Section 1
Executive Summary

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The Technical Plan is produced in accordance with Network Rail's network licence condition and is one of a suite of three documents that will be published on an annual basis. In this volume we set out how we intend to achieve our network stewardship objectives through the safe and efficient day-to-day operation of the network, and the asset maintenance and renewal activities that underpin the delivery of the train services. This document is designed to:

- provide the Office of the Rail Regulator with details of how we intend to deliver our network stewardship obligations;
- enable providers and potential providers of services relating to railways to plan their business; and
- enable funders and potential funders of services relating to railways to plan their future financial and service requirements.

The plan provides a blueprint for the achievement of our vision of delivering "engineering excellence for Britain's railway" and contains details of many of the initiatives we have launched since October 2002 that are targeted with helping us achieve this. We have made substantial progress since the publication of the 2002 NMS. However, considerable further work is required before the activity levels, and corresponding funding requirements, can be determined with an appropriate degree of confidence. We would therefore expect to publish our longer-term expenditure projections later in the year as an input to the interim review process.

The relatively recent transfer out of administration and the scale of the challenge we face means that this plan cannot yet be considered complete, but rather reflects a transition from the old to the new. Whilst it will take some time to deliver significant improvements in asset condition, and hence train service reliability, a number of initiatives are underway to deliver some early benefits. These include:

- an improved asset inspection and remediation regime;
- contract changes to return maintenance and renewal decision making to our engineers;
- tools to better understand asset degradation and train performance; and
- improvements to the development and day-to-day delivery of the timetable.

A Legacy of Underfunding

One of the most significant challenges facing the company and its funders at present is the rising cost of operating, maintaining and renewing the network.

The condition and rate of degradation of the infrastructure acquired by Network Rail reflects many years of under-investment in both maintenance and renewal activities. In the past, funding restrictions led to a "patch and repair" approach rather than the implementation of optimum whole-life cost infrastructure strategies. Whilst such an approach may have been considered acceptable in the short-term it is unsustainable over an extended period of time and has led to the current situation where a significant part of the network requires renewing or extensive maintenance to restore it to an appropriate condition. In addition to creating a significant backlog of remedial work, this deterioration in asset condition has led to poor asset reliability and a corresponding adverse impact on train performance.

The problem has been compounded in recent years by the considerable growth in traffic. In addition to further exacerbating train performance problems, increased traffic has not been matched by an increase in maintenance and renewal activities. This has led to a further decrease in asset condition and reliability, compounding the problem of deteriorating train performance.

On numerous occasions in the past safety legislation has been introduced without the cost implications being fully assessed, or with untested assumptions that the costs would be absorbed within the renewals programme. Where incremental funding has not accompanied the safety legislation funding has had to be diverted from other budgets, leading to funding shortfalls elsewhere, again compounding the backlog problem.

Asset Stewardship

Effective asset stewardship is at the heart of the delivery of a safe and reliable railway. We are continuing to move to a position where our increased understanding of the likely future behaviour of our assets enables us to develop strategies that minimise whole-life costs. Central to this is the development of asset policies, underpinned by our engineering standards, that define:

- the type and frequency of maintenance that should be carried out on the asset;
- when the asset has reached the end of its life and replacement should be considered; and
- the type of asset that must be used as a replacement.

The shaping of these policies is facilitated by our work on the development of decision support tools, to improve our understanding of how our assets degrade and the key factors that cause this degradation. Considerable progress has been made on these tools over the past twelve months, in particular the development of the T-SPA (Track Strategic Planning Application) tool for track assets, enabling us to produce more robust estimates of activity volumes required to deliver the desired asset outputs. Whilst considerable further work is required to enhance T-SPA and our other support tools, the results to date show considerable promise. The next phase of development of the tools is scheduled to be complete by the end of 2003.

We continue to suffer from poor asset information. The introduction of these support tools – and the identification of the data they require - allows us to focus more closely on the key information that is missing and is enabling us to prioritise our plans for the capture and maintenance of this information. During 2003 we will complete our assessment of missing or duplicated data which will feed into our new information management strategy.

To address the complex interactions that characterise today's rail industry our Railway Systems initiative has taken a lead role in the management of the interfaces, for technical matters, with other parts of the industry. Two key areas of attention are wheel/rail interface issues and the development of plans for the introduction of the European Railway Traffic Management System.

Of equal importance to the availability of robust asset policies is the translation of these policies into delivered work on the network. The New Maintenance Programme is designed to return the key elements of asset stewardship decision making to our own engineers, whilst still contracting out the actual delivery of the work. By owning the relevant asset information and the work prioritisation decisions we can ensure a more consistent and effective approach to asset management, leading to improved asset performance and reduced unit costs.

Implementation of this initiative will commence in East Anglia region during June 2003. This approach is reinforced by our decision to bring the delivery of this work under our direct control in three contract areas. Work has already started on transferring the Reading contract area and this will be complete by July 2003. This initiative is designed to improve our understanding of the costs associated with maintaining the network and to assist us in redefining the levels of responsibility and risks between ourselves and our maintenance contractors.

The replacement of the maintenance contractors' legacy maintenance systems with the proprietary asset and work management system, MIMS, has greatly facilitated our ability to implement these revised relationships with our maintenance contractors. We have determined that the utilisation of MIMS throughout the company will be maximised and, following completion of the current implementation phase in June 2003, we will consider further development. Stakeholder consultation with our maintenance contractors and other interested parties will play a key part in this.

Restoring track condition through increased proactive maintenance and renewal activities is central to our strategy of improving asset reliability and urgent action is being taken to address this. The use of the new High Speed Measurement Train (capable of operating at speeds of up to 125 mph), together with our initiative to fit geometry measuring systems to service trains, and the introduction of train borne ultrasonic inspection equipment allows us to gather significantly more information than in the past on track geometry and component condition – key measures of track condition. We are also examining the use of train borne techniques to automate our assessment of sleeper condition.

Having identified the track condition, effective and timely action is required. Four rail grinding trains are now in operation on the network as part of a preventative grinding regime to combat rolling contact fatigue. Two additional plain line grinders and five switch and crossing grinders are planned for introduction this year. This will enable us to operate a full preventative maintenance regime, extending rail life substantially and thereby reducing whole-life costs significantly. Similarly, the use of stone blowing equipment is allowing us to improve the effectiveness of our ballast, critical to maintaining geometry and component condition at least cost. Further stoneblowers will be introduced onto the network during 2003, including switch and crossing stoneblowers.

Access to the Network

Increased demand for train services over recent years has led to constraints on access to the network for inspection, maintenance and renewal activities. The forecast increase in workload in the future to recover asset condition and reliability to acceptable levels is going to exacerbate this problem. We have launched a number of initiatives to gain better access to the network for inspection, maintenance and renewal activities, and to improve the way in which we use this access, to enable us to deliver a reliable network at the least possible cost.

We are working with the SRA on the development of their Capacity Utilisation Policy that in part is designed to improve the way access is apportioned for train services and engineering work. We are also seeking to improve our planning processes, for example to close down the scope of the proposed works at a sufficiently early stage so that possessions can be booked with a considerable degree of certainty. Whilst this will reduce the need for late changes to the possession requirements, it is not sufficient to accommodate the scale of additional work that is required. We need to utilise these possessions more effectively and considerable work has been carried out to develop better planning tools to improve our ability to package works.

Maintenance and Renewals Planning

Efficient asset management requires effective long-term planning. However, this planning has historically been an event driven process geared towards supporting the five yearly regulatory reviews. We are overhauling this approach and moving to a position where asset management planning is carried out on an ongoing basis supported by common methods and datasets.

Whilst progress has been made in the introduction of this revised approach there remains considerable work to be done. This is reflected in the varying confidence levels associated with each of the infrastructure asset management plans. Issues include:

- reliable activity volumes are dependent upon robust decision support tools. As has already been stated, whilst good progress has been made in their development further enhancements are required. In addition this will serve to improve knowledge of the maintenance and renewal interface which is not yet adequately addressed within the plan; and
- unit cost information is variable across the asset disciplines leading to lower than desired confidence levels in our current cost forecasts. Significant additional work is also required to understand the extent to which unit costs can be reduced through improved efficiency.

Plans are in place for each of these issues and we expect to be in a stronger position with regard to the production of a firm 10 year business plan to support the interim review in summer 2003.

Network Planning and Operations

A robust timetable, that adequately reflects the capability of the network to deliver it, also has a major role to play in the operation of a safe and reliable railway. A key initiative underway at present is a thorough review of the Rules of the Plan, the rules applicable to the construction of the timetable. Ensuring that these rules more accurately reflect real operational conditions will allow a more robust train plan to be developed. The results of this process will be implemented progressively between 2003 and 2008.

We believe significant benefits can be achieved from improvements in the day-to-day delivery of the timetable and a number of initiatives are being progressed to achieve this. The development of our front line operations staff through the production of a standard operations manual, best practice guides, competency assessments and professional development provides a strong platform for delivering improvements across the network. The use of simulators to enable signallers to practice working in a range of emergency situations will improve significantly their ability to respond in a real-life incident. The installation programme will be completed by January 2005.

A new industry code of practice – Service Recovery 2003 – was implemented in February of this year to reduce the duration and impacts of incidents. This is a cross-industry initiative and builds upon previous work in this area. A key benefit of this code is clarity on the rules governing service cancellations to facilitate a return to the scheduled timetable. This provides a major opportunity to improve cooperation with train operators.

The opportunities presented by comprehensive real time information on the performance of the network, and other system critical factors such as possessions, are considerable. Our current legacy systems, fragmented and built around differing data structures, severely limit our opportunities to exploit the limited information available to us at present. By May 2003 we will have produced a robust plan for delivering a control strategy that is capable of delivering a world-class proactive control facility.

Performance Monitoring

A robust fit for purpose rail infrastructure, allied with a realistic train timetable and an ability to respond rapidly following disruptions to services are essential components to deliver a significant reduction in train service delays over the life of this plan. However, without robust and meaningful management information about the performance of the network the effects of these strategies will be diminished. Our Performance Systems Strategy is designed to address this, providing us with both diagnostic and predictive tools. Implementation will commence during 2003 with the creation of a data warehouse and improved analytical tools. Two new statistical tools to understand better the cause and effects of delay are under development and have been used for the first time as part of the 2003 Business Plan.

We have considered how the company reviews actual train performance in order to ensure that a properly integrated approach is taken to identifying and implementing corrective action. This has led to the creation of performance improvement teams for each region, charged with monitoring actual against planned performance in order to determine where (and what) action is required to address shortfalls. Regional (drawn from both Network Rail and the relevant infrastructure maintenance company) and HQ representatives will be represented on all teams to ensure that we identify issues and solutions which could be implemented on a national basis. This work will also be supported by a new integrated performance team providing a single, central supporting function across the whole of the company.

National Expenditure Summary

Figure 1.1 National expenditure to sustain the network

£ m (rounded) in 2002/03 prices	2002/03	2003/04	2004/05	2005/06
Maintenance	1,202	1,328	1,313	1,253
Renewals				
Track	913	1,205	1,242	1,153
Structures	372	440	529	539
Signalling	573	710	752	1,122
Electrification	148	228	215	251
Plant & Machinery	88	229	202	102
Information Systems	147	104	131	146
Telecoms	120	410	486	429
Stations	108	87	148	156
Depots	36	31	30	26
Lineside Buildings	15	14	22	19
Other	5	6	4	3
Total renewals	2,525	3,464	3,760	3,947
Total maintenance & renewals	3,727	4,792	5,073	5,200
Total committed enhancements	860	1,209	1,195	534

Figure 1.2 National activity volumes

	2002/03	2003/04	2004/05	2005/06
Rail renewal (km per year)	1,055	1,198	1,277	1,487
Sleeper renewal (km per year)	674	846	895	935
Ballast renewal (km per year)	717	985	1,178	1,190
S&C renewal (units per year)	270	393	535	607