributed to Network Rail per 100 train kilometres (freight services) 1999-00 to 2006-07
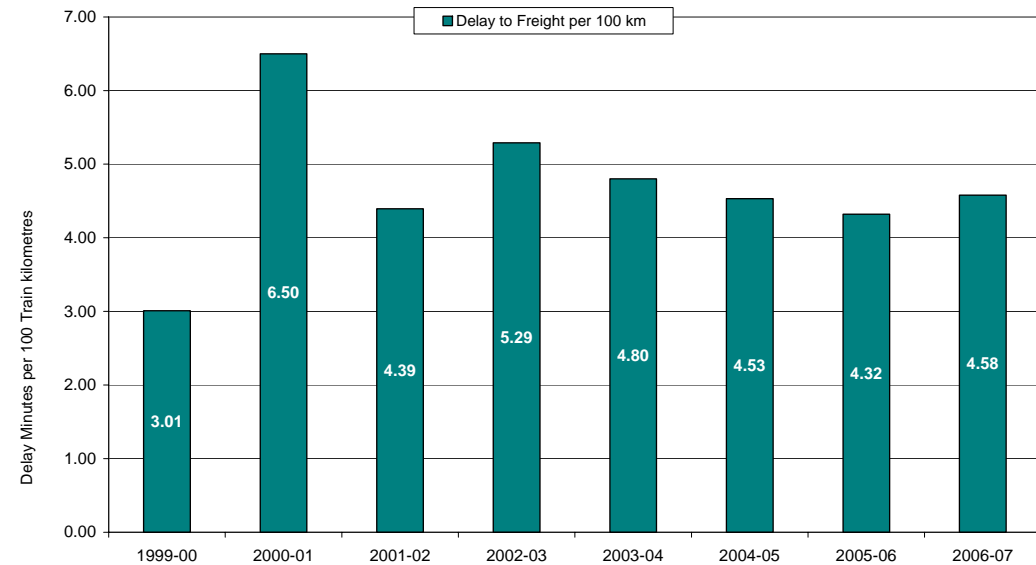
Source: Network Rail data

Joint performance process

4.7   The joint performance process (JPP) is the industry process for working together on performance improvement. Network Rail's role is to lead the process. The key output is an annual joint performance improvement plan (JPIP) for each individual TOC.

4.8   The new JPP was fully implemented for all franchised passenger operators for 2006-07. The collaborative approach to production and implementation of JPIPs was one of the factors behind delivery of significantly improved PPM. No significant issues about the process for 2006-07 have been raised with us, although some individual targets were missed, for example on First Great Western.

4.9 The industry is on a learning curve to extract maximum benefit from the JPP. As parties become more familiar with the process, issues about the level of detail in the JPIPs and the boundary between committed and aspirational achievement have begun to arise. We expect Network Rail and train operators to continue to work together constructively in the planning round for 2008-09 JPIPs.

Timetable planning

Network Rail largely fulfilled its licence requirement to give sufficient advance warning of temporary changes to the timetable in 2006-07.

4.10 Condition 9 (Timetabling) of Network Rail's Network Licence requires the company to plan engineering works and to specify its requirements for temporary changes to the national timetable (other than changes arising from emergencies or severe weather conditions) in time for the timetable to be revised at least twelve weeks prior to the date of any such change (the T-12 requirement).

4.11 Network Rail largely achieved the T-12 requirement throughout the year, but there were some areas of serious concern, especially planning and implementation of signalling renewals. Some examples are given below. Its achievement of the requirement was sometimes affected by late provision of information by TOCs, itself sometimes caused by late notice changes to the planned engineering work.

4.12 Key points are:

- Network Rail achieved an average upload of altered timetable data to the train service database of between 10 and 11 weeks ahead of the date of operation, with a slightly improving trend over the year. However late notice possessions for engineering work advised after the monitoring date (T-12) will not necessarily be reflected in these statistics – see below;

- TOC provision of data to Network Rail was 15-17 weeks, against a target of 18 weeks (T-18). However, performance by individual TOCs varied, with some regularly outperforming their requirements and others consistently underperforming, which can have implications for Network Rail achieving the licence condition requirement. Late in the year, Network Rail took action to bring the most persistent offenders into line with the requirements of the Network Code timetabling process, resulting in a distinct improvement in TOC performance since the end of the year. ORR has also engaged with individual TOCs to determine causes of slippage and to be sure plans are in place to meet requirements; and

- Network Rail has a review process in place to vet all proposals for additional late notice disruptive possessions or changes to disruptive possessions. This maintains pressure on its engineers to manage their requirements in a way that causes fewer late notice changes to the timetable than might otherwise be required. However some Routes request more such possessions, pro rata, than others, and Network Rail must continue to ensure that these are truly necessary, to identify the root causes, and to manage the disparity to achieve the required timescales.

4.13 Significant issues that caused late changes to timetable plans include:

- short notice major track renewals on the Merseyrail Electric network to rectify serious defects brought to light by a derailment;

- on-going failure fully to commission the Sandbach – Wilmslow signalling renewal;

- late changes to the requirements for the commissioning of elements of the Sheffield signalling renewal; and

- failure to commission the Portsmouth signalling renewal, resulting in on-going recasting of the daily timetable and many additional seriously disruptive possessions (further details in Chapter 7).

4.14 Such problems impact both on Network Rail's train planning units and on those of the TOCs. Any major late-notice changes can cause TOCs resourcing difficulties, but, where small TOCs with limited train planning resources are involved, the effects will be felt for some weeks, sometimes months, afterwards. This in turn can affect TOCs that have not been directly involved, as Network Rail may be unable to compile the full altered timetable without the smaller TOCs' bids.

4.15 Clearly planning and implementation of signal renewals is an area that demands Network Rail's particular attention, especially with a significant amount of signalling renewal planned over the next few years.

4.16 During 2005-06 there were significant problems with timetable development on the East Coast main line, where Network Rail had difficulty in identifying what capacity existed for additional trains between London and Leeds for GNER and open access services for Grand Central and Hull Trains. We are pleased to note that a timetable generally accommodating operators' current aspirations was developed during 2006-07 and the increased Leeds service has recently successfully been introduced.

4.17 We reviewed satisfaction with Network Rail's timetable development processes across a representative sample of franchised and open access passenger operators, freight operators and funders. The results of this exercise have been discussed with Network Rail and formed one of the themes of the Rail industry planning conference earlier this year. When taken in conjunction with development of a comprehensive suite of Route utilisation strategies (RUSs) (see below), we are satisfied that Network Rail is working to improve planning processes, and we shall continue to monitor progress. This will continue to be a high profile issue, given the anticipated continuing widespread growth in demand across an already heavily utilised network.

Strategic planning

Network Rail fulfilled its Network Licence requirement to adopt the strategic planning role for the industry. During 2006-07 it published three RUSs. It has since published one further RUS in final form and two others in draft, and is developing six others.

Route utilisation strategies (RUSs)

4.18 Following DfT's White Paper *The Future of Rail* and the subsequent Railways Act 2005, Network Rail has taken on responsibility for producing RUSs for the network. ORR modified Condition 7 (Stewardship of the network) of Network Rail's Network Licence in June 2005 to incorporate this responsibility, and at the same time ORR published guidelines on RUSs. Condition 7 outlines a process that the Network Licence holder must follow for a RUS to be established and gives ORR the right to issue a notice of objection as an important safeguard in the event that a RUS does not comply with its objectives.

4.19 A RUS takes a strategic look at a particular section of the rail network and its usage and capability in relation to current and future demand. It seeks to balance issues of capacity, passenger and freight demand, operational performance and cost, in order to address the requirements of funders and stakeholders. Where shortfalls in capacity are identified, the RUS will propose options for addressing them. These options may involve timetabling changes or investment.

4.20 Condition 7 of the Network Licence requires Network Rail to submit its RUS programme to ORR for approval. Its revised submission was made in March 2006, and ORR approval was granted. The main change was a delay of two years to the Network RUS due to complexities of the issues. Network Rail is developing RUSs to cover various routes across the rail network, starting with those not covered by RUSs produced by the SRA. Details of Network Rail's work can be found on its website[8].

4.21 There was some slippage compared with the draft programme published in Network Rail's Business Plan 2006.

4.22 The following RUS's were established in 2006-07:

South West main line RUS, established May 2006; and
Cross London RUS, established October 2006.

4.23 Published but not established in 2006-07 were:

Scotland RUS;
Freight RUS; and
the North West RUS.

4.24 Other strategies under development at the end of 2006-07 were:

Greater Anglia;
East Coast main line;
Yorkshire and Humberside;
South London;
Lancashire & Cumbria;
Wales;
Merseyside; and
Network

4.25 To manage the RUS process, Network Rail introduced a route planning team within its Planning and Regulation Directorate. This team has responsibility for Network Rail's 26 route plans and oversight of enhancements, and controls the 'Network Rail discretionary fund' (NRDF). Enhancements are delivered through a series of new route enhancement managers within each route. During the year, Network Rail has brought more analysis work in house, reducing its dependence on a small number of specialist consultants, and the head of route planning is currently scoping an expansion of his core team to include additional project management expertise.

4.26 In December 2006 we reviewed the parts of Network Rail's Network Licence relevant to RUSs, and its guidelines. Broadly we found Network Rail's process fit for purpose, but we made some specific recommendations for improvement which Network Rail is now incorporating. Details of these are published on our website[9].

Possessions

4.27 Most users of the railway, whether passengers or freight customers, have at some time experienced the frustration of disruption to their plans because of line closures caused by planned engineering work (possessions). This has been the case since long before privatisation but the disruption has increased in recent years. The volume of engineering work to renew life-expired assets has increased; in some cases Network Rail has sought longer possessions as a way of achieving the unit cost reductions required by the 2003 Access Charges Review. At the same time, demand for use of the railway has been increasing, not least in the evenings and at weekends when most possessions take place.

4.28 Network Rail is developing a number of important initiatives that are expected to reduce this level of disruption and to increase the efficiency of possession time. An international benchmarking study carried out for ORR in 2006-07 reported that, while Network Rail is at or near best-in-class in some areas, such as its use of high-output equipment, it is behind European best practice in others.

4.29 The productive time available during a possession is limited by the time taken to set up safe systems of work after the last train has passed, and to close them down safely when work is complete. This unproductive time needs to be reduced, and better processes using modern technology should enable this to be done. The 'Track occupancy permit' concept is being developed, and trials are underway to test how the new global system for mobile telecommunications (GSM) can support this.

----

[8] http://www.networkrail.co.uk/browseDirectory.aspx?dir=\RUS%20Documents&pageid=2895&root=

[9] http://www.rail-reg.gov.uk/upload/pdf/rus-review-090207.PDF

4.30 The productivity of engineering processes is also being examined. For example, further progress was made in 2006-07 towards the introduction of widespread modular renewals of switch and crossings by the end of CP3. This involves the pre-fabrication of new points in factories and delivering them on special rail wagons. Introducing such European best practice into Britain will shorten significantly the duration of many possessions while delivering higher quality renewals at lower unit costs – an all-round win.

4.31 Beyond such plans, Network Rail has also begun to develop a strategy for managing its engineering activities to provide a true '7-day railway' network availability. Many European networks already employ practices in which maintenance and renewal activities are confined to short possessions (which may be 8 hours or even less) and/or carried out while trains pass the site of work. This should be achievable by Network Rail, despite a number of significant challenges (eg. rethinking some current assumptions about single-line working and aspects of infrastructure design to enable slick bi-directional operation) that will need to be resolved before it can work routinely.

4.32 Network Rail will include 7-day railway initiatives as a key part of its Strategic Business Plan (SBP), to be submitted to ORR in October 2007, as the next stage in the 2008 Periodic review process.

Customer satisfaction with Network Rail

Network Rail's latest customer satisfaction survey shows that the perceptions of train operating companies (TOCs), freight operating companies (FOCs) and owning groups have improved, but they remain marginally negative for TOCs and are now neutral for FOCs.

4.33 This section reviews the results of the annual customer satisfaction survey that Network Rail undertakes (through its agency Ipsos MORI) and reviews Network Rail's action plan for addressing the issues identified.

4.34 The survey was carried out between mid-October and mid-November 2006 and represents changes in customers' perceptions (based on interviews with 244 senior managers) in the eight months since the last survey.

4.35 From the survey, the key measure that Network Rail uses to assess the satisfaction of its customers (TOCs) and freight operating companies (FOCs) and suppliers is the advocacy measure:

"Which describes how you best feel about Network Rail?
- I would be critical without being asked (-2)
- I would be critical if someone asked my opinion (-1)
- I would be neutral if someone asked my opinion (0)
- I would speak highly if someone asked my opinion (+1)
- I would speak highly without being asked (+2)"

Figure 8: Customer satisfaction survey results

Ipsos MORI

KPI – TOC/FOCs' attitudes to Network Rail

Measure: Advocacy Scale: 'I would speak highly of ... without being asked' to 'I would be critical of Network Rail without being asked'.
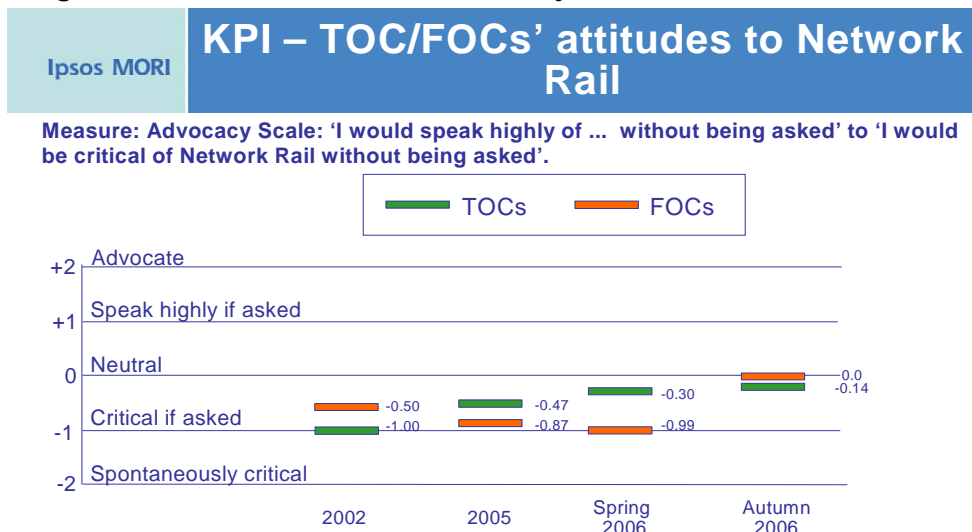
Base: All respondents

Source: Ipsos MORI

4.36 Figure 8 shows that the perceptions of TOCs, FOCs and owning groups improved between surveys, but they remain marginally negative for TOCs (at -0.41, compared with -0.30 in 2005-06) and are now neutral for FOCs (0.0 compared with -0.99 in 2005-06).

4.37 While there is clearly still some way for Network Rail to go to achieve healthy advocacy levels, this improvement in overall satisfaction is an encouraging sign and is to be welcomed. All facets of perception covered by the survey improved, particularly in the areas of trust and leadership.

4.38 The results show that Network Rail's customers are showing signs of thinking that the company:

- works in the best interests of the industry;

- is putting significant effort into delivering service improvements; and

- Is making crucial advances in gaining credibility with its customers, but the need to translate good intent into effective delivery and quality customer service right across the company clearly remains a priority.

4.39 Areas of perceived weakness include:

- the company does not understand its' customers businesses and does not adopt a sufficiently commercial approach; and

- communication with customers is sometimes slow.

4.40 The autumn 2006 survey provided a more comprehensive set of results than previous surveys and Network Rail was able to brief customer perspectives across both geographical and functional units. Bespoke presentations were made to all functional executive teams to apprise them of the results for their specific group. At a route level significant variations emerge across all dimensions. Kent is top for 11 out of 14 measures, Western is bottom for nine.

4.41 A new relationship management structure was implemented in early 2007 with senior personnel appointed to manage customer requirements on an individual customer basis. These teams have made substantial progress in raising the profile of customer issues internally, whilst acting as a mouthpiece at route executive level. The results for each customer were examined in detail by the new customer relationship executives (CREs), with 3,500 verbatim comments providing sufficient 'colour' to allow each team to present a flavour of the customer perspective to their local colleagues.

4.42 The results have been discussed in detail at senior level with each customer, to understand the priorities for Network Rail in improving the relationship going forward, and detailed action plans have been

developed in consequence. Customers were pleased to receive detailed feedback. Many CREs were invited to present the results to their senior TOC and FOC teams, which resulted in, for example:

- one TOC looking to undertake its own equivalent survey of Network Rail perspectives;

- TOC executives taking the time to support both joint and specific Network Rail training and leadership events by briefing their own perspective as part of an 'improved understanding' objective; some CREs implementing pulse checks of opinion to track and communicate emerging issues during the year;

- joint plans being implemented to coordinate enhanced engineering access with additional train services at key junctions; and

- cross-route briefings on customer visions and strategy and communication programmes to improve mutual understanding and present a consistent face to 'end-user' customers.

4.43 The customer service action plan concluded in the Spring of 2007, involving over 2,500 managers through briefing events and workshops. This workstream has now migrated to be incorporated within the 'world class' initiatives, with customers explicitly at the heart of new corporate values.

4.44 Network Rail appears to recognise the seriousness of the issues and is providing a significant level of attention to their resolution. Objective measurement of the effectiveness of the customer service action plan will be through the 2007 survey; no internal analysis of effectiveness of the training is planned. We believe that while the poor results should improve with staff training and implementation of a new relationship management approach. However the planned activity will be most effective if coordinated with functional activity to address the underlying causes of dissatisfaction.

Independent reporter

4.45 The independent reporter is satisfied that the process for conducting the surveys is statistically reliable and that the weightings applied are appropriate.

Recommendations

PPM

4.46 Network Rail needs to give particular emphasis to improving PPM for the worst performing operators, through identification and dissemination of good practice within the company.

Network Rail delay minutes

4.47 Network Rail should pay particular attention to reducing delay caused by overhead line and third rail faults, and signalling system and power supply failures.

4.48 Network Rail's attention to weather resilience generally, in terms of rail stressing, drainage, points heaters and lightning protection, for instance, must continue.

Planning

4.49 Network Rail should continue the collaborative approach to deliver further improvements in the planning process.

Possessions

4.50 Network Rail should continue to develop ways of reducing delay and disruption from engineering possessions.

Benchmarking

4.51 Network Rail should ensure that it uses the significant local variations in asset performance, delays and customer satisfaction to identify best practice and ensure that this is shared.

Network Rail continued to deal with discrepancies between actual and published infrastructure capability in accordance with its infrastructure capability plan, established following the licence breach declared in 2006.

Introduction

5.1   In this chapter, as well as considering specific capability measures, we also review changes in train mileage and some enhancements to the network. Under ACR2003, Network Rail is funded to maintain the capability of the network at the level that existed at 1 April 2001. Enhancements are generally subject to specific funding arrangements, while reductions are permitted through the network change process under of Network Code (Part G), generally as a result of changing traffic patterns.

Capability measures

5.2   Network Rail's annual returns track four physical network capability measures by mileage:

- linespeed;
- loading gauge;
- route availability; and
- electrification.

The Annual Return 2007 provides a breakdown of the network-wide data by operating route.

5.3   As noted in the 2005-06 assessment, data correction in the underlying asset information systems for recording and measuring network capability continues, which serves to obscure trends. ORR remains concerned at the length of time it is taking to reconcile the year-on-year figures. For example, the Annual Return 2007 indicated a reduction in the size of the network by 42 track kilometres from 2005-06 to 2006-07. Network Rail has stated this

is principally due to data cleansing. The reporter sampled network capability data as part of their audit of the Annual Return 2007. Some errors were identified, but the overall report was better than in previous years, indicating that data quality is improving.

5.4   Network Rail has carried out a programme to rectify discrepancies between actual and published capability identified in 2005, either to restore the route to its published capability or to revise the published capability on a permanent or temporary basis through Part G of the Network Code. It has proposed a new Part G mechanism for making temporary network changes that is currently under consideration by the industry. It has also carried out a verification of the capability of the network to ensure that the published capability matches the actual capability. Network Rail will complete this work in September 2007 and will discuss with the industry the best course of action for any new discrepancies identified. Alongside this work, Network Rail is proposing to include a cumulative tonnage measure in the definition of capability and is working to develop and provide justification for this.

Enhancements

5.5   During 2006-07, some welcome enhancements to capability were made, in many cases partially or totally funded by third parties. For example:

- the capability of the West Coast main line was further enhanced under the route modernisation project, with further increases in linespeed in a number of sections, for example from 100 to 125 mph north of Carlisle;

- Rugby to Stechford gauge cleared to W10 & W9 from W8;

- a new station at Liverpool South Parkway, combining the functions of the former Allerton and Garston stations;

- significant progress on new platforms at Edinburgh Waverley;

- new light maintenance depots (LMDs) opened in Manchester and York to service Siemens Class 185 diesel multiple units (DMUs) for Transpennine Express;

- a new LMD for First Great Western DMUs at Bristol; and

- a third platform at Bristol Parkway station.

5.6 Some schemes included in the Business Plan 2006 have not been implemented. Variance can be caused by a number of reasons, such as scope change, planned slippage to increase efficiency, or third party changes. Some examples of schemes yet to be implemented are such as:

- a new station originally planned to open at Shepherd's Bush in 2005-06, deferred to 2006-07 and not now expected to open until later in 2007;

- in June 2005, Network Rail submitted a network change proposal to remove the Wisbech branch from the operational network, but this has not yet been carried out;

- completion of a large new freight terminal at Donnington near Telford was originally expected in Autumn 2005, but construction has yet to start;

- Portsmouth resignalling, providing additional capability with reversible working from Havant to Portsmouth Harbour, was delayed from 4 February 2007 and Network Rail now plans to commission it on 29 October 2007;

- platform extensions in the Welsh Valleys delayed until 2008;

- re-connection of three terminal platforms to the national network at Birmingham Moor Street has been postponed to 2009 at the earliest;

- re-opening of the Partington freight branch has been cancelled; and

- re-opening of the Stirling – Alloa – Kincardine branch has been postponed until further notice.

5.7 The principal reduction in capability during the year was the closure of the Stratford – North Woolwich branch for partial incorporation into the Docklands Light Railway. The planned closure of the Folkestone Harbour branch has not yet taken place.

Congested Infrastructure

5.8 European Directive 2001/14/EC requires infrastructure managers to prepare annually a Network Statement of capability which sets out all the information a train operator wishing to use the network needs to know. This includes the capacity of the network, how that capacity is allocated and where the network has been declared 'congested'. This is where it is not possible for Network Rail to satisfy requests for infrastructure capacity adequately, e.g. being unable to offer a reasonable alternative to that requested. Network Rail was asked to report in its Annual Return 2007 on progress with relieving congestion points on the network. Its approach was to focus mainly on compliance with Directive 2001/14/EC.

5.9 In October 2006, Network Rail published its 2007 Network Statement[10] in which it declared three sections of infrastructure to be congested. The required capacity analyses were published in April 2007, and the corresponding capacity enhancement plans will be published during October 2007. However, there are many other locations where there is a known constraint on capacity allocation but which do not quite meet the criteria to be declared congested. Network Rail should not lose its focus on resolving these problems and should include proposals to address them in the RUS programme.

----

[10] http://www.networkrail.co.uk/documents/3640_network_statement_2008.pdf

5. Network capability

Train mileage

5.10 Network Rail was asked to report on annual train mileage for passenger train operators and freight train operators in the Annual Return 2007.

5.11 Table 1 summarises changes in train mileage in recent years. Passenger operators increased their train miles by one million miles (0.4%) in 2006-07 compared with an increase of five million miles in 2005-06. Freight train operators decreased their train miles by just less than one million miles (3.1%) in the same period, with a reduction of 521 (1.7%) million gross tonne miles.

5.12 These increases are lower than assumed in ACR2003.

Recommendations

5.13 Network Rail is recommended to:

• through the infrastructure capability programme, develop robust processes to ensure that published capability is consistent with actual capability; and

• implement the requirements of Directive 2001/14/EC and ensure that where possible it is aligned with the RUS process to provide a network statement of capability.

Table 1: Train mileage, 2003-04 to 2006-07

Million miles	2003-04	2004-05	2005-06	2006-07
Franchised passenger operators	263.3	262.9	267.8	268.8
Open access operators	3.9	3.6	4.1	4.1
Total passenger trains	267.2	266.4	271.9	272.9
Freight trains	29.7	28.3	29.0	28.1

Source: Network Rail's Annual Return 2007

6. Asset management

Introduction

6.1 In the 2006 annual assessment we described the work that we had initiated with Network Rail to examine the quality of their asset management processes. This investigation was carried out by the independent reporter for asset management and business planning (AMCL), and concluded with a full report in December 2006.

6.2 AMCL used its proprietary 'excellence model' to form a comprehensive evaluation of 20 key activities which together represent the range of technical, organisational and human capabilities that are needed to achieve world class asset management. The model itself has been developed from some 10 years of evolving worldwide best practice, including the Publicly Available Specification on Asset Management (PAS 55), published by the British Standards Institute in 2004.

Asset management is:

"Systematic and coordinated activities and practices through which an organization optimally manages its assets, and their associated performance, risks and expenditures over their lifecycle for the purpose of achieving its organizational strategic plan."

Source: BSI PAS 55 Specification for Optimised Management of Physical Infrastructure Assets

6.3 The evaluation used sets of detailed questions to examine, systematically and objectively, Network Rail's capabilities in each of its activities and to mark it against a number of assessment criteria. Scores are allocated to reflect the assessor's judgment of the degree of maturity that is found to exist. Figure 9 shows the 20 core activity areas (the 'spokes' of the wheel), with the concentric rings forming the five band scoring structure:

- 0 – 10% innocence
- 10 – 20% awareness
- 20 – 30% systematic approach
- 30 – 70% competence
- 70 – 100% excellence

Figure 9: Network Rail results from best practice review
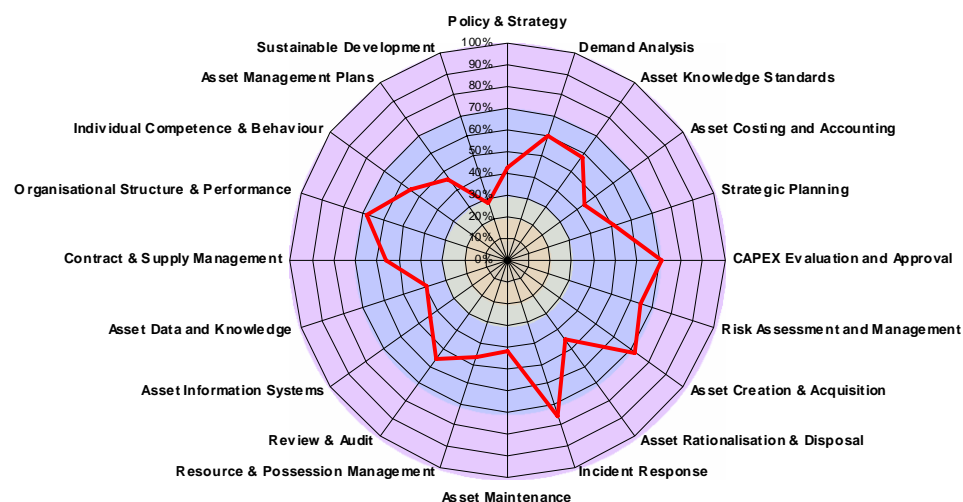
6.4 The shape of the score line reveals at a glance the overall assessment of the whole asset management process within Network Rail. It shows the highest capabilities in a number of critical processes such as:

- capital expenditure evaluation and approval;
- asset creation and acquisition (management of renewals and enhancement projects);
- organisational structure; and
- incident response.

6.5 Lower capability has been assessed in:

- asset data and knowledge;
- asset maintenance;
- asset costing and accounting; and
- sustainable development.

We comment further on some of these areas later in this section.

6.6 At this stage Network Rail is not benchmarked against any comparators and so it is not possible to rank the company in terms of a best practice, world class organisation. However, AMCL's evaluation did reach a number of key conclusions about how well Network Rail is doing.

Key conclusions from AMCL

Network Rail has a high level of motivation and commitment to delivering improvements in its asset management objectives, at both corporate and individual levels.

It has made good progress towards a coherent and holistic asset management regime. Many processes align well with good asset management principles.

In the reporter's opinion, Network Rail's maturity in asset management is at least comparable to other major infrastructure owners in the UK.

There are many potential opportunities for improving the asset management regime. The reporter made 48 specific recommendations, of which the most important was the need for Network Rail to further develop its asset policies. Such development can deliver significant savings in capital and operational expenditure.

Some processes need to be more integrated and aligned across Network Rail's organisation.

6.7 On the basis of this evaluation we welcome the focus that Network Rail is giving to asset management and the progress that it is making towards establishing a best practice regime. We note those areas in which Network Rail should be capable of implementing better practice, and especially those with a strong influence upon the long term costs of the railway. This evaluation is a particularly important element of our periodic view analysis of Network Rail's business plan for CP4, and we will be continuing to:

- monitor the company's development, prioritisation and implementation of improvements to its asset management regime;
- seek clear targets for these improvements; and
- seek further information about how Network Rail's regime compares with other infrastructure owners and operators.

Asset Knowledge

Network Rail continued the development of its asset information strategy with all key tasks due to be completed by 30 September 2007. This will be subject to thorough audit to confirm full compliance with Licence Condition 24.

6.8 Asset knowledge is of paramount importance within a good asset management regime. We continue to expend a great deal of effort in monitoring the progress Network Rail is making in improving this knowledge, not least through the major role played by the independent reporters.

6.9 The AMCL assessment shows that Network Rail's capabilities in asset knowledge are judged to be less well developed than in other aspects of asset management. The work of the independent reporter responsible for auditing Network Rail's annual returns (Halcrow) gives a detailed insight into the quality of a wide range of asset data.

6.10 Halcrow assign confidence ratings to each asset condition data set. As would be expected, long established monitoring measures such as track geometry and numbers of broken rails score the highest rating. Most other asset condition data has been assessed as being based upon sound records, which although not apparently 100% complete are considered to be accurate to within 5%.

6.11 The areas where data quality is not yet up to reasonable standards relate to:

- station condition - problems with the definition of this measure are well recognised, and a new measure has been agreed. Network Rail is now progressing a major survey programme that is expected to improve the overall quality of this data by the autumn of 2007);

- light maintenance depot (LMD) condition - reasonable records but poor levels of accuracy;

- condition of 3rd rail electrification contact systems – available data is not complete and relies heavily upon extrapolation of measurements that do exist);

- signalling failures - issues relate to subjectivity in recording and attributing delays, and to inconsistencies between two different computer systems; and

- rail defects.

6.12 The relatively low assessment of the accuracy of rail defect data is particularly disappointing as it reflects continuing delays in establishing a single, company-wide data management process. Network Rail had developed a new system known as Rail Defect Tracker (RDT). In the 2006 assessment we looked forward to an improvement in overall data accuracy that would result from this company-wide replacement of several different legacy systems. Although Network Rail had managed pilot schemes and was rolling RDT out more widely, that system has now been abandoned as it

was finally decided that it is too complex at the point of use. Further system design is again under way. The failure of this programme and the abortive costs associated with it are extremely disappointing. We expect Network Rail to correct this as quickly as possible.

6.13 Work to collect, update and improve the quality of key asset data continued during 2006-07. In parallel Network Rail is undertaking projects that will improve the availability of asset information, both within the company and more widely across the industry.

6.14 2007-08 will be a major milestone in this asset register work. Network Rail is scheduled to finalise the key elements of its programme to improve the completeness and quality of asset information, and the supporting systems, by the end of September 2007. We will then make a detailed assessment of whether Network Rail can be considered to be compliant with Condition 24 of its Network Licence, which requires it to establish and maintain up-to-date and accurate knowledge of the condition, capability and capacity of its assets. This will involve the independent reporter, who will audit asset data, review the processes for managing and updating it and review how this better information is being used to improve Network Rail's business decisions and its stakeholder engagement.

Network condition

6.15 In this section we set out our assessment of the overall state of the network infrastructure, based upon our monitoring of asset reliability and condition data to evaluate how well Network Rail is managing the infrastructure. Some measures, such as those for track geometry and signalling and structures condition, are assessments of asset quality. Other measures, such as records of asset failures, also provide an indication of underlying condition, but they demonstrate how the assets perform in service and hence influence the reliability of the railway that Network Rail delivers to its customers.

Infrastructure reliability

Network Rail has succeeded in reducing the overall amount of delay attributed to infrastructure causes during 2006–07, although it is not yet back to pre-Hatfield levels, and it has made notable progress in reducing delays caused by track circuit failures, signalling failures and temporary speed restrictions.

Elsewhere however, Network Rail has not met the challenges to continue to improve infrastructure reliability. There has been an increase in the number of infrastructure incidents this year, the first under Network Rail's management. While this is not universal, the issues are widespread. Of particular concern are the number of track faults, the continuing high level of points failures and issues relating to electrification and power supply equipment.

Network Rail has demonstrated that it *can* deliver improvements in certain asset categories and on some routes. It has to do more to turn partial success into wider improvement in all aspects of its delivery.

6.16 The reliability of the infrastructure is assessed by analysing asset failure data and the consequential train delay impacts.

6.17 In 2006-07 the proportion of infrastructure caused delays remained at just over half of all the train delay minutes attributed to Network Rail. Tables 2 and 3 are the basis for this section of our assessment. They present the key figures and show how they compare with previous years. In particular:

• delay from infrastructure causes was 5,334,164 minutes, a reduction of 5% compared to 2005-06;

• there were 58,215 infrastructure incidents in 2006-07, compared to 56,460 in 2005-06; and

• this combination of less delay from more incidents means that the average delay per incident has also fallen – for the fifth successive year. It is now below 100 minutes for the first time under Network Rail.

Table 2: Number of infrastructure incidents, total infrastructure delay, and average delay per incident, 2002-03 to 2006-07

Year	2002-03	2003-04	2004-05	2005-06	2006-07
Number of incidents	65,215	65,036	58,546	56,460	58,215
Delay from infrastructure incidents (minutes)	8,404,420	7,886,110	6,044,488	5,623,806	5,334,164
Average delay per incident (minutes)	129	121	103	100	92

Source: Network Rail's Annual Return 2007

6.18 The data needs to be interpreted with care, but on the face of it there is still much good news. Overall delays have fallen for five successive years, mirrored by improving performance in incident response. However, in 2005-06 all three measures showed an improving trend, even though the rate of year on year improvement clearly slowed down. It is a matter of some concern that the trend in infrastructure incidents was reversed in 2006-07. Even though this is by the relatively small margin of 3%, it is the first time that it has increased under Network Rail, and it is not what we expected.

6.19 In the 2006 assessment, we commented that the immediate gains made by Network Rail's decision to take direct responsibility for maintenance appeared to have been consolidated and that sustained effort would be required to deliver further performance improvements, especially in those areas where levels of performance had been disappointing. Table 3 clearly shows those areas where Network Rail has succeeded in these efforts, as well as those where it has not.

6.20 Table 3 shows the amount of delay and the number of incidents recorded in each of 18 categories over the period 2002-03 to 2006-07. It presents a very mixed picture:

- in eight of the 18 categories, the lowest level of attributed delay for five years;

- in seven of the 18 categories, total delay increased in 2006-07; and

- in 12 of the 18 categories there were more incidents in 2006-07 than in 2005-06; in seven categories the number of incidents was the *highest* in 5 years.

6.21 The good news from Table 3 is in respect of those major categories where both the total number of incidents and the associated delay fell significantly in 2006-07. They were are the lowest levels in 5 years in respect of:

- track circuit failures;

- temporary speed restrictions (TSRs) due to track condition;

- signal failures; and

- level crossing failures.

6.22 Areas where Network Rail's performance continued to be disappointing were:

- track faults (the highest total of delay minutes in 2006-07);

- points failures (the highest number of incidents in 2006-07);

- signalling system and power supply failures;

- electrification faults - overhead line and third rail; and

- cable faults.

Table 3: Delay by infrastructure incident category, 2002-03 to 2006-07

Infrastructure categories	Total Infrastructure delay (minutes)					Number of incidents*				
	2002-03	2003-04	2004-05	2005-06	2006-07	2002-03	2003-04	2004-05	2005-06	2006-07
Points failures	1,206,543	1,065,887	882,872	834,976	829,316	10,844	9,802	8,769	8,717	9,079
Level crossing failures	168,363	142,037	134,181	126,421	115,817	3,050	2,794	2,725	2,657	2,365
TSR's Due to Condition of Track	1,085,208	809,947	530,427	566,211	347,642	4,078	3,860	3,134	2,800	2,201
Broken Rails/Track Faults	1,178,882	1,244,069	849,711	925,259	924,108	6,545	7,450	5,778	6,293	7,681
Rolling contact fatigue	250,750	74,378	19,046	14,477	9,253	640	219	98	71	91
Lineside structure defects	332,341	274,968	234,619	124,904	144,548	1,067	1,090	840	611	695
Other infrastructure	582,746	610,463	441,227	386,547	340,579	7,027	8,219	7,951	7,960	8,556
Mishap - infrastructure causes	53,061	107,970	80,707	72,018	86,707	203	308	379	468	741
Fires starting on infrastructure	60,911	81,642	45,887	41,766	33,513	424	513	282	314	285
OLE/Third Rail faults	350,894	395,062	292,970	244,346	336,596	1,547	1,475	1,616	1,493	1,706
Signal Failures	509,725	510,991	434,036	390,671	345,314	9,160	9,119	8,301	8,141	7,369
Track Circuit Failures	1,418,682	1,269,960	1,058,772	985,535	818,361	10,668	9,935	9,232	8,568	7,964
Signalling System & Power Supply Failures	482,853	572,099	410,155	368,535	434,195	3,494	3,719	3,449	3,272	3,998
Other signal equipment failures	133,160	130,046	106,218	72,289	77,395	2,591	2,653	2,354	1,735	1,706
Telephone failures	44,014	48,806	42,513	56,409	45,071	1,008	994	1,060	1,067	1,220
Cable faults (signalling & comms)	146,318	193,616	141,302	155,919	175,480	423	535	445	470	628
Change Of Aspects-NFF	42,542	18,993	15,830	12,060	14,516	534	342	274	231	242
Bridge strikes	357,427	335,176	324,015	245,463	255,753	1,912	2,009	1,889	1,593	1,688
Total Asset Failures	**8,404,420**	**7,886,110**	**6,044,488**	**5,623,806**	**5,334,164**	**65,215**	**65,036**	**58,576**	**56,461**	**58,215**

Source: Network Rail's Annual Return 2007

6. Asset management

6.23 Table 3 does not show the breakdown of these figures across the eight operating routes (Western, London North Eastern, London North Western, Scotland, Kent, Wessex, Sussex, Anglia). However, Network Rail's Annual Return 2007 does show this information for numbers of incidents, and a number of issues are worth highlighting:

- Only Scotland recorded an overall reduction in numbers of incidents (4%);

- four other routes (LNE, LNW, Kent, Anglia) effectively recorded 'no change' from 2005-06, with variances within 1%;

- Wessex (22%), Sussex (13%) and Western (5%) recorded increased numbers of incidents; and

- performance on certain routes differed considerably from the national trend, e.g.:
    - electrification faults increased in all routes except Scotland;
    - track faults also increased in all routes except Scotland;
    - condition of track TSRs fell in all routes except Western; and
    - track circuit failures fell in all routes except LNW.

Asset quality

6.24 Analysis of the reliability of the infrastructure is supplemented by other measures of asset condition. A number of these are combined into an 'asset stewardship index' (ASI), which is composite index covering the key elements of the infrastructure. It was introduced at the time of ACR2003 to present a single quantified measure of the overall condition of the network, and it is calculated so that the combination of targets for each component at the end of CP3 in 2008-09 generates a single ASI target of 1.0.

6.25 Table 4 shows that the fall in the index continued in 2006-07, representing a further overall improvement in network condition. Table 5 shows how individual measures of the principal asset categories are weighted within the ASI.

Table 4: Asset stewardship index, 2002-03 to 2006-07

	2002-03	2003-04	2004-05	2005-06	2006-07
Year end ASI	1.20	1.09	0.90	0.80	0.72
Network Rail target			1.06	0.85	0.78

Source: Network Rail's Annual Return 2007 and ACR2003

Table 5: Component measures and weighting of the ASI, 2002-03 to 2006-07 (Source: ACR2003 and Network Rail data)

Asset category	Asset measure	Weighting	2006-07 actual	2008-09 target level
Track	Track geometry	20%	0.81	1.0
	Broken rails	15%	192	300
	Level 2 exceedences	15%	0.72	0.9
Signalling	Points/track circuit failures	10%	17,038	19,360
	Signalling failures	20%	22,704	28,750
Electrification	Electrification failures	10%	80	133
Structures and Earthworks	Structures and Earthworks related TSRs	10%	40	100

Source: Network Rail's Annual Return 2007 and ACR2003

6.26 The reduction in the ASI from 2005-06 confirms that the condition of the network, when measured and weighted in this particular fashion, continued to improve during 2006-07. In all seven of the component measures Network Rail outperformed ORR targets set in ACR2003. It has surpassed the 2008-09 targets and it is ahead of its own more onerous targets set in the Business Plan 2006, with the exception of signalling and electrification. The equivalent regional measure for Scotland shows a similar improvement.

6.27 However, the strongly positive performance suggested by the latest ASI figure does not entirely represent the complete story about network condition. The following asset-specific commentaries highlight a number of key issues.

Asset commentaries

Track

6.28 Half of the ASI weighting accounts for three indicators of track condition, each of which continued to improve in 2006-07. The management of track geometry continued the improving trend of recent years, and the network figure for poor track geometry has fallen from 2.8% in 2005-05 to 2.6% in 2006-07. This is despite understandable setbacks in the long dry summer of 2006, when track geometry was particularly susceptible to drying out of clay foundations.

6.29 However, the most notable achievement in 2006-07 was the reduction in the number of broken rails, down to 192 from 317 in 2005-06 (Figure 10). It is now well ahead of the regulatory target. This is considered to be the result of improvements to rail inspection methods and equipment, continued high levels of re-railing, further increases in the amount of rail grinding and the low impact of the mild winter of 2006-07.

6.30 These are very good figures, but there are still significant challenges for Network Rail in its management of the track assets. In the 2005-06 assessment we highlighted concerns about the occurrence of track faults and condition of track TSRs. There were significant differences in the actual performance in these two areas during 2006-07.

6.31 For condition of track TSRs we have already noted and welcomed the significant reduction that has been achieved. The number of incidents fell from 2,800 to 2,201, and the total delay minutes are down from more than half a million to 347,642. Network Rail's own challenging targets are certainly driving real improvements in this

category and good progress is being made to improving asset condition in order to achieve more fully the published line-speed capabilities.

Figure 10: Number of broken rails and ACR2003 target
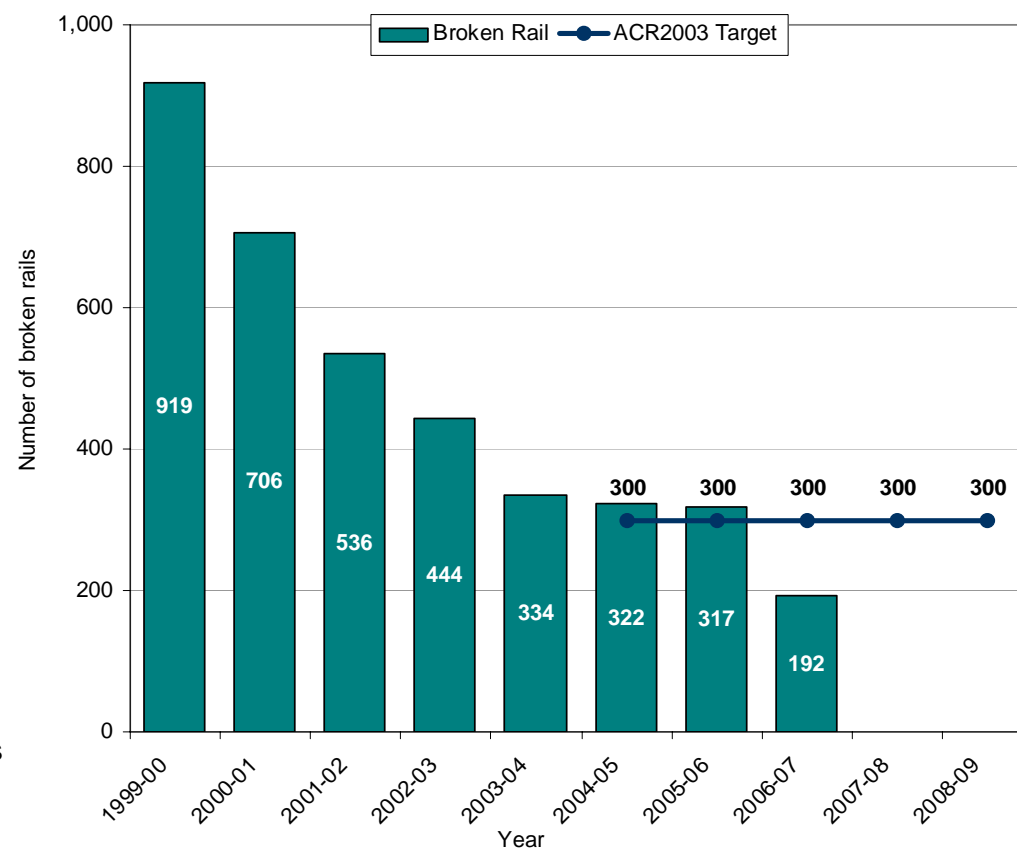
Source: Network Rail annual returns and ACR2003

6. Asset management

6.32 Table 6 and Figure 11 show the trends in numbers of TSRs on the network as measured by the total number in place at the end of each period. The improving trend from previous years was sustained through 2006-07.

6.33 The same success was not achieved in the number and management of track faults. These increased in 2006-07 to their highest level for 5 years, and they were the category that caused the most delay (924,108 minutes). The reasons for this require careful examination. At face value, such a figure appears to be at odds with the improvements in measured asset condition that are discussed above – most obviously with the reduction in broken rails, for which associated delays are also counted in this category.

6.34 We do not consider that the amount of delay being attributed to track faults indicates an underlying deterioration in the overall condition of the whole track system. However, it does appear that particular challenges continue to exist in the management of defective rails (especially where the detection of defects requires the imposition of emergency speed restrictions). We note that Network Rail's Annual Return 2007 shows:

- the number of isolated rail defects *decreased* in 2006-07, from 20,605 in 2005-06 to 18,455 at the end of March 2007; and

- the amount of continuous rail defects *increased* in 2006-07; from 1,841 km at the beginning of the year to 2,008 km at the end of March 2007.

6.35 This supports the hypothesis that an increase in rolling contact fatigue (RCF) is at least partly responsible for the increase in track faults, not least because Network Rail's procedures give more urgent attention to low-order rail defects where they occur in combination with RCF. This is an issue which is known to be occurring particularly on routes where new trains with modern bogie design and stiffer suspensions have been introduced e.g. Wessex. Network Rail is investigating how to manage these

Table 6: Number of TSRs in place at the end of the year, by cause

	2000-01	2001-02	2002-03	2003-04	2004-05*	2005-06	2006-07
Condition of track	463	370	355	325	n/av	301	249
Rolling contact fatigue	256	62	15	5	n/av	0	0
Work in progress	62	85	63	53	n/av	63	63
Other	127	139	104	74	n/av	45	37
Total	908	656	537	457	470	409	349

Source: Network Rail's network condition data

* Network Rail only reported aggregate data for part of 2004-05

Figure 11: Number of TSRs on the network by category (at the end of the 4 week reporting period), 2000-01 to 2005-06
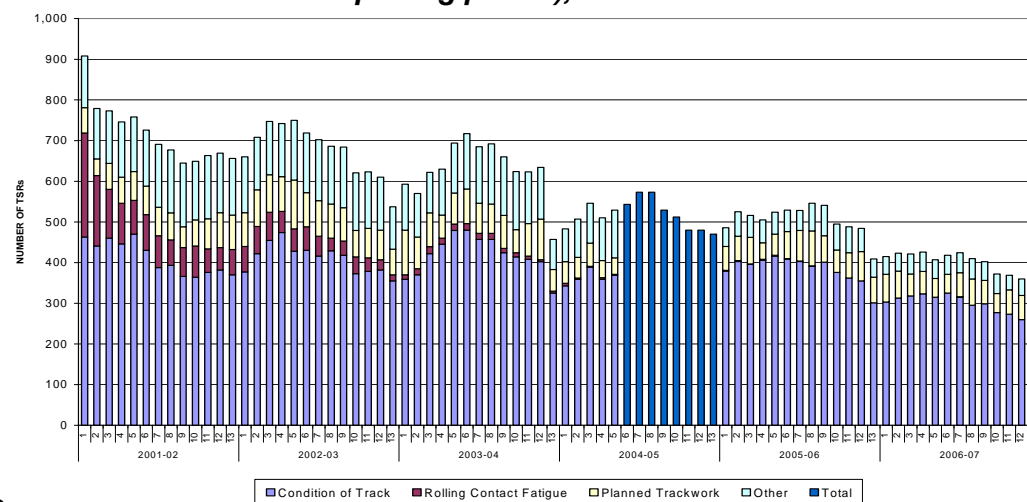
Source: Network Rail data

Note: There were eight periods in 2004-05 when only aggregate numbers of TSRs were available from Network Rail.

effects and is working with train operators through the industry's system interface committees to find the optimum solution for this wheel-rail characteristic.

6.36 We are also examining the wider issues from this development for other routes where there is a risk that network condition and hence performance and reliability may degrade rapidly with any significant increase in traffic type and/or volume.

Signalling

6.37 Signalling is a complex system and there is no single measure that provides a high level summary of the condition of the signalling system. We therefore consider the number of signalling failures as an indication of the serviceability and reliability of the asset, and the assessed condition of signalling interlockings as an indication of the overall residual life of the equipment.

6.38 In respect of the serviceability and reliability of signalling equipment, ORR monitors two types of failure data: the number of failures causing delay of more than ten minutes and the total minutes of delay for all failures, as collected by Network Rail's delay attribution system (TRUST). Both methods confirm an improvement in the reliability of the signalling system in 2006-07.

6.39 Table 7 shows the number of signalling failures. Key points are:

- there were 22,704 incidents causing more than ten minutes of delay in 2006-07, continuing a four-year improving trend. We note, however, that the year-on-year rate of improvement is declining;

- although this particular measure does not distinguish between various types of failure, Network Rail's TRUST system does. Table 3 shows the various categories to which signalling system delays are attributed. Excluding track circuit and points failures (which can be caused by track problems as well as faults with the signalling equipment), 18% of all recorded delay minutes in 2006-07 was

Table 7: Number of signalling failures resulting in total train delay of more than ten minutes, 2000-01 to 2006-07

Signalling failures	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Causing delay of more than 10 minutes	25,106	27,905	29,013	28,098	24,950	23,367	22,704
ACR2003 serviceability target	n/app	n/app	n/app	n/app	No deterioration from 2003-04 network level (28,098)		

Source: Network Rail's annual returns

caused by other signal failures, system faults (including power supply) and level crossing failures, the same as in 2005-06 and 2004-05;

- track circuits and points failures accounted for 31% of all infrastructure delays in 2006-07. Overall delay from these causes was 9% less than in 2005-06, but this hides the fact that the number of point failures increased by 4%. The delay caused by points failures was marginally better than in 2005-06 (less than 1%) but track circuit failures fell by 7% and the consequential delay also fell, by 17%;

- delay from all signalling related failures was 5% less in 2006-07 than in 2005-06 and failures fell by 2%; and

- excluded from the above are cable faults. 2006-07 saw a significant increase in the number of cable theft incidents which result in reports of cable faults. Consequential delay in 2006-07 was 13% higher than in 2005-06. The increase in copper theft is attributed to the increase in demand for copper world-wide.

6.40 As Table 8 shows, the average condition grade for signalling has remained constant at 2.4. This meets the ACR2003 target, which requires no deterioration over the control period.

6.41 Consideration of signalling asset condition based upon existing residual life assessments is not straightforward, as the data is neither complete nor totally consistent. A number of variants of Network Rail's 'signalling infrastructure condition assessment' (SICA) tool have been used to assess residual life, and not all signalling interlocking areas have been assessed. Network Rail planned to complete an assessment of all interlockings by the end of 2006-07, but this was not achieved.

6.42 Table 8 indicates that the total number of interlockings assessed decreased, despite 257 surveys being carried out in the year. The reported decrease is the result of a process review which identified some solid state interlocking (SSI) cubicles which had been counted on the basis of a summary survey only. Network Rail plan to re-assess these in 2007-08. A further 26 interlockings are less than 5 years old and do not require to be assessed.

Telecommunications

6.43 There has not been the same reporting requirement of Network Rail for telecommunication assets as exists for other asset types. This recognises that the existing fixed telecoms network (cable and transmission systems) only came back under direct Network Rail control on 1 April 2005. These assets had previously beenoperating under a finance lease arrangement since rail privatisation in 1994. Much of the existing equipment is due to be replaced by the 'global system for mobile telecommunications – railway' (GSM-R) project, or is already being replaced by extensive renewals of the fixed telephone network (FTN).

6.44 There are two relevant reporting measures both of which show an increase in numbers of failures in 2006-07. In the case of telephone failures, the number of failures was 14% higher than 2005-06 but the delay minutes caused was 10% less. At 1,220 failures in the year this is a five year high.

Table 8: Signalling condition

Condition grade*	Observed nominal residual life (years)	Cumulative total and % of interlocking areas in condition band						
		2000-01	2000-02	2000-03	2000-04	2000-05	2000-06	2000-07
1	>20	0	31 (3%)	15 (1%)	0	5 (0.3%)	8 (0.4%)	3 (0.2%)
2	Oct-20	441 (70%)	671 (64%)	655 (64%)	736 (53%)	782 (52%)	1024 (63%)	965 (63%)
3	03-Oct	162 (26%)	262 (25%)	295 (29%)	559 (40%)	626 (41%)	530 (33%)	520 (34%)
4	<3	27 (4%)	79 (8%)	67 (6%)	98 (7%)	97 (6%)	51 (3%)	20 (1%)
5	At end of life	0	0	0	0	0	0	14 (0.9%)
	Total assessed	630	1,043	1,032	1,393	1,510	1613	1522
	Average condition grade	2.3	2.4	2.4	2.5	2.5	2.4	2.4

Source: Network Rail's Annual Return 2007

6.45 As reported in the signalling section, cable faults have increased significantly as a result of cable thefts. The new fixed telephone network (FTN) will be predominantly fibre-optic and should ultimately reduce the likelihood of damage caused by theft.

Civil Engineering Structures

6.46 The structures heading covers the long-life civil engineering assets of:

- bridges and viaducts;
- tunnels;
- earth structures such as cuttings and embankments;
- retaining walls and coastal defences; and
- drainage culverts.

6.47 Many date from the original construction of the railway and where they are required to carry traffic they do so at volumes and loads far above the original design intent. Thorough inspection and appraisal regimes are therefore necessary for adequate and timely maintenance and renewal interventions, to ensure no overall deterioration of the network capability.

Bridges

6.48 The condition of bridges is reported in Network Rail's Annual Return 2007, where they are assessed on a scale of 1 to 5 (1 represents very good, or as new, condition through to 5 which represents poor condition). This banding relates to the results of detailed bridge inspections where each individual structure is allocated a 'structures condition marking index' (SCMI) score from 1 to 100. Table 9 shows the average condition grades measured over recent years. The grade for 2006-07 was 2.2, representing a slight drop on the figures for the previous three years. The cumulative average for 2000-07 is 2.1.

6.49 The key issue is the continuing low rate of structures examination. Network Rail's company standards require a detailed condition survey of each bridge at a normal interval of six years. Network Rail inspected 4,344 bridges in 2006-07, bringing the six year total to 24,172. This is only just over 60% of the total population.

6.50 In 2005-06, Network Rail said it expects to complete an SCMI inspection of all accessible bridges by April 2008. In the Annual Return 2007 that target is now stated as 2008-09. Even allowing for the fact that there is some known lag between actual inspection and the calculation of SCMI scores, at the current rate of inspection this target would appear to be unachievable. We can only conclude that Network Rail continues to be well behind on its inspection programme, and we are particularly disappointed that despite the emphasis in the 2006 assessment on the need to focus on reducing the backlog, the reported number of inspections in 2006-07 was well below those in the previous two years.

Table 9: Bridge condition index

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	00-01 to 06-07 overall
Average condition grade (1-5)	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.1
Total number of bridges assessed	1,015	1,421	4,255	3,718	5,004	5,430	4,344	25,187

Source: Network Rail's Annual Return 2007

6.51 The independent reporter (Halcrow) expressed a number of concerns about the management of the SCMI process, including accuracy, progress and document management. The SE territory also has specific access problems caused by busy lines and a multitude of tenanted arches, which can restrict access and have led to a significant backlog. The reporter has made specific recommendations to improve the overall situation and ORR expects Network Rail to consider these and address the problems identified. Network Rail has indicated that they plan to use a new electronic database called the 'civils asset register and electronic reporting system' (CARRS) now delayed until second half of 2007. This will enable reports to be received electronically by Network Rail and allow the company to deal with a number of the reporter's recommendations.

Earthworks

6.52 Network Rail reported that 90 embankment or cutting slopes became unstable in 2006-07, three of which led to serious derailments. Two of these were passenger trains and are the subject of ongoing RAIB investigations. Notwithstanding the possible impact of high rainfall last winter, ORR are concerned that this failure rate is more than double the 2005-06 total of 41. The regulatory target is based on no deterioration since the 2003-04

level of 47. The increase is despite a review of inspection processes undertaken after the previous year's derailments. Network Rail has reported that it has increased focus and resources on earthworks drainage in order to reduce the level of failure.

6.53 There were 33 sites where a TSR was imposed due to poor earthwork condition in 2006-07, up from 28 in 2005-06. However severity scores were reduced from 116 to 98. In the Annual Return 2007 Network Rail attributes this reduction to improved management of earthworks failures. While this is commendable, the significant increase in actual failures remains of concern.

Electrification

6.54 As with the signalling assets, ORR currently monitors two versions of failure data for electrification equipment. The Annual Return 2007 reports the total number of major incidents that caused train delays of 500 minutes or more.

6.55 Table 10 reports on these major incidents and shows that in 2006-07 the overall reliability of electrification equipment fell back to the levels of 2004-05, with 80 major traction power supply failures, compared with 55 in 2005-06, an increase of 45%. Both AC and DC systems contributed to this increase.

6.56 Table 3 shows how Network Rail's delay attribution system records all electrification failures, as opposed to the major incidents discussed above. There was a disappointing increase of 40% in delay minutes and 14% more incidents compared with the previous year. Power supply incidents causing delay of more than 500 minutes were up by 66% compared with last year and returned to 2002-03 levels of unreliability.

Table 10: Traction power supply incidents causing over 500 minutes delay

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	ACR2003 Target
AC System (OLE*)	88	107	102	79	71	49	69	88
DC System (3rd rail)	45	30	32	33	13	6	11	45
Total	133	137	134	112	84	55	80	133

Source: Network Rail's Annual Return 2007

* OLE – overhead line equipment

Operational property

Stations

6.57 Network Rail is revising the inspection regime that drives the station condition score reporting. As reported in the Annual Return 2007, it was agreed with Network Rail that a lower number of surveys than would be expected could be used in 2006-07 to arrive at the annual condition score, pending a complete revision of the scoring methodology. The numbers of stations surveyed were thus:

- Category A (national hub)   2
- Category B (regional hub)   14
- Category C (important feeder) 55
- Category D (medium, staffed)   55
- Category E (small staffed)   130
- Category F (small, unstaffed)   0

6. Asset management

6.58 Seventy category F stations were previously surveyed and these were included in the score. Table 11 shows that the overall score for the network in 2006-07 was 2.24, slightly lower than in 2005-06. This remains within the target figure of 2.25, but given the ORR's reservations previously expressed about the issues of data consistency, and the known weaknesses of the existing station condition index, it is not possible to confirm that the score is a true reflection of the condition of all stations.

6.59 Table 12 provides a breakdown of station condition by route and by home country. It shows only minor changes compared with last years position. 86% of the network's stations are located in England and Wales and of these 73% have a condition grade of 2 or better compared with the network figure of 76%. The overall score for England and Wales is adversely affected by the south east routes of Kent, Sussex and Wessex where only 36% of stations have been given grades of 2 or better. Scotland has 14% of the total number of stations and 95% are grade 1 or above. Firm conclusions on all of these results is not possible in view of the unreliability of the data noted above.

6.60 Other points of note during the year were:
- work on London Victoria roof and elements of Kings Cross works were deferred, with £1.2 million of this money being spent at Crewe instead. The Kings Cross renewal and enhancement schemes have now been integrated under a single delivery team. The Victoria roof work in now to be considered as part of the station's Masterplan works;
- renewal of major structural elements at Euston was found not to be needed, due to better than expected condition;
- station renewals in East Anglia were ahead of plan with work brought forward at various sites on the Liverpool Street -Tilbury - Southend and Harwich routes; and
- £4 million extra was spent at stations in the North West due to additional availability of possessions.

Table 11: Station per condition grade and overall condition score, 2000-01 to 2006-07

Condition grade	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Grade 1	112	125	123	105	151	154	137
Grade 2	1,756	1,769	1,773	1,815	1,766	1,787	1,764
Grade 3	532	555	594	572	582	561	604
Grade 4	9	9	9	8	6	4	3
Grade 5	0	0	0	0	0	0	0
Total	2,409	2,458	2,499	2,500	2,505	2,506	2,508
Overall grade	2.2	2.25	2.25	2.25	2.23	2.22	2.24
ACR2003 target					No worse than 2003-04 average		

Source: Network Rail's annual returns

Table 12: Station condition index by route, 2007

Operating Routes	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	2006-07
London North Eastern	40	286	54	0	0	380
London North Western	29	519	56	1	0	605
South East – Anglia	8	215	17	0	0	240
South East – Kent	1	70	110	1	0	182
South East – Sussex	1	52	122	1	0	176
South East – Wessex	0	77	127	0	0	204
Western	1	280	105	0	0	386
England & Wales	**80**	**1,499**	**591**	**3**	**0**	**2,173**
Scotland	**58**	**268**	**14**	**0**	**0**	**340**
Network total	**138**	**1,767**	**605**	**3**	**0**	**2,513**

Source: Network Rail's Annual Return 2007

6. Asset management

Light maintenance depots (LMDs)

6.61 The LMD condition score stayed constant at 2.58 with 27 more depots surveyed. The inspection of all LMDs is due to be completed in 2007-08, two years later than planned, delaying final confirmation from ORR of the baseline target condition score.

Recommendations

6.62 Network Rail is recommended to:

- further develop its asset policies, supporting justifications and asset management regimes in line with recommendations of the independent reporter;

- address the areas of lower capability found by the AMCL excellence model, i.e. asset data and knowledge, asset maintenance, asset costing and accounting and sustainable development;

- reverse the current trend of increasing asset unreliability in some areas and maintain continuous improvement in the reduction of delay minutes caused, particularly in track faults, points failures, and issues relating to electrification and power supply;

- implement a strategy to catch up the backlog of structural inspections, prioritised on a risk basis;

- improve the quality of systems (such as CARRS) and collected asset data (for example knowledge of specific asset types and extending currently incomplete data or ensuring that inspection schedules are met), particularly where this information is key to effective asset management and needs further improvement, such as rail defect data and structural inspections; and

- improve focus on the utility of design, timely development and effective delivery of asset information management systems.

Introduction

7.1 Renewal activity on the network is measured by volumes of work undertaken on an annual basis for the various asset categories. There have been significant and essential increases in renewal activity in recent years, and this has continued into 2006-07. However, year on year comparisons are not necessarily appropriate for all asset types, particularly the longer life assets such as bridges and tunnels. Improved maintenance regimes can also affect the timing of renewals required and renewal activities may be deferred or brought forward to ensure that benefits of efficient delivery can be maximised. This can be achieved for example by combining renewal of asset components under a single possession.

> Track renewal volumes remained at high levels in 2006-07 albeit less than the peak level achieved in 2003-04. However in other areas, such as structures and signalling renewals, the levels of measured activity volumes in 2006-07 were more mixed.

7.2 As provision was made in ACR2003 for increased levels of renewal activity, this assessment asks important questions about value for money and whether Network Rail is actually delivering asset renewals at the rate it has claimed to be necessary for sustainability of the network. For reasons that are explained in detail below, we conclude that this year's figures do not necessarily reflect a serious under-delivery against actual plans. To assist in this judgement Network Rail has introduced a composite activity volume measure, but further discussions are necessary before its effectiveness can be established. Network Rail needs to continue to improve the way it reports asset renewals activities and hence how it is demonstrating value for money.

Track renewals

7.3 Table 13 shows how track renewal volumes increased after 2001-02 to reach a peak in 2003-04. The volume of plain line renewal was significantly lower in 2004-05, but increased again in 2005-06 and 2006-07. The volume of switch and crossing renewals fell in 2006-07 after running at a level above 500 units a year for the previous two years, reflecting a rebalancing between full and partial renewal.

Table 13: Track and signalling renewal volumes 2000-01 to 2006-07

Renewal Activity	2001-02		2002-03		2003-04		2004-05		2005-06		2006-07	
	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual
Rail renewal	790 km	983 km	1,142 km	1,010 km	1,198 km	1,401 km	874 km	816 km	1,002 km	1,120 km	1,007 km	1,028 km
Sleeper renewal (all types)	557 km	636 km	625 km	666 km	849 km	837 km	695 km	670 km	733 km	744 km	782 km	738 km
Ballast renewal (all types)	648 km	624 km	775 km	665 km	985 km	812 km	690 km	685 km	752 km	798 km	986 km	850 km
Switch and crossings	N/A	136 units	297 units	254 units	393 units	373 units	539 units	511 units	507 units	520 units	407 units	439 units
Signalling (signalling equivalent units)	N/A	1,440	N/A	810	N/A	604	N/A	1,678	254	278	669	401

Source: Network Rail's Annual Return 2007 and forecasts from Network Rail's business plans

7.4 These renewal volumes for 2006-07 are close to Network Rail's planned volumes for the year:
- rail renewal: 2% more than planned;
- sleeper renewal: 6% less than planned;
- ballast renewal: 14% less than planned; and
- switch and crossings renewal: 8% more than planned.

Renewal volumes in Scotland were marginally higher than planned.

7.5 We are examining what constitutes a 'steady state' of asset renewal as part of our periodic review work for CP4.

7. Renewal activity

Signalling renewals

7.6 2004-05 marked the start of a significant ramping up of activity in signalling renewals and table 13 shows that the rate of signalling renewal in 2006-07 has increased significantly from 2005-06 but failed to achieve the forecast figure. The actual renewal increased from 278 to 401 (44% increase). The difference between the actual value and the forecast value of 669 is largely the result of the renewal of signalling in the Portsmouth area not taking place as planned (further details below). As a result Network Rail only completed 60% of the forecast signalling renewals in 2006-07.

7.7 There should be continued growth in signalling renewals in 2007-08. Network Rail has a very demanding programme, which will have to be controlled carefully if the planned outputs are to be achieved. We will continue to monitor closely the progress of the signalling renewal programme.

Portsmouth re-signalling

7.8 Failure to complete planned re-signalling work during a blockade in early 2007 led to reduced levels of train service operating between Fratton and Portsmouth Harbour for a prolonged period. Contingency plans implemented by Network Rail have enabled it to increase service levels progressively to the current five per hour each way, but the full service (seven trains per hour) is not due to be restored until the autumn. We found that Network Rail had failed to identify and address adequately the risk and consequences of such a failure in its management of the project during the autumn of 2006. A major contributory factor was Network Rail's failure to manage its main contractor, Siemens, effectively even after it became apparent that the project was in difficulty. ORR concluded that Network Rail breached its network licence in its management of the Portsmouth re-signalling project.

7.9 Network Rail has given itself a demanding programme of signalling renewals. Its business plans show expenditure in this area increasing by a factor of more than three over the current control period (CP3, 2004-09) and remaining at this high level in CP4 (2009-14). With limited availability of key resources, both of staff and of network access, this will make great demands on the company and the supply industry. Little more than a year ago, problems with another re-signalling scheme in Cheshire (Sandbach-Wilmslow) led to a similar hiatus in services. On that occasion we accepted that Network Rail acted reasonably in difficult circumstances, but warned that it must strive to avoid a repetition. While tackling the technical and resource challenges of its re-signalling programme, it must ensure that it also gives sufficient importance to maintaining services to customers, and does all that it reasonably can to achieve that.

Telecommunications renewals

7.10 Although there is no detailed activity volume data for telecommunications within Network Rail's Annual Return 2007, work on FTN and GSM-R project is progressing.

7.11 The replacement of Network Rail's FTN and introduction of the GSM-R train radio system substantially replaces the existing cable, transmission and radio networks. Work on the replacement network is planned to continue until 2013 so it will be some years before the new network is fully operational. However, installation work continues across the country, substantial parts of the FTN are already in place.

7.12 The fixed equipment for the trial site of the GSM-R system (Strathclyde) is complete and testing of cab radio equipment has started but there is still further cab fitment work to be completed before the radio system is used operationally. The trial of GSM-R will take place on the line between Helensburgh and Drumgelloch and between Glasgow Central and Kilmarnock. The replacement of existing radio systems will then progressively extend nationally.

7.13 Nationally, the cab mobile fitment programme has been developed in close consultation with train operators and the rolling stock companies (RoSCOs). This is designed to introduce GSM-R nationally efficiently while meeting critical deadlines for specific parts of the country.

Structures renewals

7.14 From Chapter 8 we see that total expenditure on structures ran slightly over the ACR2003 determination in 2006-07. However overall they remain slightly behind the ACR allowance, Table 14 shows that, with the exception of tunnel and earthwork repairs, Network Rail's activity in structures renewals was broadly at the same level as last year in terms of interventions.

7.15 Whether the figures indicate any issues about poor asset management and value for money in managing the structures portfolio is not clear. An important factor in Network Rail's reporting of structures activity is that it only includes remediation work above a given level of expenditure, thus many smaller scale interventions do not get reported and the figures in Table 14 reflect a proportion of the total work done.

7.16 There are approximately 40,000 bridges across the network and they comprise the largest component of the structures stock. Their maintenance and renewal is essential to the capability, security and reliability the network. Key points are:

- in 2006-07, 154 were subject to renewal or remediation with a scheme value greater than £100,000, three fewer than the previous year. This represents 59% of the total for 2004-05; and

- the area of deck replaced in 2006-07 was 2.4 times that for 2005-06 and 27.5% more than 2004-05. With long-life assets, variations in expenditure from one year to the next are not necessarily significant, reflecting the variation in type and complexity of work undertaken from year to year. We will continue to review with Network Rail the average condition of the bridge stock and the effectiveness of the asset reporting measures to record this.

Table 14: Structures renewals volumes 2004-05 – 2006-07

Measure		Achievement in 2004-05	Achievement in 2005-06	Achievement in 2006-07
Structures	Bridges	260	157	154
		10,222 m²	5,433 m²	13,041 m²
	Culverts	16	9	10
	Retaining walls	2,635 m²	2,016 m²	2,240 m²
	Earthworks	106	76	68
	Tunnels	38	39	19

Source: Network Rail's annual returns

7.17 For other structures the key points are:

- culvert renewals reported for 2006-07 reflect only those renewals greater than £50,000, under the definition of the asset reporting measure. The increase to ten in 2006-07 compared with nine in 2005-06 is not significant against a total of around 23,000 culverts. Most renewals are likely to fall under the £50,000 cut-off for this measure and we consider Network Rail should reflect this in its reporting, a point we have made on several previous occasions, particularly given the acknowledged state of drainage overall;

- there was a 30% reduction in retaining wall interventions in 2006-07 compared to 2005-06 (7 compared with 10). At 2,240 square metres repaired last year's interventions were 10% more extensive than 2005-06 but still less than a quarter of a peak recorded in 2003-04. The asset reporting measure again only reports interventions of value greater than £50,000. There is no particular evidence of a decline in condition, although one of the earthwork failures reported in Chapter 6 involved the prior collapse of a retaining wall;

- earthworks interventions were made at 68 sites in 2006-07 compared to 76 in 2005-06. Earthworks expenditure is planned to nearly double in 2007-08 and clearly this will be reflected in future activity volumes; and

- there are approximately 700 tunnels on the network with a combined length of 200 miles. There were only 19 schemes greater than £50,000 reported in 2006-07, compared to 39 in 2005-06. An explanation will be sought for this significant reduction.

7.18 Network Rail has continued the development of the decision support tool 'civil engineering cost and strategy evaluation' (CECASE), to support their CP4 submission for structures. This will assist long-term prediction of maintenance and renewal volumes for all principal structures types, and also allow evaluation of alternative priorities for those structures elements most critical to the security of the network.

7.19 While activities on the larger and more expensive schemes have clearly reduced from last year, the total volume of activity on the many smaller scope and less expensive interventions are not captured within these figures.

Recommendations

7.20 In its Annual Return 2007 Network Rail included a composite measure encompassing the majority of asset renewals. Whilst it appears to provide more detail than the asset activity volume measures discussed above, we require further explanation before we can endorse this new measure. It does provide an overall summary by asset type but does not give explanation of over- or under-delivery within each asset type. It remains our recommendation that Network Rail continues to develop and review KPIs for:

- annual activity measures for some asset types, e.g. structures, where activities incurring major costs are published, but not the quantum of all interventions, to fully reflect how the total annual expenditure has been allocated;

- activity measures that reflect expenditure on project design and development, such as signalling renewals, where considerable expenditure can be incurred well before asset renewals take place; and

- additional activity measures for maintenance volumes, particularly track, where ORR currently only has visibility of annual spend.

7.21 In progressing the substantial programme of signalling renewal projects, Network Rail should ensure that it conducts robust risk assessments that reflect the potential impact on third parties and puts in place appropriate management and mitigation measures.

Introduction

8.1 This chapter reports on Network Rail's 2006-07 operating, maintenance and renewals (OMR) expenditure, and compares this expenditure with the amount allowed for by ORR in ACR2003. We then examine the reasons for the difference observed between actual and allowed expenditures[11]. All figures presented in this chapter are in 2006-07 prices, unless otherwise stated.

In 2006-07, Network Rail marginally overspent on controllable non-WCRM OMR by a total of £54 million, or 1%, compared to the ACR2003 assumption. However, it has underspent by 5% over the first three years of CP3.

We attribute around £60 million to outperformance (additional efficiency compared with the ACR2003 assumption) by Network Rail on controllable opex and maintenance in 2006-07, offset by an overspend on non-WCRM renewals expenditure of £114 million.

The cumulative position over the first three years of CP3 is one of:

- outperformance on controllable operating and maintenance expenditure by £306 million; and
- performance broadly in line with the ACR2003 assumptions on renewals expenditure, albeit with some notable overspends on some asset categories, particularly track.

Based on progress to date Network Rail is broadly on target to achieve the overall 31% unit cost efficiencies built into the CP3 revenue allowance.

This assessment includes an element of judgement, as Network Rail does not have a full set of unit cost data for 2006-07. The independent reporter and Network Rail both felt that a number of unit cost measures, although available, were not sufficiently robust to be included this year. Network Rail is taking steps to improve the accuracy and robustness of unit cost data.

8.2 In ACR2003, we set a revenue allowance for CP3 based on a number of assumptions, including an assumption about the level of unit cost efficiency savings Network Rail would be able to achieve over the period[12]. Establishing the reasons for the variance between actual and allowed expenditures therefore plays an important role in helping us assess the extent to which Network Rail is meeting this unit cost efficiency assumption.

8.3 In the 2005-06 Annual assessment we noted the need for Network Rail to take further steps towards establishing a relevant and robust framework for measuring and monitoring maintenance and renewals unit costs. This chapter includes an update on Network Rail's progress with that work.

8.4 The primary source of data reported in this chapter is Network Rail's audited Regulatory Accounts for 2006-07 and its Annual Return 2007. Other supporting information has been provided by Network Rail and audited as required by the independent reporter. The analysis also makes reference to the ACR2003 final conclusions document and our assessment of Network Rail's 2005-06 performance, where appropriate. It should be noted this assessment and the Annual Return 2007 use data reported on a regulatory accounts basis, whereas the Q4 2006-07 Network Rail monitor used data reported on a management accounts basis. The differences however are not materially significant.

---

[11] Expenditure on major projects and other investments are considered separately in Chapter 10 of this report.

[12] In ACR2003, we assumed that Network Rail would be able to reduce its OMR unit costs by 31% over CP3. (Improvements in scope efficiency are not included in the unit cost efficiency target.) A detailed breakdown of these assumptions is provided in *Access Charges Review 2003: final conclusions*, December 2003, page 92.

8.5 Numbers presented in this chapter are for Network Rail as a whole. We have not reported on disaggregated expenditure data for Scotland, or England and Wales, as the regulatory accounts for 2006-07 already provide this break down. Furthermore, a breakdown of efficiency based on unit cost for renewals and maintenance was not available, as these were reported only at a GB level to us. We expect Network Rail to provide unit costs for England & Wales and Scotland separately from now on in its annual return. This will allow us to report the disaggregated information in future assessments.

Expenditure

8.6 Network Rail's actual expenditure on controllable non-WCRM OMR totalled £4,443 million in 2006-07, compared with £4,389 million assumed in ACR2003. This represents overspend of £54 million, or 1%, for the year and a cumulative underspend of £669 million, or 5%, for the first three years of CP3[13]. Figure 12 shows how actual annual spend compares with the ACR2003 allowance to date.

8.7 Table 15 shows that the largest categories of overspend in percentage terms were in:

- track renewals (£150 million);
- IT and other renewals (£39 million); and
- plant and machinery renewals (£19 million).

  Network Rail also overspent significantly on WCRM renewals, by £154 million.

8.8 This largely reflects spend deferred from previous years and, in the case of WCRM and track renewals, lower efficiency relative to ACR2003 assumptions.

8.9 Although Network Rail recorded an overall slight overspend for the year (excluding WCRM renewals), expenditure was below ACR2003 assumptions in some areas, notably telecoms renewals, electrification renewals and non-controllable operating expenditure.

Figure 12: Cumulative OMR expenditure against ACR2003 determinations (2006-07 prices)
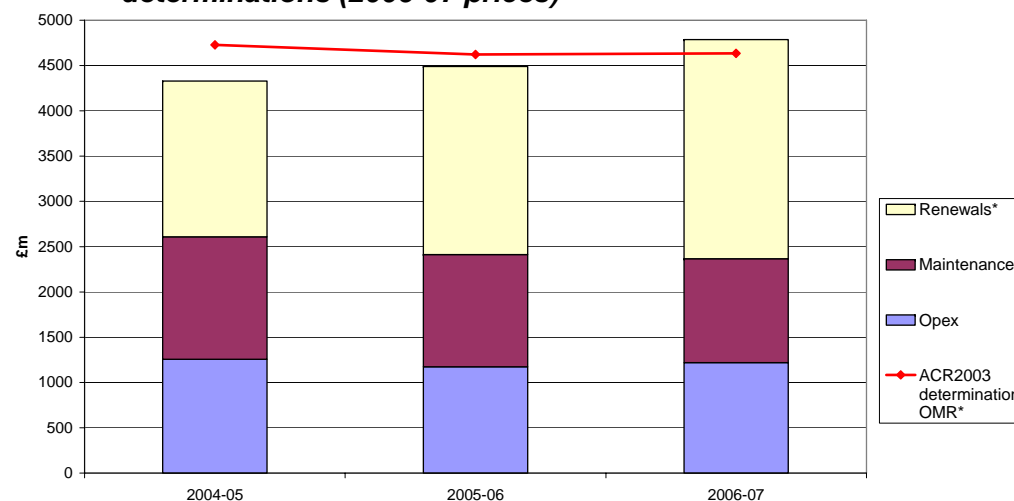
Renewals reported are non-WCRM renewals only

Source: Regulatory Accounts 2005, 2006, 2007, and ACR2003 Final Conclusions Appendix D

Monitoring and treatment of underspend

8.10 In January 2005, we published our policy statement on the monitoring and treatment of Network Rail's underspend and efficiency[14]. This set out our approach to monitoring the extent and causes of any underspend by Network Rail, which has been adopted for the analysis presented in the remainder of this chapter.

----

[13] As reported in our 2005-06 Annual assessment, Network Rail recorded a £696m underspend (in 2005-06 prices), or 8%, against the 2005-06 ACR2003 assumption.

[14] ORR, January 2005, Monitoring and Treatment of Network Rail's Underspend and Efficiency: Policy Statement, available at http://www.rail-reg.gov.uk/upload/pdf/273.pdf.

8.11 While Network Rail is allowed to retain the benefits of any outperformance[15], at least for the duration of the current regulatory period, it should not be allowed to benefit from any underperformance[16]. We may adjust Network Rail's allowed revenue accordingly in the next periodic review in 2008 (PR2008).

Analysis of 2006-07 underspend

Operating expenditure

8.12 ACR2003 set a controllable operating expenditure (opex) allowance for Network Rail of £917 million in 2006-07, which incorporated an efficiency assumption for the year of 8% and for the first three years of CP3 of 22%. In assessing Network Rail's performance against this, we have assumed that all the underspend against this target is outperformance, on the grounds that there is little practical scope for Network Rail to defer or de-scope operational activity without adversely affecting performance[17].

---

[15] Outperformance is defined as additional unit cost efficiencies beyond those assumed in ACR2003 and reductions in scope that do not compromise the long term asset condition and serviceability of the network. (See ORR's *Monitoring and Treatment of Network Rail's Underspend and Efficiency: Policy Statement*)

[16] We define underperformance to mean underspend realised while failing to achieve the output targets specified in the access charges review and/or compromising the long-term asset condition and serviceability of the network.

[17] While we acknowledge that opex could fall due to, for example, the size of the network decreasing, or traffic falling, given the current conditions in the rail sector, we do not consider this relevant.

[18] Adjusted for signalling review conclusions in December 2005.

Table 15: Network Rail actual 2006-07 OMR expenditure compared with ACR2003 projection (2006-07 prices)

Expenditure category £m	Actual spend £m	ACR2003 determination £m [18]	Variance £m	% Variance	Cumulative % variance for CP3 to date
Operating expenditure	1,221	1,163	58	5%	-2%
Of which controllable	878	917	-39	-4%	-8%
Maintenance	1,146	1,167	-21	-2%	-2%
Renewals					0%
Non WCRM	2,419	2,304	115	5%	-6%
- Track	897	747	150	20%	9%
- Signalling	436	450	-14	-3%	-18%
- Structures	377	348	29	8%	-2%
- Electrification	86	97	-11	-11%	-22%
- Plant and machinery	84	65	19	28%	-32%
- Telecoms	181	292	-111	-38%	-29%
- Operational property	208	194	14	7%	9%
- IT and other	150	111	39	36%	-4%
WCRM	345	191	154	81%	4%
Total OMR	5,131	4,825	306	6%	-3%
Controllable non-WCRM OMR	4,443	4,389	54	1%	-5%

Source – Network Rail's Annual Return 2007, ACR2003 final conclusions, ORR Annual assessments 2004-05 and 2005-06, ORR calculations.
Note: a negative variance figure indicates underspend relative to the ACR2003 determination.

8. Expenditure and efficiency

Table 16: Analysis of Network Rail operating expenditure, 2006-07

£ million 2005-06 prices	ACR2003 determination		Actual expenditure	Variance (post-efficiency)	Efficiency	
	Pre-efficiency	Post-efficiency			Total gain [19]	Out-performance
Controllable opex	1,178	917	878	-39	25%	4%
Non-controllable opex	246	246	343	97		
Total opex	1,424	1,163	1,221	58		

Source: Network Rail's Annual Return 2007, ACR2003: final conclusions, and ORR calculations.

8.13 As Table 16 shows, Network Rail underspent on controllable opex by £39 million in 2006-07, which represents a 4% outperformance of the efficiency assumption for the year. It is important though to consider the cumulative position over the first three years of CP3. Network Rail has outperformed its cumulative allowance of £3 billion by £228 million, or 8% (see Figure 13).

8.14 Supporting information provided to us by Network Rail suggests that the majority of this outperformance was due to targeted reductions in agency staff, contractors and consultants. The outperformance would have been higher if not for a £34 million increase in opex costs caused by the Grayrigg derailment.

Maintenance expenditure

8.15 Network Rail's 2006-07 performance on maintenance efficiency was assessed on the basis of the change in total maintenance expenditure per equated track mile (ETM[20]), as per previous assessments. We have assumed that all maintenance underspend is outperformance and deferrals and change in scope of activity were zero.

8.16 As shown in Table 17, Network Rail underspent on maintenance in 2006-07 by a total of £21 million relative to its post-efficiency target of £1,167 million (in 2006-07 prices) set in ACR2003. This represents a 24% gain on pre-efficiency allowances and a 2% outperformance on post-efficiency allowances.

Figure 13: Cumulative efficiency targets for controllable opex against actual performance
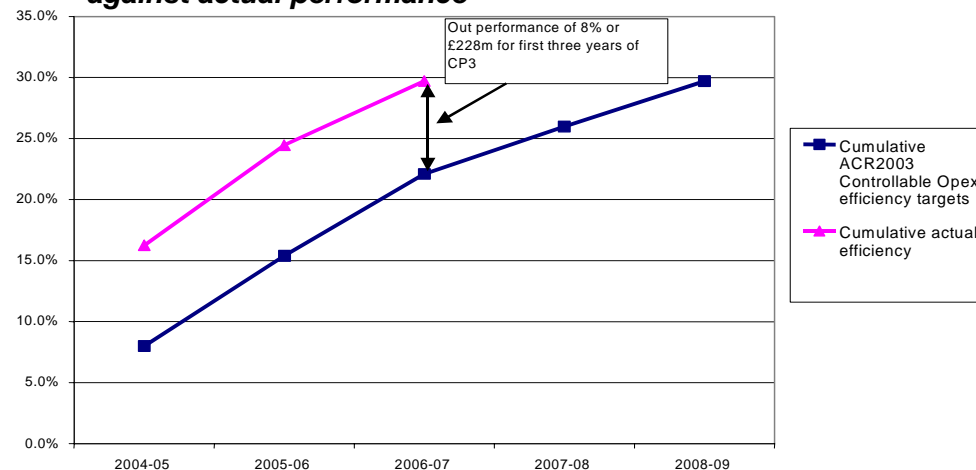
Source: ACR2003 Final Conclusions Appendix D, Annual assessment 2005-06 and ORR calculations.

Table 17: Analysis of Network Rail maintenance expenditure 2006-07

	ACR2003 determination		Actual expenditure	Variance (post-efficiency)	Efficiency	
	Pre-efficiency	Post-efficiency			Total	Out-performance
Maintenance (£ million 2006-07)	1,499	1,167	1,146	-21	24%	2%
Maintenance per ETM	68	53	50	-3	26%	6%

Source:Network Rail Annual Return 2007, ACR2003 final conclusions, ORR calculations.

---

[19] Total gain is the % difference between actual expenditure and pre-efficiency determinations

[20] The ETM metric is based on the amount of expected activity necessary to maintain the network to a certain standard.

8.17 When converted to a maintenance per ETM measure and accounting for the increase in ETMs[21], Network Rail outperformed its cumulative maintenance expenditure allowance of just over £3.8 billion for the first three years of CP3 by 6% (see Figure 14). The underspend relative to 2005-06 was 8%.

8.18 For 2006-07, Network Rail reported a range of maintenance unit cost measures (MUCs). It has identified a total of 18 repeatable activities (15 track and three signalling) for which it has developed unit cost measures. Nine of the 18 were reported in the Annual Return 2007 (Table 18).

8.19 We expected Network Rail to provide baseline unit cost data for all 18 MUCs in the Annual Return 2007. However, because of problems of consistency of data collection and accuracy of the data, identified by both Network Rail and the independent reporter, only nine are reported. We note furthermore that the independent reporter attached low confidence in the reliability and accuracy of the figures shown in Table 18.

8.20 The independent reporter made a number of recommendations[22] to improve accuracy, which address amongst other things improving auditing and data input through formal documentation. Network Rail has agreed to implement these particular changes.

8.21 Once Network Rail has built up a sufficient time series of robust maintenance unit cost data, we will supplement this analysis with our current maintenance per ETM analysis.

---

[21] Network Rail reported the following ETM figures: 2003-04 21,896; 2004-05 21,896; 2005-06 22,599; 2006-07 27,770.

[22] See *Independent Reporter Annual Return Audit 2007 Final Report* – August 2007 – Halcrow Group Limited)

Figure 14: Cumulative ETM efficiency targets for maintenance expenditure against actual performance
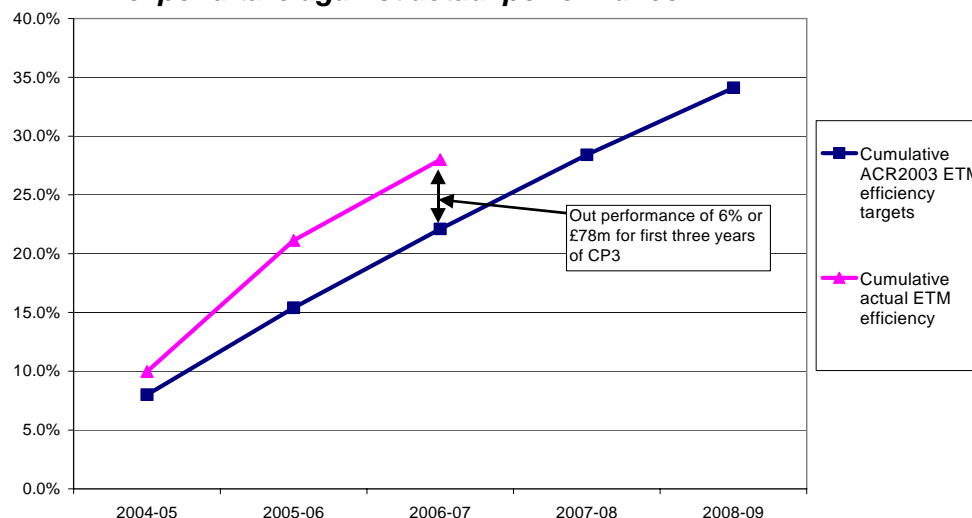
Source: ACR2003 Final Conclusions Appendix D, Annual assessment 2005-06 and ORR calculations.

Table 18: Network-wide MUCs, 2006-07

MUC Activity	Unit of measure	Network-wide cost per unit (£)
Rail changing	Rail yards	74
Re-sleepering	Number	143
Switch and Crossings (S&C) unit renewal	Number	9,877
Replacement of S&C bearer	Number	271
Visual inspection (patrolling)	Track miles	40
Manual correction of plain line track geometry	Track yards	14
Point and routine maintenance	Number	156
Signals routine maintenance	Number	108
Track circuits routine maintenance	Number	125

Source: Network Rail's Annual Return 2007, ACR2003 Final Conclusions ORR calculations

Renewals expenditure

8.22 Network Rail's overspend on non-WCRM renewals in 2006-07 was £114 million compared with the ACR2003 allowance of £2.3 billion. The overspend arose partially from Network Rail making catch-up expenditure on renewals following deferment of renewals work in previous years, and partially from a failure to meet track renewal expenditure efficiency targets.

8.23 There is currently no single way of assessing Network Rail's performance against the regulatory target, as the ACR2003 set annual renewal efficiency targets for unit costs, but did not set baseline unit costs against which to compare efficiency impacts. In addition, the few renewal unit costs available cover an insufficient proportion of the total renewals expenditure.

8.24 As in our assessments of Network Rail's performance in 2004-05 and 2005-06, we have therefore examined a combination of measures - the unit cost indices that are currently available for some asset categories and Network Rail's own budget variance analysis, which assesses the difference between budgeted and actual expenditure for each major renewals asset category. We have had to rely on an element of judgement in arriving at our overall assessment of Network Rail's renewals efficiency performance, particularly as Network Rail's unit cost indices at present cover only part of its renewals expenditure.

Renewals unit cost efficiency

8.25 Network Rail is continuing the development of its cost analysis framework (CAF), which will monitor unit costs for 51 repeatable work activities, covering around 80% of expenditure. For 2006-07, the CAF covered a total of 43 measured and repeatable renewals activity types. However, the Annual Return 2007 reported on only 17 of these, as there were problems in recording and comparing unit costs between projects and to a historic baseline for the other activities. The 17 activities reported do, however, account for £958 million (40%) of total renewals expenditure (Table 19).

Table 19: Renewals unit cost indices, 2006-07

Asset	Activity type	Activity Costs reported 2006-07 £m	% reported of each Total Renewals Asset spend	Unit Cost Index
Structures	701 – Overbridges	10.91		86.7
	702 – Underbridges	61.71		84.0
	703 - Overbridges - Bridguard 3	11.05		62.8
	704 – Footbridges	3.61		93.7
	705 – Tunnels	7.35		69.8
	706 – Culverts	1.18		33.4
	707 - Retaining walls	2.68		27.3
	708 – Earthworks	29.71		72.8
	709 - Coastal- Estuary defences	5.04		83.4
	TOTAL	**133.23**	**35.30%**	**74.7**
Signaling	101 - SSI resignalling	50.47		70.1
	103 - Interlocking renewal	9.67		25.9
	108 - Level crossing renewals (ABCL Type)	2.63		76.6
	108 - Level crossing renewals (MCB Type)	4.73		96.8
	108 - Level crossing renewals (AHBC Type)	5.22		60.0
	TOTAL	**72.73**	**16.70%**	**57.5**
Telecoms	504 - Small signal box concentrator	3.6		85.4
	TOTAL	**3.6**	**2.00%**	**85.4**
Track	401 - Plain Line	542.94	60.60%	82.8
	403 - Switches & Crossings	205.2	22.90%	89.8
	TOTAL	**748.14**	**83.40%**	**84.6**
Overall renewals total (less WCRM)		**957.7**	**39.60%**	**80.2**
Re-sleepering			Number	143
S&C unit renewal			Number	9,877
Replacement of S&C bearer			Number	271
Visual inspection (patrolling)			Track miles	40
Manual correction of plain line track geometry			Track yards	14
Point and routine maintenance			Number	156
Signals routine maintenance			Number	108
Track circuits routine maintenance			Number	125

Source: Network Rail's Annual Return 2007

8.26 Table 19 shows renewals unit costs for activity types that were available in 2006-07 (total structures costs, track plain line, switch and crossings), plus further measures showing structures disaggregated by activity type, and data for signalling and telecoms. These measures are considered to be sufficiently robust by both Network Rail and the independent reporter to be included in the Annual Return 2007.

8.27 An overall unit cost index is also reported in this table and is generated by combining the asset indices, weighted in proportion to spend. The overall index of 80.2 implies a cumulative unit cost efficiency of 19.8%. However, as pointed out above, this represents only 40% of total renewal expenditure and is dominated by track renewal, for which the level of cumulative efficiency achieved over CP3 to date has not been the same as other asset categories.

8.28 Replicating our analysis in the 2006 assessment, the unit costs shown in Table 20 provide only a partial picture of the efficiency of Network Rail's renewals activity. Track and civils expenditure together represent 53% of Network Rail's non-WCRM renewals in 2006-07, and the unit cost measures cover 70% of this, implying 37% coverage of total non-WCRM spend. However, if these figures reflect total renewals expenditure, they imply an improvement in renewals unit cost efficiency of around 9% in 2006-07, 1% outperformance of the ACR2003 efficiency assumption.

8.29 Had the CAF work been completed according to Network Rail's own initial timetable, we would be more confident to conclude an outperformance within renewal expenditure. We will continue to monitor Network Rail's progress closely in this matter.

Budget variance

8.30 Network Rail's budget variance analysis provides another way of assessing renewal efficiency. As stated in the Annual Return 2007, annual budgets are set on the basis of achieving the overall cumulative regulatory target of 22%. As Table 21 shows, Network Rail achieved a range of core renewal efficiencies, but reported that

Table 20: Renewals unit cost indices

Real index, 2003-04=100	2004-05	2005-06	2006-07	Coverage (%)	% change, 06-07 on 05-06
Track (total)	95.6	93.8	84.6	83%	9.8%
plain line	94.5	95.7	82.8	61%	13.5%
switch & crossings	98.1	88.6	89.8	23%	-1.4%
Structures\civils	85	77.0	74.7	35%	2.9%
Average, expenditure weighted	92.4	89.4	81.7	70%	8.7%

Source – Network Rail's Annual Return 2007 and ORR calculations. Note % change figure shows a reduction (i.e. "improvement") in unit costs as a positive figure.

Table 21: Network Rail's budget variance analysis

£ million 2006-07	Core renewals efficiency
Track	13.9%
Signalling	25.8%
Structure	26.6%
Electrification, Plant & Machinery	33.7%
Telecoms	32.5%
Operational Property, others	35.5%
Total Non-WCRM	23.0%

Source – Network Rail's Annual Return 2007 and ORR calculations.

Note % change figure shows a reduction (i.e. "improvement") in unit costs as a positive figure.

overall cumulative efficiency for non-WCRM renewals in 2006-07 was 23%, slightly ahead of the regulatory target.

8.31 We have concluded from this, and from the unit cost analysis outlined above, that although Network Rail is likely to have broadly achieved the ACR2003 renewals efficiency assumption of 8% in 2006-07, it did not outperform this figure.

Summary

8.32 In summary, in 2006-07 we consider that Network Rail outperformed its unit cost efficiency target for controllable non-WCRM expenditure by £60 million, but this has been more than offset by a £114 million overspend on non-WCRM renewals. Table 22 provides a summary.

8.33 The cumulative unit cost efficiency outperformance for the first three years of CP3 is £306 million (2%) (See Figure 15). Based on progress to date Network Rail is broadly on target to achieve the overall 31% unit cost efficiencies built into the CP3 revenue allowance.

Use of surpluses from outperformance

8.34 Network Rail has developed criteria for the use of any funds from outperformance, which have been formalised in its Business Planning Criteria[23]. For CP3, Network Rail intends to use any outperformance (including that generated from the various regulatory incentive mechanisms) to reduce debt as a first priority, or if there are no financeability/compliance constraints, to fund and finance investments, decided in consultation with the Department for Transport and Transport Scotland. Network Rail has set aside £200 million of outperformance for investment purposes in its 2007-08 Business Plan.

----

[23] *Network Rail Business Planning Criteria – March 2006.*
http://www.networkrail.co.uk/browse%20documents/regulatory%20documents/business%20planning%20and%20charges%20review/business%20planning%20criteria/businessplanningcriteria.pdf

Table 22: Attribution of OMR underspend to outperformance, 2006-07

£ million, 2006-07 prices	Variance against ACR2003	Additional unit cost efficiency	Scope efficiency	Deferral	Expenditure out-performance
Controllable opex	-39	-39	0	0	-39
Maintenance	-21	-21	0	0	-21
Non-WCRM renewals	114	0	0	0	0
Total controllable non-WCRM OMR	54	-60	0	0	-60

Note: Columns may not add due to rounding.

Figure 15: Cumulative ACR2003 efficiency targets against actual performance
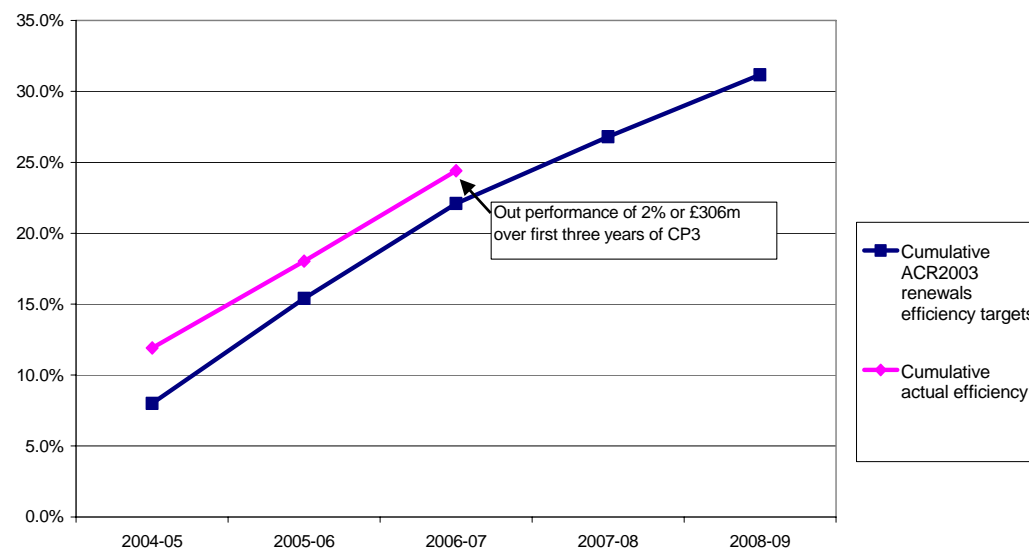
Source: ACR2003 Final Conclusions Appendix D, Annual assessments 2004-05 and 2005-06 and ORR calculations

8. Expenditure and efficiency

Recommendations

8.35 We recommend that Network Rail:

- continues with work to implement a comprehensive set of unit cost measures for both maintenance and renewals activities that are sufficiently robust and wide enough in coverage to be used as the basis for efficiency analysis from 2007-08 onwards. With the help of the independent reporter, we will continue to monitor and audit Network Rail's implementation of these unit cost measures; and

- provide unit cost measures not only at a GB wide level, but disaggregated (England & Wales and Scotland) from 2008-09, with efficiency similarly broken down at this level.

Introduction

9.1 This chapter reviews Network Rail's financial position and income in 2006-07. Comparisons are made against the ACR2003 assumptions and in some cases Network Rail's Business Plan 2006[24]. Unless otherwise stated, all numbers are in 2006-07 prices (apart from in the net debt section, which is in nominal prices).

Net debt at 31 March 2007 was £1.3 billion (in nominal prices) lower than the ACR2003 assumption, largely due to underspend in the first three years of CP3 on operating, maintaining, renewing and enhancing the network, financing costs and an outperformance of the Schedule 8 regime.

Net debt

9.2 Net debt at 31 March 2007 was £18.6 billion. This was:
- £0.6 billion higher than at 31 March 2006 and £5.7 billion higher than at the beginning of CP3;
- £1.3 billion less than the ACR2003 assumption of £19.9 billion; and
- £0.5 billion less than the Business Plan 2006 forecast of £19.1 billion.

9.3 Table 23 shows the movements in net debt over the period 2004-05 to 2006-07.

9.4 The increase in net debt of £0.6 billion during 2006-07 was £0.1 billion higher than the increase assumed in ACR2003 (£0.5 billion). Network Rail's net cash deficit was £0.1 billion higher than assumed in ACR2003 due to higher renewals spending (£0.3 billion higher than assumed in ACR2003), offset partially by £0.2 billion lower interest payments, as financing costs have averaged 5.3% in 2006-07 compared to the ACR2003 assumption of 6.0%.

---

[24] The ACR2003 assumption includes the revenue deferral and the signalling review adjustments. The signalling review adjustment was not included in the ACR2003 assumption used in the 2006 Annual assessment.

Table 23: CP3 movements in net debt 2004-05 to 2006-07 (nominal prices, £ billion)

	2004-05			2005-06			2006-07		
Net debt at 1 April			12.9			15.6			18.0
Total income		-3.1			-3.1			-5.1	
Expenditure									
Operating expenditure	1.2			1.1			1.2		
Maintenance	1.3			1.2			1.1		
Renewals	2.7			2.7			2.8		
Enhancements	0.7			0.4			0.4		
Other income	-0.7			-0.8			-0.8		
Total expenditure		5.2			4.6			4.7	
Net interest		0.7			0.8			1.0	
Other		-0.1			0.1			0.0	
Movements in net debt			2.7			2.4			0.6
Net debt at 31 March			15.6			18.0			18.6

Source: Network Rail data and ORR calculations.

Notes:
1) Other includes outperformance fund spending, capital expenditure not yet approved as an addition to the RAB and timing differences between accrued and cash expenditure.
2) To be more comparable, net interest in 2005-06 has been restated from the £0.6 billion used in the 2006 Annual Assessment, to better reflect the total cost of borrowing.

9. Finance and income

9.5 Net debt at 31 March 2007 was £1.3 billion lower than the ACR2003 assumption. This difference is mainly due to Network Rail's underspend of £1.0 billion on operating, maintaining, renewing and enhancing the network in the period 2004-05 to 2005-06, partially offset by an overspend of £0.4 billion on operating, maintaining, renewing and enhancing the network in 2006-07. The combined effect over three years has been a reduction in net debt of £0.6 billion at 31 March 2007. Schedule 8 income was also £0.3 billion higher than the ACR2003 assumption and cumulative financing costs were £0.5 billion lower than assumed in ACR2003 as Network Rail's financing costs have averaged 5.1% over the period 2004-05 to 2006-07, compared to the ACR2003 assumption of 5.9%.

9.6 Net debt was £0.5 billion less than assumed in Network Rail's Business Plan 2006. This largely reflects Network Rail's £0.2 billion underspend on enhancements, £0.1 billion underspend on maintenance and the opening actual net debt at 1 April 2006 being £0.1 billion lower than assumed in the Business Plan 2006.

9.7 The movements in Network Rail's actual cash flows over the first three years of CP3 are mainly due to:

- the effect of the revenue deferral scheme reducing income in the first two years of CP3[25];
- higher enhancement expenditure in the first year of CP3 than in years two and three due to peaks in certain projects e.g. WCRM and Southern region new trains programme. Enhancement expenditure in the last two years of CP3 is expected to significantly increase; and
- higher net interest costs of £0.2 billion in 2006-07 than in 2005-06. This is mainly due to an increase in average net debt of £1.5 billion (from £16.8 billion in 2005-06 to £18.3 billion in 2006-07) and also that Network Rail has started to pay government (£0.1 billion in 2006-07) for the benefit derived from the financial indemnity mechanism.

Regulatory asset base (RAB)

9.8 At 31 March 2007, Network Rail's RAB, as shown in Network Rail's regulatory accounts, was £25.3 billion. This was:

- £1.4 billion higher than the RAB at 31 March 2006, which was £23.9 billion (after adjusting for inflation);
- £0.4 billion lower than the ACR2003 assumption of £25.7 billion[26]; and
- £0.2 billion lower than the forecast of £25.5 billion made by Network Rail in its Business Plan 2006 largely due to a £0.2 billion underspend on enhancements.

9.9 The increase in the RAB during 2006-07 of £1.4 billion is largely due to the addition to the RAB of the difference between the ACR2003 assumption of £2.7 billion for renewals and enhancement expenditure less the ACR2003 amortisation assumption of £1.5 billion.

---

[25] Part of Network Rail's grant income in the first two years of the control period was re-profiled to later years. The resulting shortfall in income of £1.7 billion in 2004-05 and £1.8 billion in 2005-06 has been financed through additional borrowing. This re-profiling is explained in *Access Charges Review 2003: Regulator's approval of Network Rail's proposed financing arrangements*. This document can be accessed at http://www.rail-reg.gov.uk/upload/pdf/188.pdf.

[26] This figure has been adjusted in line with the final conclusions of the medium term review of signalling expenditure, published in December 2005 by ORR.

9.10 The RAB at 31 March 2007 was £0.4 billion lower than assumed in ACR2003[27], mainly due to:

- a £0.4 billion reduction in the RAB in relation to the adjustment for actual 2003-04 out-turn expenditure;

- the £0.3 billion reduction in the RAB due to underspend on enhancements, which are remunerated on an emerging cost basis[28]; and

- offset by additions to the RAB of £0.2 billion for enhancements that were not originally funded in ACR2003, but nevertheless qualify to be added to the RAB.

9.11 Table 24 summarises the movements in the RAB for 2006-07.

Table 24: Analysis of movements in RAB (£ billion, 2006-07 prices)

Opening Balance at 1 April 2006 (2005-06 prices)			**23.0**
Inflation		**0.9**	
Amortisation assumed in ACR2003		**-1.5**	
Additions			
Renewals assumed in ACR2003	2.4		
Enhancements assumed in ACR2003	0.3		
Other additions not funded in ACR2003	0.1		
Other adjustments	0.1		
Total additions		**2.9**	
Total movement in RAB			**2.3**
Closing Balance at 31 March 2007			**25.3**

Source: Network Rail regulatory accounts and ORR calculations.

[27]   Network Rail's regulatory accounts (available on Network Rail's website at http://www.networkrail.co.uk) and ORR's Regulatory Accounting Guidelines (available on our website at http://www.rail-reg.gov.uk) provide more detail about these adjustments.

[28]   By emerging cost basis we mean enhancements for which we have not set a fixed price in ACR2003, instead we will add the actual expenditure incurred on the enhancement to the RAB with effect from the year concerned. For further details refer to the Enhancements funded in ACR2003 section of *Regulatory Accounting Guidelines, April 2007,* http://www.rail-reg.gov.uk/upload/pdf/323.pdf

Notes:

1) The RAB is adjusted for inflation every year. The RAB at 1 April 2006 in 2006-07 prices was £23.9 billion.

2) The ACR2003 assumptions for renewals and enhancement expenditure, funded as part of ACR2003, are added to the RAB and an appropriate adjustment will be made at 31 March 2009 to reflect any non-delivery of agreed outputs.

ORR

Income

9.12 Network Rail's total income[29] in 2006-07 was £5.9 billion. This was:

- £1.9 billion higher than income in 2005-06 of £4.0 billion;

- £0.1 billion higher than the adjusted[30] ACR2003 assumption of £5.8 billion; and

- £0.1 billion higher than Network Rail's Business Plan 2006 assumption of £5.8 billion, largely due to outperformance of schedule 4 and 8 income.

9.13 Table 25 shows the income for 2006-07 broken down into the various income categories compared against the ACR2003 assumptions and the Business Plan 2006.

Table 25: Comparison of actual income in 2006-07 to ACR2003 and Network Rail's Business Plan 2006 (£ billion, 2006-07 prices)

	Actual (A)	ACR2003 (B)	Business Plan 2006 (C)	ACR2003 variance (A-B)	Business Plan variance (A-C)
Franchised track access income[31]	1.9	2.3	2.4	-0.4	-0.5
Grant income[32]	3.2	2.7	2.6	0.5	0.6
Other single till income	0.8	0.8	0.8	0.0	0.0
Total income	**5.9**	**5.8**	**5.8**	**0.1**	**0.1**

Source: Network Rail regulatory accounts, ACR2003 and ORR calculations

9.14 Actual income was £1.9 billion higher than in 2005-06 due to the revenue deferral scheme no longer being in the phase where Network Rail's grant income from government is reduced. After a total reduction in income of £3.5 billion in the first two years of CP3, there was a small (£0.3 billion) repayment in 2006-07 from government to Network Rail.

9.15 Actual income was £0.1 billion higher than the adjusted ACR2003 assumption due to increased variable charges income, e.g. schedule 8 income, of £0.2 billion offset by the payment to DfT of £0.1 billion in relation to the ACR2003 adjustment for net debt at 1 April 2004.

9.16 Grant income from DfT in 2006-07 was £0.5 billion higher than assumed in ACR2003, due to an additional £0.6 billion grant payment from DfT[33], offset by the payment to DfT of £0.1 billion in relation to the ACR2003 adjustment for net debt at 1 April 2004.

9.17 Franchised track income was £0.4 billion lower than assumed in ACR2003 as the reduction in income as a result of the £0.6 billion rebate of track access charges from Network Rail to train operators is offset by £0.2 billion of increased variable charges income e.g. Schedule 8 income.

---

[29] Total income is the sum of track access charges, grant income and other single till income (including net income from Schedule 4 and 8).

[30] Adjusted for the effect of the revenue deferral in March 2004.

[31] Net of Schedule 4/8 income and expenditure.

[32] Actual and Business Plan 2006 grant income in this table is net of the adjustment for net debt at 1April 2004.

[33] The additional £0.6 billion grant payment from DfT is exactly offset by the £0.6 billion rebate of track access charges from Network Rail to train operators.

Net debt to RAB ratio

9.18 Network Rail's net debt to RAB ratio at the end of 2006-07 was 73.5%, which was within the regulatory limits and 4.6% lower than the net debt to RAB ratio of 78.1% at 31 March 2006. This was due to net debt increasing by only £0.6 billion compared to the increase in the RAB of £2.3 billion (in nominal prices).

9.19 The difference between the RAB and net debt can be a proxy for the level of the buffer available to the company to absorb shocks to costs and revenues. Network Rail's network licence requires borrowings to be below certain levels of RAB (the first limit being a trigger at 85%). Therefore, in practice, the buffer available to the company is the difference between 85% of RAB and net debt. This buffer was £2.9 billion at 31 March 2007.

9.20 Another way of thinking about the buffer available to the company is to compare the buffer, i.e. 85% of RAB less net debt, with forecast expenditure (excluding enhancements) in the following year. This calculation identifies the amount by which Network Rail could overspend its expenditure budget in the following financial year without breaching the net debt/RAB limit of 85%. On this basis, Network Rail could overspend its forecast expenditure budget of £5.6 billion[34] in 2007-08 by 59% before breaching the 85% net debt/RAB threshold.

Other financial indicators

9.21 The actual adjusted interest coverage ratio[35] for 2006-07 is 1.9 times compared to 2.0 times in the prior year[36]. This level is generally considered to indicate a strong financial position for a regulated utility.

Recommendations

9.22 There are no recommendations that we want to make in relation to Network Rail's financial position. Most of the underlying reasons for the variances reported on in this chapter are commented on elsewhere in this document.

[34] Total expenditure for opex, maintenance and renewals for 2007-08 per Network Rail's 2007 business plan. Forecast RAB of £27.9 billion (in nominal prices) at 31 March 2008 as per Network Rail's 2007 business plan and forecast net debt at 31 March 2008 of £20.4 billion as per Network Rail's 2007 business plan.

[35] The adjusted interest coverage ratio is one of the financial indicators that can give an indication of Network Rail's financial health. It measures Network Rail's adjusted net operating cash flow (total income less operating costs, maintenance, maintenance capital expenditure and corporation tax) against interest costs. This assesses Network Rail's ability to meet interest payments from net operational cash flows after deducting an allowance for maintenance capital expenditure. The maintenance capital expenditure allowance only includes the level of capital investment that is required to maintain the RAB in steady state, i.e. any capital investment that improves the network is not included. At present maintenance capital expenditure is approximated by the regulatory amortisation charge.

[36] To be more comparable, the prior year ratio is adjusted for the effect of the revenue deferral. Without this adjustment the prior year ratio would have been 0.1 times.

Introduction

10.1 This chapter describes our annual review of Network Rail's investment activity. Monitoring Network Rail's delivery of schemes is a key activity for us in implementing the investment framework, which aims to facilitate investment in the railway by addressing a number of barriers to the delivery of efficient investment. The review has been carried out with advice from the independent reporter, Halcrow.

> Network Rail spent around £400 million on the delivery of a wide range of enhancement schemes in 2006-07. It has improved its development, delivery and reporting processes for many of the major schemes, although it still needs to be more consistent in its management of these schemes and needs to continue to develop and deliver smaller schemes, particularly the NRDF Programme, where it faces a considerable delivery challenge in 2007-08 and 2008-09.
>
> Network Rail underspent overall on enhancement schemes included in ACR2003 by £71 million: it spent £255 million against the allowance of £326 million.
>
> Network Rail made progress in delivering the remaining WCRM enhancements required for the December 2008 timetable. However, the scope delivered was less than forecast by the project team at the beginning of the year, resulting in project expenditure in 2006–07 of 23% below budget.

Scope of review of investment activity

10.2 In December 2006 we published a letter to Network Rail describing our review of investment activity for 2005-06, highlighting several areas where Network Rail could improve its development and delivery of investments. The key recommendations arising from that review (carried out with assistance from Halcrow) were that Network Rail should:

- collect data on actual costs incurred on investment schemes using a consistent framework to enable structured monitoring and comparative analysis through a common data recording system;

- implement a company-wide set of performance indicators which reflect actual economic value added (earned value) rather than simply variances in cost and schedule against its forecasts; and

- roll-out good practice in project management, as seen on the FTN/GSM-R programme, to other major programmes.

10.3 For 2006-07 the scope of Halcrow's analysis was widened to include all investment activity by Network Rail, so that it reviewed:

- specific major investment programmes:
    - West Coast Route Modernisation (WCRM);
    - renewal of Network Rail's telecoms network (FTN/GSM-R);
    - the national pollution prevention programme (NPPP); and
    - the access for all programme of improvements.

- the Network Rail discretionary fund (NRDF);

- schemes promoted by third parties (other than Government); and

- self-financing commercial schemes.

10.4 In future years the review will be further extended to include all major investment schemes.

10.5 Before summarising the reporter's recommendations, which will be set out in its report to be published on our website in the next month we first summarise overall expenditure on investments. The outputs delivered by the major schemes are also discussed below.

Expenditure

10.6   Network Rail's Regulatory Accounts for 2006-07[37] show that:

- Network Rail underspent overall on enhancement scheme included in ACR2003 by £71 million: it spent £255 million against the allowance of £326 million, primarily due to a significant underspend against the provision in the year for Safety and Environment schemes of £94 million;

- this was partly balanced by an overspend on emerging cost schemes of £29 million. Note that the underspend on Safety and Environment schemes does **not** indicate underachievement of outputs, as most of the provision did not relate to specific schemes; and

- Network Rail also spent £134 million in 2006-07 on enhancement schemes not included in the ACR2003, including the buyback of Project Evergreen 2, which was completed in the year at a cost of £69 million.

10.7   As well as the investments above required (and funded) by Government, expenditure incurred by Network Rail on schemes sponsored by third parties (that is, scheme sponsors other than Government) amounted to £143 million in the year, an increase of 60% on the £89 million incurred in the previous year. For more details on new third party investment, see paragraph 10.19.

Outputs

10.8   On its major projects and programmes Network Rail generally made reasonable progress in its delivery of outputs. More details will be given on each of these schemes in the reporters' forthcoming report. Key points are:

WCRM

- Network Rail made progress in 2006-07 in delivering the remaining enhancements required for the December 2008 timetable. However, the actual scope delivered during this year was less than forecast by the project team at the beginning of the year, resulting in project expenditure in 2006–07 of 23% below budget. Network Rail emphasised that the forecast at the beginning of the year was based on early indications of the phasing of work to be delivered prior to March 2009. This phasing was subsequently updated as detailed design information and possession availability were confirmed; and

- during the year we discussed handling of expenditure on West Coast in CP3 with Network Rail and the Department for Transport. We accepted that the two parties had agreed that because of the specific arrangements in place for this programme, funds saved from the deferral of some work to CP4 or CP5 could be used for additional unforeseen work which would deliver additional outputs and facilitate a reliable and sustainable timetable for December 2008. This means that additional WCRM outputs for the next control period will need to be funded afresh.

FTN/GSM-R

- Network Rail has generally continued to make good progress in terms of fitment of the necessary infrastructure. There have, however, been problems with the preparations for the trial site at Strathclyde, which will delay the commencement of the in-service operation. In general for this programme, output delivery was on target, although there were variations within the individual components of the programme.

----

[37]   See Statement 3 of the 2006/06 Regulatory Accounts, published at http://www.networkrail.co.uk/browse%20documents/regulatory%20documents/regulatory%20compliance%20and%20reporting/regulatory%20accounts/regulatory%20financial%20statements%20for%20the%20year%20ended%2031%20march%202007.pdf

Access for all

- At the start of the programme, there was an underestimation of the time it would take to establish the programme and in particular, manage stakeholder input. This led to significant output (and financial) variances in the early stages of the project. Network Rail responded positively to recover the position, by establishing a revised programme that was consistently delivered in the last four months of the year.

National pollution prevention programme

- in 2006–07 Network Rail initially focused on achieving compliance with the terms of the Oil Storage Regulations England and Scotland (and with anticipated legislation for Wales) and compliance with the Ground Water Regulations. Substantial completion of the programme is now forecast for October 2007 and expenditure is forecast to be less than the original budget. However, the reporter's analysis highlighted concerns about aspects of the programme where the outturn physical progress against programme appears to show slippage. Although Network Rail claims that this variance is due to efficiencies, the reporter has not yet been provided with evidence in support of this.

Summary of recommendations from the independent reporter

10.9 The independent reporter identified a number of underlying issues which need to be addressed if the delivery of projects/ programmes by Network Rail is to improve. These are identified in more detail in their report, which will be published on our website.

10.10 In conducting its reporting activity, Halcrow was impressed by the thoroughness of the programme management and reporting regime established by the WCRM programme team. This allowed the reporter to obtain a detailed understanding of the reasons behind both the financial and output variances that have inevitably arisen in this complex programme of works. Recent conclusion of the final definition of the overall scope to be delivered by the WCRM programme, coupled with the project management processes that are implemented on a day-to-day basis by the programme team, have generated an increased level of confidence that the agreed outputs will be delivered. Significant challenges do however remain, on schemes such as the Rugby-Nuneaton project.

10.11 In relation to other programmes of work, the reporter identified a number of underlying management issues which need to be addressed. These are:

- reporting by Network Rail programme managers on expenditure and work programmes is often against programme-level budgets. Each element of a programme however is often a substantial project in its own right, so project reporting regime and particularly project close out procedures can be implemented in full compliance with the GRIP (Network Rail's Guide to rail Investment projects) process in each instance. This should include completion reports to capture lessons learned and best practice that could be used in future schemes as well as reporting on any variance from programmed costs and timescales;

- in a number of instances no KPIs were established in advance to assist Network Rail's programme managers in monitoring project outputs and work progress, other than reports against the initial work programme. While reporting of financial progress through Network Rail's internal monthly reports is consistently comprehensive, these reports do not refer to physical progress or milestones in such a way as to make them comparable with any baselined KPIs. We would expect to see an effective reporting regime that referred (where appropriate), to such "earned value" KPIs; and

- the level of programme management expertise and concerted application of project management techniques, recently applied successfully to the WCRM programme, should be applied in an appropriate manner on future Network Rail major programmes in

order to improve delivery[38]. The only current programme which (in the reporter's view) approaches this level of application is the FTN/GSM-R programme.

10.12 On the basis of these issues and the reporter's analysis, it appears that the three recommendations flagged in the reporter's report last year have not been fully implemented. In particular, Network Rail has not:

- consistently put in place appropriate KPIs (or other appropriate indicators) showing earned value for all major projects; and

- applied good practice from the WCRM and the FTN/GSM-R programmes appropriately to other major projects and programmes.

  Network Rail now needs to explain to us what plans it has in place to address these issues.

Network Rail discretionary fund (NRDF)

10.13 Network Rail has continued to make progress in developing and delivering NRDF schemes, although a considerable delivery challenge remains for 2007-08 and 2008-09. During 2007-08, Network Rail is planning to spend £59 million on NRDF schemes, which is a significant increase on 2006-07, when it spent £11 million. By the end of 2007-08, Network Rail's forecasts expenditure of £70 million of the total fund of £200 million. Since the implementation of the fund, twelve schemes (costing £10 million) have been completed: eleven schemes in England and Wales and one in Scotland.

10.14 The reporter's assessment of the NRDF programme noted that total authorised expenditure by Network Rail at the end of Quarter 1 of 2007-08 was £85.5 million, relating to 62 schemes. This includes all projects that are either under way or now complete.

10.15 The reporter also assessed Network Rail's progress against recommendations made last year in relation to the NRDF programme, which were that:

- the NRDF team should implement periodic reporting of financial variance, baselined output KPIs, Cost Performance Index (CPI) Schedule Performance Index (SPI) and unit costs to improve the measurement, and consequently the management, of the work; and

- that NRDF activities are assessed to identify those that might usefully be captured using the Network Rail cost analysis framework (CAF) so that efficiency can be monitored and future cost estimation can be improved.

10.16 Network Rail is implementing the second recommendation. However, it has in fact adopted a rather different approach to the reporting of progress on NRDF. Currently, the individual spending levels on each project do not appear to be aggregated in each regular report. The reporter also notes that, given the nature of NRDF, it may be appropriate to find other approaches to the monitoring of physical progress.

10.17 Network Rail needs to explain how it will continue to improve its reporting of NRDF schemes. It is clear that delivery challenges remain for Network Rail - we will continue to closely monitor Network Rail's development and delivery of the NRDF programme.

---

[38] Note that this recommendation does not apply directly to the NRDF programme – see below

Third party schemes

10.18 Our investment policy framework and guidelines are aimed at smoothing the way for greater third party investment by providing clarity to potential investors about the role and responsibilities of Network Rail and the terms on which they can expect to invest.

10.19 We analysed Network Rail's involvement in schemes promoted by third parties, where Network Rail may provide design or delivery services, or facilitate schemes on behalf of others delivering schemes. The key points are: Network Rail provided services to 132 new schemes in 2006-07, of which 104 used the templates for third party schemes approved by us;

- third parties committed to £142 million of new rail investment in 2006-07 (this figure is obtained by summing the value of schemes in implementation i.e. £85 million + £57 million); and

- the value of Network Rail services provided to these schemes was £55.8 million.

10.20 Table 26 summarises Network Rail's involvement in new third party schemes entered into in 2006-07.

10.21 Some stakeholders have told us that Network Rail is responding better to customer requirements, although the picture is far from consistent. Network Rail has aimed to improve its responsiveness by increasing its front-line resources, particularly route enhancement managers who act as single points of contact for customers. However Network Rail should go further in meeting customers' requirements in a timely manner, particularly at the stage of entering into contracts with promoters. The Network Rail publication "Investing in the Network"[39] provides some further clarity on how it treats investment proposals, and the process for taking forward third party schemes.

Table 26: Network Rail's involvement in new third party investment schemes in 2006-07

	Template Agreements	Bespoke Agreements	Total numbers of agreements	Value of projects funded under template agreements £M	Value of projects funded under bespoke agreements £M	Total value of projects funded under template & bespoke agreements £M	Total forecast NR spend under template & bespoke agreements £M
Projects in development	61	11	72	£735.0	£139.0	£874.0	£15.6
Projects in implementation NR facilitating	29	13	42	£74.0	£11.0	£85.0	£6.0
Projects in implementation NR implementing	14	4	18	£54.0	£3.0	£57.0	£49.8
Total third party projects.	**104**	**28**	**132**	**£863.0**	**£153.0**	**£1,016.0**	**£71.4**

Source: Network Rail data

10.22 We have also just begun a review of the approach to third party schemes, with full stakeholder consultation and involvement, to identify areas where the process for delivering and developing these schemes can be improved. This review may lead to changes in the way data on third party schemes is reported, as well as any other appropriate changes required to the policy framework.

----

[39] The document acts as supporting material to Section 13 of the Code of Practice for Dependent Persons under Condition 25 of Network Rail's Network Licence. The document is available at: http://www.networkrail.co.uk/documents/3802_section13accompanyingmaterial.pdf

10. Major investments projects

Recommendations

10.23 Network Rail needs to respond to this review of its investment activity by:

- improving the consistency of its reporting by programme managers on expenditure and on other aspects of the project reporting regime - particularly project close-out procedures - to ensure these are implemented in full compliance with the GRIP process for each scheme;

- explain how it will put in place appropriate and consistent KPIs showing earned value for all major schemes and programmes;

- explain how it will apply good practice from WCRM and the FTN/GSM-R programme appropriately to other major projects (such as the NPPP and Access for all); and

- explain how it will improve data capture and reporting for the NRDF programme.

10.24 As noted above, we will publish the final reporter's report on our website in the next month, which will set out the reporter's recommendations in full. Network Rail will then need to respond to this report by explaining (if it has not already done so) how it will address each of the issues identified in this chapter, and all further issues identified by the reporter.

Introduction

11.1 This chapter assesses the work carried out by Network Rail toward the protection of the environment and its contribution to the achievement of sustainable development.

During 2006-07 Network Rail continued its LMD pollution prevention programme in order to secure compliance with the Control of Pollution (Oil Storage) Regulations and the Groundwater Regulations. This work is due to be completed by October 2007.

Pollution prevention

11.2 In a similar way to 2005, Network Rail's 2006 Business Plan primarily set out its plans for safety and environmental schemes that were specifically funded through ACR 2003. In terms of the environment, this specifically related to the continuing national programme of works to ensure compliance with environmental legislation in respect of oil pollution at LMDs and more general contamination to groundwater and soil on Network Rail land. The programme for 2006-07 was widened to include similar work at other depots and locations where oil is stored.

11.3 In respect of pollution prevention, during 2006-07 Network Rail:

- delivered a £10 million efficiency on the programme;

- completed the majority of oil storage works at LMDs in England and commenced implementation works in Scotland and Wales;

- completed implementation work to 240 small sites;

- progressed design of Ground Water Regulations works at LMDs; and

- commenced work on Ground Water Regulations at 10 LMD sites.

11.4 Network Rail also set out the actions it would undertake during the current year to ensure that the programme is completed by December 2007.

11.5 Although it is noted that December 2007 mirrors the deadline for this work set out in Network Rail's Annual Return 2006, October 2007 was the intended completion date stated in the 2006 and 2007 Business Plans. No explanation is given, however, for the reason why this apparent two month delay might have occurred.

11.6 Network Rail has also reported against two other specific environmental schemes:

- its contaminated land programme has been brought to a conclusion with final close-out to be completed in early 2007-08, the operation and maintenance of effluent treatment plants at seven sites being transferred under Territory management; and

- Landfill waste management sites have continued to be monitored during the year, with Network Rail planning to surrender its four licences during 2007-08.

Other environmental issues

11.7 The 2005 Business Plan highlighted a number of specific issues that Network Rail indicated that it would address in respect of its environmental objectives. These included dealing with visual impact issues such as graffiti and fly-tipping, initiatives to deal with railway crime and vegetation issues (including nesting problems), management of sites of special scientific interest, waste management initiatives, minimising noise and vibration impacts and generally improving it's understanding of environmental impacts and good practice.

11.8 ORR understood from the 2006 Business Plan that these types of issue were addressed during 2005-06, and that it was intended that this work would continue work during 2006-07. We are therefore again concerned that Network Rail has failed to report any of its activities or progress against such objectives, despite this being a specific action that we recommended be addressed in our 2006 assessment. Network Rail has again concentrated its response on those specific issues for which it has been specifically funded to

address under ACR 2003. Whilst we are encouraged that work on the pollution prevention programme is progressing well, Network Rail cannot comment fully on whether it has achieved its objectives in respect of all of the planned environmental initiatives identified previously.

11.9 In our 2005-06 assessment, we placed a number of specific actions on Network Rail, including:

- in accordance with Licence Condition 11, to provide us with a copy of the revised environmental policy that was reviewed during 2005-06 and to which it referred in the Annual Return 2006. Network Rail has not kept a promise made in December 2006 that we would receive this document;

- to ensure that its Annual Return 2007 provides greater detail of its environmental performance and achievements. As discussed above, we do not consider that this detail has been provided; and

- incorporate more detailed environmental objectives within future Business Plans so that annual performance can be more easily evaluated. Whilst the 2007 Business Plan recognises that the delivery of a sustainable railway is one of Network Rail's strategic objectives, in terms of environmental initiatives it still only focuses on the pollution prevention programme (which will shortly be coming to an end).

11.10 It is also a concern to us that Network Rail's 2007 Business Plan does not identify specific environmental targets, particularly as our Notice, issued in accordance with Condition 7 of its network licence on 13 October 2006, required it to "*contain details of plans to improve safety and environmental measures…and indicate how these will contribute to the principles of sustainability*". In view of the limited environmental initiatives outlined in the 2007 Business Plan, we consider that it will be difficult to assess performance during 2007-08 in any meaningful way, as it has been for the preceding two years.

11.11 In our policy document that outlined the way in which we intend to discharge our statutory sustainable development duties in future[40], we concluded that we would not for the time being seek to amend Condition 7 of the Network Licence to place a firmer requirement on Network Rail to formally include sustainable development objectives and initiatives within its future Business Plans. Our view on this remains unchanged at present. We will, however, keep this situation under review and, in the meantime, continue to work with Network Rail to ensure that it places sufficient emphasis on its sustainable development objectives and targets within future planning documents and annual reports.

Recommendations

11.12 In moving forward on this issue we recommend that Network Rail:

- keeps us informed of developments on the production of its revised environmental policy and provides a copy to us (consistent with Condition 8 of the Network Licence) and all train operators (consistent with Part E of the Network Code);

- incorporates more detailed environmental objectives within its 2008 Business Plan so that its intentions can be considered in more detail and associated annual performance more easily assessed;

- ensures that its Annual Return 2008 focuses on wider environmental issues than the pollution prevention programme, in order that we, the rail industry and other interested and affected parties can evaluate the extent to which its environmental strategic objective is being met, and discern the extent to which environmental responsibilities are being taken seriously; and

- participates constructively in cross-industry initiatives aimed at improving the sustainable performance of the railways.

----

[40]   *ORR's sustainable development & environmental duties – conclusions,* April 2007 (available at http://www.rail-reg.gov.uk/upload/pdf/324.pdf).

Introduction

12.1 On 31 March 1994, a licence to operate the network was granted under the Railways Act 1993 ("the Act") to Railtrack PLC, subject to conditions set out in the licence. Network Rail took over the licence in October 2002, when it became the owner and operator of the rail network. In this chapter we report on specific aspects of Network Rail's performance in relation to Network Licence requirements.

12.2 Conditions in the Network Licence cover a wide range of subjects such as stewardship of the network, asset management, insurance, timetabling, cooperation with others, accounting rules, restrictions on types of business, provision of information, environmental matters and disposal of land.

12.3 ORR has a range of statutory powers to enforce Network Licence Conditions under the Act as amended. Using these powers, we set the contractual and financial framework within which Network Rail operates the network, ensuring that the company carries out its activities efficiently and effectively, and that it is funded to do so.

At the start of the year, we confirmed the penalty of £250,000 on Network Rail for its failure to rectify the discrepancy between actual and published capability. We also found two further licence breaches for the year 2006-07. In the first case, Network Rail volunteered to us that it had disposed of some land at East Grinstead without our formal consent. We did not consider a penalty appropriate in this case.

In the second case, between September and December 2006, Network Rail breached its licence in relation to poor planning and risk assessment in the Portsmouth resignalling scheme. We announced the breach and financial penalty in 2007-08.

Infrastructure capability

12.4 In our 2006 assessment we explained that we had found Network Rail in breach of Condition 7 of its licence because it did not take the necessary steps to ensure that its published information on capability was accurate. We required Network Rail to develop a recovery programme to rectify the breach.

12.5 In March 2006 Network Rail submitted detailed plans to us for resolving the discrepancies, and implemented those plans in 2006-07. Most of the discrepancies that it had originally identified have been rectified though the network change process in Part G of the Network Code. Others have been restored to their published capability or are going through the GRIP process before restoration. It also carried out a verification programme across the network to ensure that published capability meets the actual capability and is due to complete this work in September 2007. So far, Network Rail has met the milestones in its recovery programme for this work. It is now discussing with the industry the options for rectifying any new discrepancies. There are no specific end-dates for resolution of any discrepancies discovered through this process, or for the restoration of routes included in the Business Plan 2006, but we will monitor Network Rail's progress on these matters and we expect the company to act in a timely manner in accordance with the requirements of Condition 7 of its Network Licence.

12.6 Network Rail is also developing a new process, 'short-term network change' (STNC), to temporarily amend the published capability while there are no immediate traffic prospects. This process has taken much longer than planned due to difficulties in developing and agreeing the drafting of the process. This is now on course to be included in the Network Code in October 2007.

12.7 In addition to the work required in the recovery programme, Network Rail also proposed to review the definition of capability, to ensure that its obligations and its customers' contractual rights are clearer, and to review the method by which the information is made available, to ensure that the relevant information is easier to find and can be kept as up-to-date as possible. This is taking longer than expected due to disagreements over the new definitions, but work is progressing.

12. Network Licence compliance

Portsmouth re-signalling scheme

12.8   In July 2007, we announced our intention to impose a penalty of £2.4m on Network Rail for the weaknesses in the planning and execution of the Portsmouth resignalling scheme, after concluding in June that Network Rail had breached its network licence. Failure to complete planned re-signalling work during a blockade in early 2007 has led to reduced levels of train service operating between Fratton and Portsmouth Harbour for a prolonged period (see Chapter 7 for further details).

Train performance (Chapter 4)

Measure	ACR2003 target					Achievement in 2006-07
	2004-05	2005-06	2006-07	2007-08	2008-09	
Delays to all services (million minutes)	12.3	11.3	10.6	9.8	9.1	10.53
Delays to passenger services (minutes per 100 train kms)	2.34	2.12	1.97	1.80	1.65	1.92
Delays to freight services (minutes per 100 train kms)	No target					

Source: ACR2003 and Network Rail's Annual Return 2007

Asset condition and serviceability (Chapter 6)

Track

Measure	ACR2003 target			Achievement in 2006-07		
Serviceability: Temporary speed restriction (TSR)	No target 2006-07			409		
Broken rails	No more than 300 per year from 2005-06			192		
Quality: Track geometry	No deterioration from 2003-04 levels					
	35m top (vertical deviation):					
	standard: 50%, 90.0% 100%;			50.0%	90.0%	100.0%
	target: 62.4% 89.2% 97.0%;			70.0%	92.3%	98.1%
	35m alignment (horizontal deviation):					
	standard: 50.0% 90.0% 100.0%			50.0%	90.0%	100.0%
	target: 72.7% 92.9% 96.5%			79.0%	95.0%	97.5%
	70m top (vertical deviation):					
	standard: 50.0% 90.0% 100.0%			50.0%	90.0%	100.0%
	target: 63.6% 92.4% 95.3%			72.2%	94.7%	96.7%
	70m alignment (horizontal deviation):					
	standard: 50.0% 90.0% 100.0%			50.0%	90.0%	100.0%
	target: 79.5% 95.8% 97.2%			92.9%	97.3%	98.3%
Level 2 Exceedences	Reduction to 0.9 per track mile by 2005-06			0.72		
Asset stewardship incentive index	1.00 or less by 2008-09			0.72		

Other assets

Asset type	Measure	ACR2003 target	Achievement in 2006-07
Earthworks	Serviceability: Number of TSR sites and severity score	ACR2003 - no worse than 2003-04 Total: 85 / Severity score: 323	33 / 98
Signalling	Serviceability: Failures causing more than 10 minutes delay	No worse than 2003-04 level Total failures: 28,098	22,704
	Condition	No worse than 2003-04 average condition grade of 2.5	2.4
Electrification (separate for AC and DC)	Serviceability: for 3rd rail and OLE – failures causing more than 500 minutes delay	Annual serviceability no worse than 2001-02 AC - no deterioration from 2001-02 total of 107 DC - no deterioration from 2001-02 total of 30	AC failure - 69 / DC failure - 11
	Condition:	Return to 2001-02 condition level:	
Substations and feeder stations, OLE and 3rd rail contact systems		AC sub-station condition 2001-02: 2.1 DC sub-station condition 2001-02: 2.3 AC contact systems 2001-02: 1.8 DC contact systems 2001-02: 1.8	AC sub-station condition: 1.88 DC sub-station condition: 1.64 AC contact systems: 1.7 DC contact systems: 1.9
Structures	Serviceability:	Return to 2001-02 levels	
	TSRs	Total: Not available / Severity score: Not available	8 / 15
	Condition	No deterioration from 2001 baseline of 2.1	2.1 (bridges only)
Stations	Condition	No worse than 2003-04 average condition grade of 2.25	National average 2.24
	Facilities	No target	109.7
Depots	Condition	No worse than 2003-04 condition grade of 2.73	2.58

Source: Network Rail's Asset Reporting Manual; Network Rail's Annual Return 2007 and ACR2003

Annex A: Summary of targets, measures and achievements 2006-07

Activity volumes (Chapter 7)

Renewal activity	Network Rail Business Plan 2006 targets	Achievement in 2006-07 (excluding maintenance renewals)
Rail renewal (km)	1007	1028
Sleeper renewal (all types) (km)	782	738
Ballast renewal (all types) (km)	986	850
Switch and crossings renewal (equivalent units)	407	439
Signalling (SEUs)	669	481

Source: Network Rail's Annual Return 2007

Network capability (Chapter 5)

Measure	Relevant target	Actual 2006-07
Line speed capability (track kms)	The regulatory targets for each of the network capability measures is for Network Rail to maintain the capability of the network for broadly existing use at April 2001 level, subject to network change procedures under Part G of the Network Code. Actual capability at April 2001 for each of the measures has yet to be confirmed by Network Rail.	Up to 35 mph – 3,787
		40-75 mph – 16,856
		80-105 mph – 7,488
		110-125 mph – 2,932
Gauge capability (route kms)		W6 – 4,746
		W7 – 2,720
		W8 – 5,496
		W9 – 1,618
		W9 & W10 – 1,138
Structures route availability (track kms)		RA 1-6 – 2,296
		RA 7-9 - 25,928
		RA 10 – 2,839
Electrification capability (track kms)		25 kV AC - 7,980
		650/750 V DC – 4,484
		Dual AC/DC - 38

Source:Network Rail's Annual Return 2007 and ACR2003

Annex B: Key recommendations for Network Rail

Key recommendations for each chapter of this assessment are summarised below. A plan will be developed and agreed with Network Rail to put in place robust and measurable actions to ensure that these recommendations are delivered. Progress in delivering the plan will be monitored through our regular scheduled reviews with the company. It is intended that progress will be reported in next year's assessment.

Chapter 3: Health and safety

- We acknowledge that the company is addressing specific weaknesses mentioned in this chapter, particularly those identified by Improvement Notices. Therefore there are no further recommendations.

Chapter 4: Train operations, planning and customer satisfaction

Train operations and performance

- Network Rail needs to give particular emphasis to improving PPM for the worst performing operators, through identification and dissemination of good practice within the company.
- Network Rail should pay particular attention to reducing delay caused by track circuit failures and TSRs.
- Network Rail's attention to weather resilience generally, in terms of rail stressing, drainage, points heaters and lightning protection, for instance, must continue.

Planning

- Network Rail should continue the collaborative approach to deliver further improvements in the planning process.

Possessions

- Network Rail should continue to develop ways of reducing delay and disruption from engineering possessions.

Benchmarking

- Network Rail should ensure that it uses the significant variations in satisfaction at a route level to identify best practice and ensure that this is shared.

Chapter 5: Network capability

- Through the infrastructure capability programme, develop robust processes to ensure that published capability is consistent with actual capability.
- implement the requirements of Directive 2001/14/EC and ensure that where possible it is aligned with the RUS process to provide a network statement of capability.

Chapter 6: Asset management

- Further develop its asset policies, supporting justifications and asset management regimes in line with recommendations of the independent reporter.
- Address the areas of lower capability found by the AMCL excellence model, i.e. asset data and knowledge, asset maintenance, asset costing and accounting, and sustainable development.
- Reverse the current trend of increasing asset unreliability in some areas and maintain continuous improvement in the reduction of delay minutes caused, particularly in track faults, points failures, and issues relating to electrification and power supply.
- Implement a strategy to catch up the backlog of structural inspections, prioritised on a risk basis.

Annex B: Key recommendations for Network Rail

- Improve the quality of systems (such as CARRS) and collected asset data (for example knowledge of specific asset types and extending currently incomplete data or ensuring that inspection schedules are met), particularly where this information is key to effective asset management and needs further improvement, such as rail defect data and structural inspections.

- Improve focus on the utility of design, timely development and effective delivery of asset information management systems.

Chapter 7: Renewal activity

- In its Annual Return 2007 Network Rail included a composite measure encompassing the majority of asset renewals. Whilst it appears to provide more detail than the asset activity volume measures discussed above, we require further explanation before we can endorse this new measure. It does provide an overall summary by asset type but does not give explanation of over- or under-delivery within each asset type. It is our recommendation that Network Rail continues to develop and review KPIs for:

  - annual activity measures for some asset types, e.g. structures, where activities incurring major costs are published, but not the quantum of all interventions, to fully reflect how the total annual expenditure has been allocated;

  - activity measures that reflect expenditure on project design and development, such as signalling renewals, where considerable expenditure can be incurred well before asset renewals take place; and

  - additional activity measures for maintenance volumes, particularly track, where ORR currently only has visibility of annual spend.

- In progressing the substantial programme of signalling renewal projects, Network Rail should ensure that it conducts robust risk assessments that reflect the potential impact on third parties and puts in place appropriate management and mitigation measures.

Chapter 8: Expenditure and efficiency

- Network Rail continues with work to implement a comprehensive set of unit cost measures for both maintenance and renewals activities that are sufficiently robust and wide enough in coverage to be used as the basis for efficiency analysis from 2007-08 onwards.

- Provide unit cost measures not only at a GB wide level, but disaggregated (England & Wales and Scotland) from 2008-09, with efficiency similarly broken down at this level.

Chapter 9: Financing

- There are no recommendations in relation to Network Rail's financial position.

Chapter 10: Major investment projects

- Improve the consistency of its reporting by programme managers on expenditure and on other aspects of the project reporting regime - particularly project close-out procedures - to ensure these are implemented in full compliance with the GRIP process for each scheme.

- Explain how it will put in place appropriate and consistent KPIs showing earned value for all major schemes and programmes.

- Explain how it will apply good practice from WCRM and the FTN/GSM-R programme appropriately to other major projects (such as the NPPP and Access for all).

- Explain how it will improve data capture and reporting for the NRDF programme.

Annex B: Key recommendations for Network Rail

Chapter 11: Environment

- Keeps us informed of developments on the production of its revised environmental policy and provides a copy to us (consistent with Condition 8 of the Network Licence) and all train operators (consistent with Part E of the Network Code)

- Incorporates more detailed environmental objectives within its 2008 Business Plan so that its intentions can be considered in more detail and associated annual performance more easily assessed.

- Ensures that its Annual Return 2008 focuses on wider environmental issues than the pollution prevention programme, in order that we, the rail industry and other interested and affected parties can evaluate the extent to which its environmental strategic objective is being met, and discern the extent to which environmental responsibilities are being taken seriously.

- Participates constructively in cross-industry initiatives aimed at improving the sustainable performance of the railways.

Glossary

3rd rail	A method of providing electricity to power a train by means of a continuous rigid conductor mounted alongside the railway track or between the rails.
Access for All	The Government is committed to public transport that is accessible to disabled people
ACR2003	Access Charges Review published in 2003. A review undertaken by ORR to establish the revenues and associated financial framework required for the network operator to operate, maintain, renew and enhance its infrastructure.
Annual return	Network Rail's Annual Return of their stewardship of the GB rail network
ASI	This is a composite index that includes elements (e.g. track geometry) where degradation is more gradual and does not necessarily cause train delays.
ASI-R	The asset stewardship measure has been replaced by the ASI-R. The ASI-R is similar to the network-wide ASI and differs only in detailed respects for the track geometry, which in part explains the difference in the national figures shown in the England and
Bogie	Frame containing suspension axles and wheels on which a railway vehicle is mounted.
CAF	Cost analysis framework

CECASE	Civil engineering cost and strategy evaluation
Continuous (rail)	Continuously Welded Rail
CP3	Control Period 3 which runs from 1 April 2004 to 31 March 2009.
CREs	Customer relationship executives
DfT	Department for Transport
DLR	Docland Light Railway
DMU	Diesel multiple unit
Earthworks	Embankments and cuttings
Ellipse	Database of assets and defects
EMU	Electric multiple unit
ETM	Equated track mile
FOC	Freight Operating Company
FTN	Fixed Telecoms Network
GRIP	Guide to Railway Investment Projects
Gross Tonne Miles	The sum of ton-miles handled, calculated using the total weight of the trailing tonnage (both loaded and empty cars) of the trains moved. It excludes the weight of he locomotives pulling the trains.
GSM-R	The Global System for Mobile communications as applied to Railways. Currently being installed in the UK to replace the existing NRN (National Radio Network) and CSR (Cab Secure Radio) systems.
ICC	Infrastructure Control Centre

IRSE	Institution of Railway Signal Engineers
JPIPs	Joint Performance Improvement Plan; (between a train operator and Network Rail).
JPP	joint performance process
KPI	An indicator used to monitor how well the business is doing.
Level 2 exceedence	A discrete fault in the alignment, level or gauge of the track, which requires corrective action within defined timescales
LMD	Light Maintenance Depot (for locomotives and stock)
LNE	London North Eastern route
LNW	London North Western route
MIMS	Mincom Information Management System
MUC	Maintenance unit cost measure
NDS depots	Network delivery service, depots which supply rail sleeprs and ballast etc
Network Code	The Network Code (formerly the Railtrack Track Access Conditions) is a common set of rules applying to all parties to regulated track access contracts with Network Rail.
NPPP	National Polution Prevention Program
NRDF	Network Rail Discretionary Fund

OLE	Overhead Line Equipment: the equipment suspended over the railway for supplying electricity to electric trains.
OMR	operating maintenance & renewals
Open Access services	The process by which new train operators may gain access to the railway infrastructure, provided they meet the specified safety and other standards.
ORG5	Recent Network Rail re-organisation
Periodic review	The process by which the Regulator establishes Network Rail's revenue requirements for a quinquennium.
Point heaters	Heaters that stop the tips of switch and crossings from freezing.
PPM	Public Performance Measure: the percentage of trains arriving within a specified time, combining both Network Rail and passenger TOC lateness and cancellations.
RAB	Regulatory asset base
Rail stressing	Stressing is a technique to avert rail track buckling problems that can occur when installing Continuous Welded Rail (CWR). When installing new rail the rail must be optomised to take into account variances in rail length made by ambient temprature.

Glossary

RCF	Rolling Contact Fatigue - general term covering fatigue damage at the wheel rail interface.
ROGS	Railways and Other Guided Transport Systems Safety Regulations
RRVs	Road Rail Vehicle
RUS	Route Utilisation Strategy
S&T	Signalling and Telecommunications
SAF5	Recent Network Rail re-organisation
SAF6	Recent Network Rail re-organisation
SCMI	Structures Condition Monitoring Index
SE territory	South East territory
Sleeper	Wood, concrete or steel transverse tie which secures the rails to gauge and in position.
SRA	The Strategic Rail Authority (SRA) was a non-departmental public body in the United Kingdom set up - under the Transport Act 2000 to provide strategic direction for Britain's Railway Industry. Following the passing of the Railways Act 2005 it was wound up
STNC	Short-term network change
T-12	Network Rail's requirement to finalise amended timetables (usually for planned engineering work) to enable them to be published 12 weeks in advance, (time of operation minus 12 weeks – hence T-12.)

T-18	TOC provision of data to Network Rail ragarding amended timetables
TOC	Train Operating Company
TRUST	Train Running System on TOPS (Total Operations Processing System): computer system which records details of train running as compared with schedule
TSR	Temporary Speed Restriction
W8	(h) 3618mm - (w) 2600mm
W9	(h) 3695mm - (w) 2600mm
W10	(h) 3900mm - (w) 2500mm
WCML	West Coast Main Line
WCRM	West Coast Route Modernisation