

Network Management Statement 2000

All of the documents with the symbol  are available to download with the Adobe Acrobat reader. If you do not have this programme on your computer, click [here](#) to get it.

Acrobat files are very easy to download and print. Just click on the document title and the file will open automatically.

[BACK TO REGULATORY PAPERS](#)

[BACK TO CORPORATE DOCUMENTATION](#)

-  [Chairman's Statement \(13 kb\)](#)
-
-  [Volume 01 \(3,414 kb\)](#)
-
-  [Volume 02 \(3,782 kb\)](#)
-
-  [Regional Summary London and South East \(1,967 kb\)](#)
-
-  [Regional Summary Midlands \(904 kb\)](#)
-
-  [Regional Summary North \(921 kb\)](#)
-
-  [Regional Summary Scotland \(3,431 kb\)](#)
-
-  [Regional Summary South West \(794 kb\)](#)
-
-  [Regional Summary Wales \(761 kb\)](#)
-

The pace of change in recent years in the railway industry has been more dramatic than in almost any other business area and the past year has seen no slackening in the rate of the transformation of the railway. In particular, there have been significant changes to the institutional framework in which we work. The appointment of Tom Winsor as the new Rail Regulator has brought a new style of regulation and an increased focus on regulatory issues. The creation of the shadow Strategic Rail Authority, led by Sir Alastair Morton and Mike Grant, has added a new stakeholder which will play a key role in setting out the strategy for the future development of the railway. At the same time, rapid growth in rail usage has continued.

Taken together with the Regulator's review of access charges, these developments have meant that we are working in a less certain climate. While the Regulator's provisional conclusions, issued in December 1999, brought some welcome clarity, the coming year will require crucial decisions on the kind of railway the nation needs. In particular, the question of the future funding of the development of the railway will need to be resolved. A fair financial framework will be essential if Railtrack is to be able to fund the enhancement of the network that the country and the travelling public wish to see take place. As a prerequisite, it is vital that the recent decline in Railtrack's share price is reversed, and that a sustainable single A credit rating is in place.

Within that context, we have been working hard to improve the performance of the railway and meet our public service obligations as stewards of the network. Over the past year, we have seen reductions in delays, a decrease in the number of broken rails and an increase in investment to £2bn (including CTRL). We are also developing the network with 25% of CTRL completed, work starting on the upgrading of the West Coast Main Line at Birmingham, Manchester and Euston, and £31M spent on the initial work on enhancing the East Coast Main Line.

However, our perspective on the year is inevitably dominated by the tragic accident at Ladbroke Grove. Safety has always been our key priority, but the whole industry is reviewing its management of safety and we are determined to learn the lessons of the accident. Our commitment to running a safe railway is absolute.



Sir Philip Beck

CHAIRMAN March 2000



1

Sustaining and developing Britain's rail network



Volume 1

The 2000 Network Management Statement outlines our plans for the management of railways in Great Britain. It expresses a shared industry vision for a major network expansion to carry more passenger and freight trains with greater reliability, reduced journey times and improved station facilities

Volume 1

Executive summary pages 8–17

Executive summary

Introduction pages 18–25

Introduction
Periodic review of Railtrack's access charges
Response to Regulator's provisional conclusions
Summary

Sustaining the network pages 26–55

Planning and delivering a sustained network
Measuring network outputs
Punctuality
Network capability
Asset condition
Asset condition in the next control period
Railtrack's safety plan
Environment
Expenditure plan 2001/02–2010/11
Promoting growth



Developing the network

pages 56–105

Introduction
Assessing future demand
Route Strategy analysis
Increasing network capacity
Network level capacity issues
Cost estimation
Evaluation of options
Committed enhancement schemes
Options to enhance the network
sSRA and franchise replacement
sSRA incremental outputs
Stations
Station condition and facilities
Major stations
Delivering the options
The way forward

Freight

pages 106–125

Introduction
Understanding the rail freight market
Freight routeing strategy
Gauge enhancement
Progress over the past year
Improving access to the network
Summary

Abbreviations and glossary

pages 126–132



For complete details of Customer Plans, Zone Plans and Route Strategies, please refer to Volume 2 of the 2000 Network Management Statement.

The pace of change in recent years in the railway industry has been more dramatic than in almost any other business area and the past year has seen no slackening in the rate of the transformation of the railway. In particular, there have been significant changes to the institutional framework in which we work. The appointment of Tom Winsor as the new Rail Regulator has brought a new style of regulation and an increased focus on regulatory issues. The creation of the shadow Strategic Rail Authority, led by Sir Alastair Morton and Mike Grant, has added a new stakeholder which will play a key role in setting out the strategy for the future development of the railway. At the same time, rapid growth in rail usage has continued.

Taken together with the Regulator's review of access charges, these developments have meant that we are working in a less certain climate. While the Regulator's provisional conclusions, issued in December 1999, brought some welcome clarity, the coming year will require crucial decisions on the kind of railway the nation needs. In particular, the question of the future funding of the development of the railway will need to be resolved. A fair financial framework will be essential if Railtrack is to be able to fund the enhancement of the network that the country and the travelling public wish to see take place. As a prerequisite, it is vital that the recent decline in Railtrack's share price is reversed, and that a sustainable single A credit rating is in place.

Within that context, we have been working hard to improve the performance of the railway and meet our public service obligations as stewards of the network. Over the past year, we have seen reductions in delays, a decrease in the number of broken rails and an increase in investment to £2bn (including CTRL). We are also developing the network with 25% of CTRL completed, work starting on the upgrading of the West Coast Main Line at Birmingham, Manchester and Euston, and £31M spent on the initial work on enhancing the East Coast Main Line.

However, our perspective on the year is inevitably dominated by the tragic accident at Ladbroke Grove. Safety has always been our key priority, but the whole industry is reviewing its management of safety and we are determined to learn the lessons of the accident. Our commitment to running a safe railway is absolute.



Sir Philip Beck

CHAIRMAN March 2000



executive summary





Executive summary

In last year's NMS, we set out a £27bn, ten-year programme of infrastructure-related expenditure comprising £6.4bn for maintenance, £10bn to renew the existing network and a further £10.7bn for enhancing capacity and capability. Since then, including the Channel Tunnel Rail Link (CTRL), we have invested £2bn on renewing and enhancing network infrastructure and plan to increase this to £2.5bn in 2000/01, over three times the level achieved four years ago.

We have undertaken further studies to assess market prospects for passenger and freight traffic on rail, taken forward our Route Strategies with customers and funders and spent £70M on detailed feasibility work. We have also fundamentally changed our approach to capital planning, cost estimation and project delivery.

Over the next year, critical decisions will need to be made about investment in the rail network – what extra capacity should be provided for growth and how a major programme of investment to deliver this is to be funded. This year's NMS sets out our view of the network investment needs based on our role as owner and operator of the national network. This enables us to take a national and strategic perspective on how the network should be developed. We have undertaken extensive consultation with our key stakeholders and our plans have been developed within the wider framework of Government policy. We shall work with Government, the shadow Strategic Rail Authority (sSRA) and other key stakeholders to enable these plans to be delivered.

Against this background, the 2000 NMS:

- Reviews developments in the last year
- Describes the changes we have made to improve project development and delivery
- Sets out our maintenance and renewal plans to sustain the network
- Defines the measures by which our performance will be judged in future
- Recommends a priority programme for network enhancement
- Puts forward costed options for further enhancement schemes including Customer Reasonable Requirements and the sSRA's Incremental Output Statements
- Describes our approach to estimating passenger and freight demand

- Outlines our methodology for assessing social and environmental benefits
- Highlights the importance of integrating investment arising from the franchise replacement process into our programme
- Is a key input into the Regulator's periodic review of access charges which must provide Railtrack with sufficient financing to deliver this investment via an appropriate incentives structure.

DEVELOPMENTS IN THE LAST YEAR

The last year has seen dramatic changes in the way we manage the company with the recruitment of new people and the implementation of new systems and processes. The most significant changes have come in our new approaches to managing train performance, our maintenance contractors and to the delivery of our investment programme.

Our public service obligations are our top priority. Since the publication of our NMS last year, we have:

- Increased infrastructure investment in the existing network by a third to £1.7bn in 1999/2000 – with plans for £2bn in 2000/01
- Delivered this complex investment programme within the difficult operational constraints imposed by increased traffic volumes, train performance and safety requirements
- Reduced delays we cause to passenger trains by 10%
- Enabled further growth of 3.3% in passenger train kms which has highlighted the growing number of capacity constraints on the system
- Accelerated the introduction of the Train Protection Warning System
- Made substantial progress on the Station Regeneration Programme, CTRL and a range of enhancement schemes
- Made good progress on Phase I of the West Coast Main Line project and reconfigured Phase II to reduce risk
- Improved network stewardship with reductions in broken rails, temporary speed restrictions and other key asset condition measures.

At the same time, the tragic accident at Ladbroke Grove has put the industry's safety systems and management under close scrutiny. The steadily improving safety statistics do not argue against the need for a significant response to the tragedy.

EXTERNAL ENVIRONMENT This year's NMS is published at a time of considerable uncertainty for the industry with three major processes under way – the periodic review of Railtrack's access charges, the process of franchise replacement and the Transport Bill going through Parliament which will formally establish the Strategic Rail Authority and give it new powers.

Since the 1999 NMS, the establishment of the sSRA has led to the start of a process of franchise replacement which is likely to change the operational map of rail services in this country and in turn has important implications for investment. This will take time and creates uncertainty, making it even more important that we continue to deliver investment and improvement.

The new Regulator, Tom Winsor, has raised the profile and pace of regulation and strengthened the momentum of the periodic review process. His provisional conclusions on Railtrack's future revenue requirements, in December 1999, provided welcome clarity on the future framework of regulation but the proposals, as they stand, fall short of what is needed to enable us to undertake a major programme of network enhancement.

The periodic review and the process of franchise replacement are now running concurrently, and together will determine the shape of the industry and its ability to grow over the next decade. It is vital that the two processes are integrated.

A significant factor which distinguishes Railtrack from other infrastructure network providers is that rail services are dependent on Government support. Consequently, much major investment in network development – like investment in roads – has to be justified in relation to wider social and environmental benefits, rather than in purely financial terms. This means that expansion of the network carries important implications for levels of overall Government financial support which, since 1996, has been declining.

In this context we welcome Government proposals to develop a ten-year plan for transport within which decisions on future funding of the road and rail networks will be made. This is particularly valuable given the long lead time for transport infrastructure investment, and the importance of Government policy levers in influencing the pattern of demand between modes. It also enables informed decisions on the allocation of new capacity between the road and rail networks to be based on the same cost benefit criteria.

The industry faces enormous challenges with such change taking place. This NMS lays out a vision for the way forward.

MODERNISING RAILTRACK Against this background, we have accelerated the process of modernising Railtrack to enable us to cope better with the pressures of a rapidly growing investment programme and increasing expectations. We are continuing to work to improve our relationship with our customers through our account planning process. Beyond this, our aim is to improve performance in five areas:

- Asset and performance management – including the adoption of leading-edge technology and building on the successes of the Area Delivery Groups
- Commercial project sponsorship and our understanding of the market for rail services
- Project development skills, including cost estimation and project appraisal techniques
- Project delivery including supply chain management and logistics
- Work with the industry to strengthen further our safety management.

Asset management is at the heart of Railtrack's role as steward of the network. The last year has seen critical reports from the Regulator and his consultants concerning our asset management systems. However, having successfully overcome the Y2K problems, we are now fully engaged in moving from the nationalised industry approach we inherited to applying best practice for managing and recording the condition of our assets. This is to be linked into new maintenance contracts based on collaborative working, greater transparency and increased focus on delivering outputs. Underpinning this approach are improved information systems – part of a wider strategy to enhance the quality of data used in our decision making. In doing this, Railtrack is drawing on expertise and experience from other utilities and non-regulated businesses both in the UK and worldwide.

The railway industry has long been characterised by a slow rate of technical change. Some of our technology originated in the nineteenth century. This is beginning to change, for example with the introduction of high output track machinery, heavy duty UIC60 rail and the long term prospect of advanced train control systems. We are committed to being at the forefront of technological development and we are working with railways in Europe and North America to achieve this.

We have made great progress in our management of train punctuality and expect the introduction of the new generation of maintenance contracts to reinforce our asset management activities. We are leading the way through cross-functional working, the use of key performance indicators and spreading best practice across our organisation. We want to draw on the expertise of

both those experienced in running the railway and those who can bring knowledge from other fields. This progress is reflected in our improved operating performance and delivery of the investment programme.

We have strengthened our commercial sponsorship of investment projects and have been actively working with our customers in the context of the new round of franchise bids. Since the 1999 NMS, we have also undertaken substantial work in understanding the passenger and rail freight markets and the main drivers of demand. We describe the new approaches towards cost estimation and scheme appraisal including the use of cost benefit techniques.

We have also improved our approach to the delivery of enhancements which has to be radically different in the privatised railway from that adopted when the railway was a public sector organisation. All users of the route to be enhanced need to be involved. Timetabling skills are key. Integrating the upgrading work with the renewals and maintenance programme, a robust approach to cost estimation, good possession management, logistical supply chain management – all are critical skills. We have adapted our processes to meet these demands. There are no short cuts.

SAFETY We are committed to implementing the Train Protection Warning System (TPWS) across the network by the end of 2002 in line with the recommendations of the Davies' safety report with a commitment to develop Automatic Train Protection (ATP) as part of major route upgrades. We shall also work to pilot enhancements to TPWS which might offer the capability of extending train protection capability up to 100mph. In addition, the industry has made good progress in reducing the number of signals passed at danger (SPADs). In line with Government recommendations, we are taking steps to establish the Safety & Standards Directorate as a separate subsidiary with an independent chairman. We noted the Health and Safety Executive's detailed report published in February, which concluded that there is no evidence of a conflict between safety and commercial considerations within Railtrack. We are now actively working on implementing its recommendations along with those of the Southall inquiry. We also commissioned consultants DuPont to review our safety processes and their recommendations are being implemented. Rail safety remains an absolute priority for Railtrack and the rail industry.

SUSTAINING THE NETWORK

Our approach to planning network expenditure can be considered in two parts: first, sustaining the network through maintenance and renewal and second, enhancing the capacity and capability of the network.

In sustaining the network, our forecast maintenance expenditure is based on assessed activity and costs arising from a new generation of maintenance contracts. The renewal projections derive from detailed asset maintenance plans for track, structures, signalling and stations which rely on engineering assessments, sampling data on asset condition and statistical techniques to assess requirements for maintaining a steady state network – methods which are widely used in other network utilities. Our projections are also corroborated with bottom-up business plan forecast activity levels for the first three years.

The growth of traffic on the existing network increases the rate of maintenance and renewal activity required and we have identified these costs separately, although the Regulator has assumed these costs will in future be recouped through cost-reflective access charges. We have also incorporated further improvements in train performance (5% for 2000/01 and 2.5% annually for the next five years) into our plans as well as improved track quality and station condition by 2001 which are sustained thereafter. These are aggressive given the level of growth.

Our baseline maintenance and renewal plans for the network are consistent with those we put to the Regulator last November for reaching his provisional conclusions. They involve planned expenditure of £10.6bn for the next control period, an annual rate of spending of more than £2bn. These projections incorporate annual efficiency savings of controllable costs of 2%.

£M 1999/2000 prices	1999/2000	2000/01	2001/02– 2005/06	2006/07– 2010/11
Baseline plan – sustaining				
Maintenance	680	660	3,010	2,670
Renewal	1,290	1,310	7,610	5,060

The Regulator has proposed, in his December provisional conclusions, alternative lower levels of maintenance and renewal activity which we believe are inadequate to sustain the higher level of outputs that are required. It is vital that we are adequately funded to renew the network as the allowance made by the previous Regulator for the period 1995–2001 was around £2bn less than was necessary. We are therefore undertaking further corroborative work on our plans and testing some of the underlying assumptions, particularly on track renewals. We expect to put a final cost submission for the periodic review to the Regulator in May.

We also believe the Regulator's proposals for 5% annual efficiency savings in controllable costs, applied from a 1998/99 base year, are not sustainable at a time when the company will be delivering major capital investment programmes and improved network outputs. With the expected growth of traffic on the existing network, our proposed 2% efficiency saving is already equivalent to a reduction in cost per unit of output (ie per train kilometre) of around 5% per annum.

This NMS sets out the range of measures of asset condition and network serviceability on which we expect to be judged in the next control period. They include train performance, temporary speed restrictions, track-quality measures and the quality of our station environments. We are still discussing with the Regulator the precise definition for a number of the measures in the context of the wider regulatory reporting framework for the next control period.

PLANNING NETWORK DEVELOPMENT

The second part of our planning process deals with the development of the network to enhance capacity and capability. There are a number of key building blocks to this process which are summarised below.

ASSESSING FUTURE DEMAND This must be the starting point for any development plan. Railtrack, working with the Association of Train Operating Companies (ATOC), has now developed a passenger-demand forecasting capability building on methods originally developed by British Rail. It is this work which provides the alternative demand scenarios described in this NMS. The scenarios show a range of forecast growth over ten years ranging from 23% to 64%. The forecast used in compiling the Route Strategies is 47% – which is significantly above the forecast in last year's NMS. It assumes GDP growth of 2.25% pa and retention of the fuel duty at a rate of 6% real pa, but no road pricing.

Our work demonstrates the importance of key policy variables in influencing passenger demand for rail services. For example, we believe that retention of the fuel duty escalator at 6% (which is our base assumption for the demand forecasts in this NMS) influences rail passenger demand growth over ten years by as much as 15%.

Since last year's NMS, we have also undertaken further work to understand the main drivers of freight demand. On the basis of 2–3% pa economic growth and forecast distribution patterns, we expect the overall British freight industry to grow by approximately 25–30% over the next ten years. Again, some of the key policy levers lie with Government. For example, we estimate that the introduction of 44-tonne lorries would lead to a reduction of 12% in forecast growth for rail freight.

We have developed a range of growth scenarios for rail freight based on assumptions about Government policy, rail industry costs and charging and service levels. For example, we estimate that if the rail industry reduces its costs by 2% pa relative to road, this would increase the volume of freight on rail by 30% in 2010. Like the passenger market, the rail freight industry would also benefit from road pricing, a fuel tax or rail subsidies, effectively lowering the customer's cost of shipping via rail.

Our work shows that under the most favourable conditions, rail's share of the total freight market could conceivably grow from 8% today to as much as 21% by 2010/11 – representing a tripling of current volumes. But to achieve such a shift from road to rail would require action by all industry players and significant sustained financial and policy support by Government.

CONSULTATION WITH CUSTOMERS AND FUNDERS In 1998, we introduced more systematic account-planning processes to identify the requirements of our customers and funders. Since then, we have continued to develop our account-planning processes against a background of significant change. Our discussions with train operators have been set increasingly in the context of new franchise bids and have focused more on strategic network developments. On routes where franchise replacement is under way, it is not possible to finalise plans before the outcome of the franchise bids is known. We have also held discussions with the Scottish and Welsh Executives about the development of rail services in Scotland and Wales and expect to do the same in London, following the election of the Mayor. In addition to all of these, we have continued to liaise closely with the sSRA and Passenger Transport Executives.

ROUTE STRATEGIES We have continued to develop Route Strategy-based analysis to explore where future demand may require additional capacity and capability. Our analysis examines how much additional demand can be accommodated within the constraints of the existing infrastructure, and where and when enhancements may be required to accommodate additional growth. Our objective is to propose enhancement schemes to the industry's funders and our customers which will allow this demand to be accommodated in the most efficient and cost-effective way possible. We aim to match network capacity with future estimates of demand, recognising that major upgrades typically involve step changes in capacity.

We have made substantial progress on a number of key Route Strategies such as the East Coast Main Line (ECML) since last year's NMS, and we have spent around £70M overall on detailed feasibility studies. Our proposals for each of the 45 Route Strategies are set out in Volume 2. We have incorporated, so far as possible, the incremental outputs requested by the sSRA within the Route Strategies.

APPROACH TO COST ESTIMATION AND RISK Feedback from previous statements has led us to develop a process by which we can better communicate the level to which the development of an enhancement scheme has progressed, and in so doing provide an indication as to the confidence levels associated with the costs. The process records project development on a scale of 0–5, with a full risk-quantified cost being produced at level 5, the stage at which design development is undertaken. Reaching level 5 is time consuming and expensive, typically constituting 10% of the project's final cost. We are using this approach to assist our discussions with customers and funders. For each scheme, we would expect to provide a timescale for reaching level 5 which will depend on the complexity of the scheme, including whether a Transport and Works Act (TWA) is required and the priority given by customers and funders. Railtrack is prepared to contract to deliver projects for fixed prices once level 5 is achieved. Below that level, different forms of risk sharing are more appropriate.

Our policy is to move beyond level 1 once there is some certainty of who the customer is to be and once we are confident that the programme can be funded. This, in the main, requires the completion of the franchise replacement process. In the meantime, we are pressing ahead with the committed enhancements and hope to agree as many of the sSRA's Incremental Output Statements as possible by the summer so that we can proceed with them too.

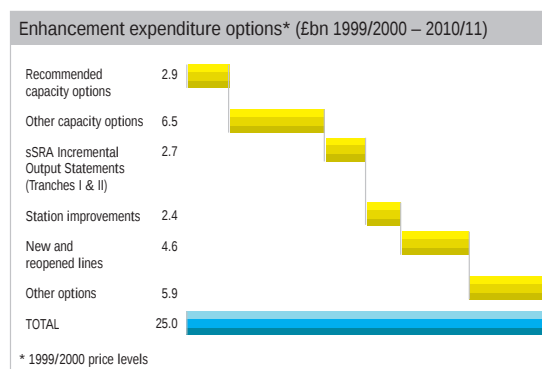
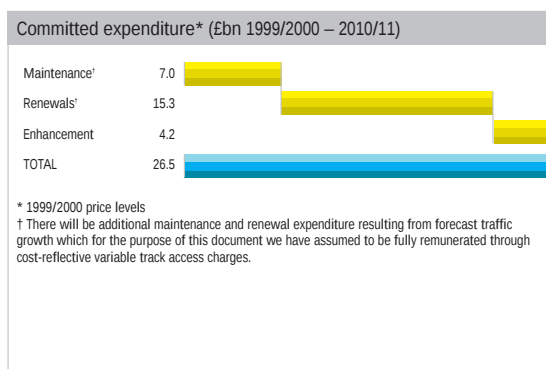
ASSESSING THE BENEFITS OF RAIL INVESTMENT The case for substantial investment in increased network capacity and capability has to be made, not just on narrow financial criteria, but on wider social and environmental benefits, in accordance with OPRAF's 1999 Planning Criteria and DETR's Guidance on the Methodology for Multi-Modal Studies. Consequently, this year we have refined our approach to the evaluation of the social and environmental benefits of enhancement projects to assist with their prioritisation. We estimate that a programme of investment in the network to permit our central forecast of passenger and freight demand would lead to annual social and environmental benefits in excess of £2.5bn by 2010. These benefits arise from reductions in the costs of air pollution, climate change, noise and vibration, traffic congestion, the risk of accidents, degradation of road infrastructure, and from the value of decreased journey times. This growth in rail use would reduce net carbon dioxide emissions by approximately 10 million tonnes pa. The most attractive schemes in cost-benefit terms include major intercity routes and improved airport links. Upgrades of suburban commuter routes typically show lower cost-benefit ratios due to the relatively high capital costs of enhancement which are required to satisfy demand in the peak although at present our work excludes any monetary valuation for the relief of overcrowding. Our analysis has been carried out on a scheme-by-scheme basis and is reflected in our approach to setting priorities.

OUR PROPOSED NETWORK DEVELOPMENT PROGRAMME We distinguish in this NMS between our committed plans for developing the existing network and costed development options.

COMMITTED ENHANCEMENT SCHEMES The main enhancement scheme in progress is the West Coast Route Modernisation (WCRM). To date we have authorised £1.25bn of work with contracts let for more than £1bn and work completed to a value of £680M. This will ensure that we are ready to deliver Phase 1 by May 2002. We are reviewing with industry stakeholders the preferred configuration, timescale and funding for Phase 2. Other schemes include Thameslink 2000, the Sunderland metro, installation of TPWS at agreed locations and the upgrade of stations to comply with the Disability Discrimination Act. These schemes require investment of £3bn in the next control period.

COSTED OPTIONS These comprise:

- Incremental Output Statements which the sSRA has asked to be costed
- Customer Reasonable Requirements
- Other major enhancement options derived from our Route Strategy analysis and work on stations.



INCREMENTAL OUTPUTS The sSRA has drawn up a portfolio of Incremental Output Statements comprising schedules of 324 often small-scale network enhancements. These schemes cover improvements to journey time, capacity, and operational flexibility. They include such measures as opening up freight-only lines for passenger services, the provision of turnback facilities at stations as well as junction remodelling and the provision of extra tracking. Work is under way to refine the specification of these enhancements. The estimated costs for the first two tranches covering 240 schemes are £2.65bn. These costs are to be refined in advance of the Regulator's July determination so that if the sSRA wishes to purchase them they may be included in the baseline expenditure. The remaining IOSs are more complex and require further development with the expectation that these will be negotiated separately with the sSRA.

CUSTOMER REASONABLE REQUIREMENTS We have continued our consultation with our customers through the account planning process. This has led to the identification of some 1,800 proposals which are at varying stages of development. As far as possible we have incorporated these proposals in our Route Strategies and Customer Plans set out in Volume 2. They are subject to further discussions with customers and funders.

OTHER ENHANCEMENT OPTIONS We have set out a wide range of options to enhance the network covering capacity, freight capability, station improvement and new and reopened lines. Our principal focus has been on options to enhance network capacity. Based on capacity-utilisation analysis, we have identified bottlenecks where current capacity utilisation is at 90% or greater and have set out options for dealing with these.

For each of these schemes we have examined both the industry financial case for investment and the wider cost benefit

case taking account of a range of social and environmental benefits. On this basis, we have put together a recommended package of enhancement schemes which will relieve capacity bottlenecks and which can be justified in terms of the social and environmental benefits. The resulting programme comprises:

- East Coast Main Line Phases I, II and III
- Great Western Main Line Phase I
- London–Stansted
- North Trans-Pennine
- Manchester Area capacity Phases I and II
- Coventry–Birmingham four tracking.

The total investment required for this programme is £3bn, of which £2.5bn falls due during the next control period. In some cases, eg ECML, physical work is already under way. For the others, we are progressing detailed feasibility, design work and cost estimates to put us in a position to initiate physical work as soon as practicable. Obviously, this prioritisation needs discussion and agreement with the sSRA.

OUR PROPOSALS For the next control period we therefore propose £3bn of committed enhancements and £2.5bn of additional schemes to enhance capacity, giving a total of £5.5bn enhancement investment over the next five years. Subject to a satisfactory Regulatory determination, this leaves headroom for other enhancement schemes which the sSRA will wish to select from the IOSs and the other options we have put forward covering capacity, freight gauging, stations, etc.

Estimated costs for the different elements of our programme are set out in the chart above. Further work is under way to refine these cost estimates on the basis of detailed feasibility work using the approach described above.

DELIVERING THE DEVELOPMENT PROGRAMME

Delivering enhancements is complex and requires an integrated management approach. The enhancement cannot be delivered in isolation from the day-to-day running of the privatised railway. The right enhancement is the one which meets the needs of all the users of the route, fits in with the route strategy, optimises the timetable and maximises the maintenance and renewal synergies, and the route's possession plan.

We, and the wider industry, face an enormous challenge in delivering this large portfolio of major projects which all need to be implemented while keeping a busy railway running and minimising disruption to users of the network.

We have therefore adopted a range of new approaches to managing the delivery of these projects. These include an improved cost and risk assessment process to ensure complete clarity at each stage of project development. We are working more closely with customers and funders from the earliest stages and have separated sponsorship of the investment from the team responsible for its delivery.

Our success in delivering the investment programme will be determined by the competence of Railtrack's management team and by the strength of our supply chain. In the last year, we have continued to develop our organisation by recruiting key people from other industries, while also developing our existing competencies. We have completed a thorough assessment of supply chain and logistics operations and put in place a clear strategy for improvement. We are looking to form around 20 strategic alliances with companies whose technologies or services are critical to our future.

We have faced up to the unique challenges of delivering investment programmes on the operational railway. The work on WCRM takes place on Europe's busiest mixed-use railway while it continues to operate with more than 2,000 trains a day. The work required to deliver the outputs will require the management of some 12,000 possessions a year. Framework agreements have been awarded to three of the world's leading programme management companies who are working closely with us in integrated project teams.

FINANCING THE DEVELOPMENT PROGRAMME

Even on the basis of the committed and recommended enhancement schemes alone, this is a massive investment programme. Our current spending levels are already three times higher than the level four years ago. The additional financing required can only be sustained if Railtrack and the industry has the right financial framework, providing an appropriate return on investment and the right incentives operating in a clear and certain context. The Regulator's review of access charges is a key determining factor and his December provisional conclusions made some important steps in the right direction. However, they do not go far enough to support the major programme of enhancement needed to enable rail to play a bigger role in the nation's transport system. Our response to the Regulator's provisional conclusions on Railtrack's revenue requirements sets out the changes we believe are needed.

We welcome acknowledgement by the Regulator that the risks associated with enhancement projects can be greater than for our core activities. Over the coming months, there are important issues to be resolved concerning the allocation of different types of risk and their remuneration in the context of the Regulator's proposed Code of Practice for enhancement.

Our ability to raise capital – both debt and equity – will depend on a range of financial parameters including our credit rating, financial ratios and share price, together with other key factors such as perceived regulatory and political risk. The regulatory and political stance will need to give the financial markets the confidence that Railtrack will not continue to be subject to a disproportionate level of regulatory and political intervention, including fines and enforcement action.

The scale of the funding requirement may require recourse to innovative methods of financing – something we are currently examining. It has been suggested that franchise operators might themselves undertake investment in upgrading the network, in their own right. In the context of what is predominantly a multiuser railway, we see fundamental practical difficulties with this idea which would introduce a further layer of contractual complexity and fragmentation into what is already a complex contractual framework. An enhancement cannot be delivered in isolation from a route's maintenance and renewal needs, its timetable and the needs of all its users. There are also particular concerns regarding the potential impact on safety of any further fragmentation. However, we have agreed with the sSRA that there may be scope for third-party investment in stations and depots and 'green field' railway, and we will explore these options with customers and funders. In this context, we believe that joint

ventures with train operators, sharing risk and return, and finally aligning the industry, has enough potential to be worth assessing.

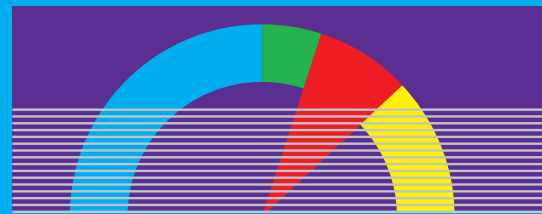
To finance a substantial enhancement programme, there needs to be a significant increase in access charges. Clearly, an element of the increase will in turn be funded from incremental farebox receipts from the increase in passengers. However, particularly in the early years, there will be a financial deficit to be funded. This primarily means increases in Government support to the industry rather than increases in fares to customers or freight rates. Currently, it is not clear as to the extent to which the Government's preparedness to fund these deficits is itself likely to be a constraint on the level of enhancement investment. The underfunding problem is made worse because the existing access charges set in 1995 are inadequate to facilitate current ongoing levels of maintenance and renewal expenditure. As such, Government is necessarily a key player in decisions of how much additional rail capacity should be provided, and where, and in what capacity, to provide for transfer of freight traffic from road to rail. As we have shown, Government policy levers are important external determinants of the growth of passenger and rail freight, which in turn will affect the success of wider Government objectives for integrated transport, environmental targets and social inclusion. We therefore look forward to contributing to the Government's ten-year plan for transport, the outcome of which, we hope, will provide a firmer basis for our investment plans.

While most attention has been focused on possible financial constraints on the scale of the investment programme, there are other potentially more significant constraints to the development of the network. These include the capacity of the supply chain, such as signalling, together with the practical difficulties of working on an operational railway while sustaining improvements in train performance. The availability and cost of possessions will also be key constraints on network development. We are examining ways of overcoming these constraints through better planning and innovation.

We will proceed to delivery of further enhancements as franchise replacement provides greater clarity as to the needs of customers; as the conclusions of the periodic review provides certainty on our funding capacity and the sSRA decides which options it wishes to fund. It is important that this process should not result in an investment hiatus at a time when there is a clear need to make progress in developing the capacity and capability of our network so that it can play a more substantial role in moving passengers and freight in the 21st Century.

OUR VISION is the delivery of a safe, reliable, efficient, modern railway for our customers and the nation, using our railway skills to grow the company to reward our stakeholders and employees. We have made good progress this year, in improving operating performance, in delivering investment and in accommodating growth. We look forward to building on this foundation.

introduction



2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

Introduction	20
Periodic review of Railtrack's access charges	22
Response to Regulator's provisional conclusions	24
Summary	25

Introduction

Railtrack was privatised in 1996 and we own and operate the nation's railway infrastructure. As the guardian of the national railway assets, Railtrack has unique responsibilities and obligations to provide a public service that meets the nation's transport needs. This document sets out our plans for meeting those obligations.

These plans are set out at a time of considerable change and uncertainty in the railway industry as a whole. The Rail Regulator issued his provisional conclusions on the periodic review of access charges in December; the process of franchise replacement has begun; and the tragedy at Ladbroke Grove has prompted a review of the whole industry's safety management systems. Passenger growth has continued at an unprecedented rate and our investment programme has doubled.

The privatisation of the railway was unique in the scale of the restructuring which took place and in the large number of organisations which that restructuring created. This established a complicated set of relationships between a wide range of stakeholders. This has meant that incentives have not always been properly aligned with different parties pursuing different objectives. In particular, Railtrack has little economic incentive to promote growth or invest, whereas train operators have strong growth incentives. We welcome the Regulator's acknowledgement that the framework of incentives may need to be revised to align the incentives of the different parties and end adversarial behaviour.

We welcome the establishment of the shadow Strategic Rail Authority (sSRA). It has set in hand major changes, most notably the Franchise Replacement programme, which will develop a framework for the development of quality and capacity for the railway industry. We are working closely with the sSRA to develop mechanisms for funding and delivering increased capacity. The Government is developing a ten-year plan for transport that will provide the context within which decisions on future investment in expanding capacity will be taken.

The issue of the future funding of the railway is one which all parties need to address. Government subsidy to passenger services is currently planned to decline, having already fallen from £2.1bn in 1996/97 to £1.54bn in 1998/99, and is currently projected to fall to £900M in 2001/02. Key decisions about how the railway is to accommodate extra demand over the next ten years, and the financial framework needed to support that growth, will be made over the coming year. The funding challenge is vast, it requires a clear framework with the right incentives. This challenge

will need to be addressed in the Regulator's review of Railtrack's passenger access charges.

ROLE AND STRUCTURE OF THE NETWORK MANAGEMENT STATEMENT

More than most companies, Railtrack has to balance the interests of a wide range of stakeholders, rail users, train operators and Government, as well as suppliers and shareholders. The process of drawing up the Network Management Statement (NMS) involves extensive consultations with customers and funders. This document seeks to reflect their requirements and aspirations, although acknowledges that these aims can sometimes conflict. It sets out a range of options for developing the railway to meet those demands and outlines Railtrack's vision of the network.

The document has been divided into two volumes. There are also six regional summaries. The main volume contains four sections. The first covers the role and purpose of the NMS and updates the progress on the periodic review. The second describes our plans and policies to sustain the existing network. The third sets out the options for the development of the passenger network and the fourth outlines the options for the development of the freight network. The second volume provides detailed local information on the 45 Route Strategies. These plans have been drawn up in consultation with customers as part of our account-planning process. They provide an assessment of current and future demand on the routes as well as the maintenance and renewal requirements for each section of railway.

The six regional documents provide a broad overview of activity in: Scotland, Wales, the South West, the North of England, London and the South East, and the Midlands.

LICENCE CONDITION 7

The publication of a Network Management Statement is a requirement of Condition 7 of Railtrack's Licence as amended in September 1997. Its form and the period it covers are agreed with the Regulator and its primary purpose is to supply providers and funders of railway services with information to plan their future activities with a reasonable degree of assurance. It sets out plans for the maintenance and renewal of the network; and its improvement and development. These include:

- Projections of future network quality and capability
- Planned modifications to the network and how they will affect customers
- Estimates of the costs of planned improvement
- Progress on the plans set out in the 1999 Statement.

RAILTRACK'S STRATEGIC ROLE

As infrastructure owner and manager, Railtrack has important responsibilities not only for managing day-to-day operations but also for planning development of the network to meet the future demands likely to be placed upon it. Our position at the core of the railway allows us to take a national perspective and an overview of the network as a whole and, unlike train operators constrained by the length of their franchises, can look at issues over the long term.

We have steadily improved our processes to gain a robust understanding of the requirements of our train operator customers, and through them of the passenger and rail freight markets. In this way we can take a co-ordinated and integrated approach to the development of the railway. This is reinforced through joint-industry research on future demand and the requirements which will be placed on the infrastructure and its stations to meet that demand.

Following publication of the 1999 Statement on 25 March, we held extensive discussions with our customers and funders during April and May. We also received written responses from many local authorities, the Rail User Consultative Committees (RUCCs) and other transport-planning bodies. All expressed a desire to be involved more closely in the compilation process. We have taken this forward through our involvement in the Local Transport Plan process and a major conference was held in October to discuss local authority aspirations for the NMS.

During the summer, we also held a number of regional workshops to feed back results of our consultation and our proposed actions to address the issues raised. Generally, the respondents felt that the 1999 NMS was an improvement on the previous year's and that the categorisation of enhancements added clarity. There was some concern that there was a bias towards main lines and London and that more work was needed to explain capacity issues. There were also requests for more details on station condition and greater clarity on financing.

We have undertaken a detailed assessment of this feedback and, where possible, have tried to accommodate these views in this year's NMS.

CONSULTATION ON THIS NMS

We would again like to receive comments on both format and content of the NMS. We will use a number of mechanisms to achieve this:

- Formal, written consultation with our customers through our account executives on both this Statement and our Route Strategies
- Formal consultation with the SSRA, PTEs and other funders
- Informal consultation with our suppliers
- Written responses from other interested parties or e-mails on nms@railtrack.co.uk or telephone calls on 08457 114141
- Forums in each of our Zones to feed back the results of our consultation exercise together with the opportunity to discuss the NMS with our appropriate key managers.

We would like to receive written responses by 1 June 2000, and we will conclude formal consultations with our customers and funders by the same date. The consultation forums in each of our Zones will be held during June and July 2000.

Written responses should be sent to:

Paul Prescott
Strategy Director
DP 10/82
Railtrack House
Euston Square
London NW1 2EE
or e-mail on nms@railtrack.co.uk

Periodic review of Railtrack's access charges

This NMS is a key milestone in the process of determining the future level of passenger access charges. The Regulator launched the periodic review of those access charges in December 1997 and two years on, in December 1999, announced his provisional conclusions on his review.

The Regulator's proposed methodology for resetting our price controls is based on the standard utility model and uses the single-till approach adopted in 1995. There are four key steps in this process:

- Step 1: Identify the baseline outputs which we are expected to deliver in the next control period.
- Step 2: Identify the level of revenue from access charges for franchised passenger train services over the next price control period which we require in order to finance the delivery of these baseline outputs.
- Step 3: Determine how this revenue should be profiled over the price control period.
- Step 4: Check that the resulting financial indicators (gearing, etc) are consistent with the Regulator's duties, including not making it unduly difficult for us to finance our business.

The methodology for step 2 is summarised in Chart 2.

OUTPUTS

The appropriate level of charges depends on the outputs which we are expected to deliver in return for these charges. The outputs covered by the periodic review are referred to as the baseline outputs since they exclude any new enhancement which might be negotiated. The baseline outputs are defined as:

- The sustained network outputs, essentially based on existing network outputs, which are achieved primarily through maintenance and renewal of the network.
- Incremental outputs which are included in the baseline, as enhancements to the existing network, to accommodate the needs of passengers, operators and funders.

These different outputs are represented in Chart 3.

ACTIVITIES AND RENEWAL VOLUMES

For the sustained network, we have put forward expenditure projections for the next two control periods (2001/02–2011/12). The Regulator is still examining these projections and has asked for further corroborative work to support the case for higher future

levels of renewal activity. In view of uncertainties in the level of activity required, he has evaluated a range of scenarios. His base scenario assumes a continuation of the 1998/99 levels of maintenance and renewal activity into the next control period which are lower than our own forecasts. However, as the Regulator is not sure whether this will be sufficient to sustain the current capability and condition of the network, he is using a provisional assumption that these activities may need to increase by around 10%. However, this does not take account of our recent reassessment of the maintenance and renewal costs associated with the West Coast Main Line, which could mean a further 12% increase in activity.

EFFICIENCY

Our expenditure projections incorporate challenging efficiency targets of 2% pa in the level of controllable costs. The Regulator has examined our efficiency targets and compared them with evidence from a wide range of sources. Given this evidence, the Regulator believes that we should be able to achieve savings of 3–5% pa over the price control period as a whole. For the purpose of his provisional conclusions, he has assumed savings of 5% pa – at the top end of his proposed range. If implemented this would represent cost reductions of over 30% by the end of the next control period.

SINGLE-TILL INCOME

In setting the level of our passenger access charges, the Regulator takes into account expected income from other sources such as property and freight – this is known as single-till income. Property is the main source of this income and is expected to total just under £1bn over the next price control period. The Regulator has provisionally assumed that freight income and open-access income will remain flat in real terms – but the freight agreements are due for renewal and the Regulator will take the new contracts into account in setting the passenger access charges.

COST OF CAPITAL

The cost of capital is the rate of return demanded by the providers of capital (eg shareholders and banks) if they are to invest in or lend to a particular business or project. The Regulator proposes to set the allowed rate of return on a pre-tax basis. His approach to assessing the cost of capital has been to adopt a methodology which is consistent with that used by other regulators and takes account of our risk profile. He has concluded that we face some additional risks compared with other utilities. On this basis, the Regulator has proposed a real pre-tax rate of return of 7–7.5%.

REGULATORY ASSET BASE

In setting access charges, the Regulator must also determine the asset value to which the cost of capital should be applied. This asset value is referred to as the regulatory asset base or RAB. The Regulator believes that it is important to ensure that this is consistent with the reasonable expectations of investors at the time of privatisation. Otherwise, investors' perception of regulatory risk may be increased and this could impact on our cost of finance. The initial RAB is based on the value of equity plus debt at around the time of privatisation. The Regulator presently intends to include an uplift of 10–15% on the first day's trading value of equity. The provisional conclusions assume an uplift of 10% which results in an initial RAB of £2.93bn at 1998/99 prices.

In addition, the Regulator has set out his provisional conclusions on how the RAB will be rolled forward. He intends to include:

- £0.48bn of backlog spending, on the basis that this was the understanding when the price controls were set at privatisation.
- Only £0.32bn of the additional £1.9bn which we will have spent during the current price control period in excess of the allowances made by the Regulator in January 1995.
- £0.46bn of enhancement expenditure in the current control period.

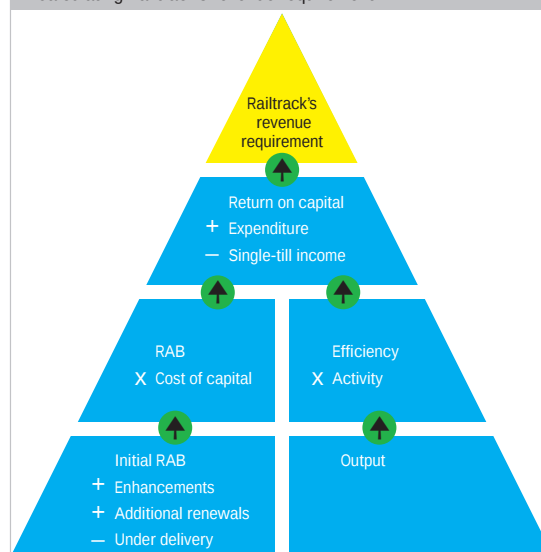
BASELINE REVENUES

On the basis of these assumptions, there is still a wide range of possible outcomes which are set out in Table 4. These charges do not include the cost of up to around £0.7bn of further enhancements in the current control period, the cost of any enhancements which might be negotiated over the next period or the cost of any incremental outputs which the sSRA may wish to buy as part of the periodic review process.

REACHING FINAL CONCLUSIONS

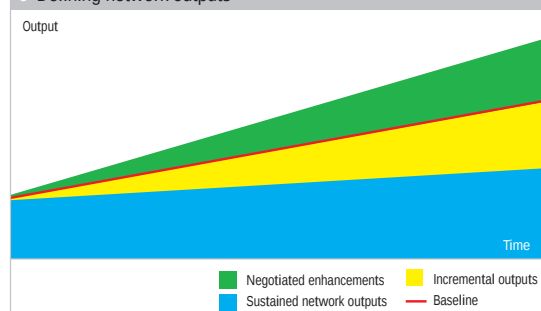
The Regulator is due to reach his final conclusions in July 2000. There are a number of different work areas which need to be finalised before then. A major focus of activity will be to define and cost the network outputs to be included in the baseline. In addition, further work is under way on the development of a clear framework and Code of Practice for enhancements, their negotiation and funding. There has also been a consultation process on the incentive framework and the Regulator is expected to publish his provisional conclusions on these issues and the subsequent new structure of charges in April.

2 Calculating Railtrack's revenue requirement



The Regulator's proposed methodology for resetting our access charges is based on the standard utility model and uses the single-till approach.

3 Defining network outputs



Railtrack's access charges will be set on an agreed level of baseline outputs.

4 Potential initial adjustment to franchised passenger access charges

Initial price adjustment with X=0	No new enhancements	Including Railtrack's enhancement projections
Scenario 1: Base	-17%	-1%
Scenario 2: Additional activity	-8%	8%
Scenario 3: Additional WCRM	2%	18%
Scenario 4: Railtrack	31%	47%

The Regulator has set out a range of scenarios for future access charges.

Response to Regulator's provisional conclusions

We responded in detail to the Regulator's provisional conclusions in February. We set out here a summary of the main points in our reply.

CLARITY OF FRAMEWORK

The Regulator's proposals signal a welcome intention to bring clarity and predictability to the regulatory framework. They cover the structure of the future framework of regulation and the basis for calculating our revenue for the next control period.

The Regulator has taken the opportunity to deal with many of the flaws in the current regime. In particular, we support his proposals for a baseline output statement setting out both the requirement to maintain the network in its current state, together with specified incremental outputs to improve its capacity and capability. The stricter definition of modern equivalent form will provide much-needed clarity on the boundary between maintenance and renewals. The framework for enhancement investment is also a welcome development although the proposed Code of Practice for large enhancement schemes will need considerable further work on the details if it is to enable the required investment on network enhancement to take place.

However, there are a number of issues where we do not accept the Regulator's assumptions and conclusions and believe that, if these are reflected in the final determination, they will not prove an adequate financial framework to support our activities.

MAINTENANCE AND RENEWAL VOLUMES

We believe the Regulator's provisions for underlying volumes of maintenance and renewal are insufficient to maintain and improve network performance. We feel that the efficiency targets are unachievable against a background of growth and would jeopardise delivery of key outputs. In addition, the proposals would not allow Railtrack to finance any significant enhancement to network capability and capacity. We believe this would be inconsistent with the Regulator's duty not to make it unduly difficult for Railtrack to finance its activities.

The Regulator has challenged us to provide corroboration of our plans for future maintenance and renewal activity and to explain why these are different from current levels of spending. Our latest plans were prepared against the background of concerns expressed by his own consultants about the sufficiency of our earlier plans for track and signalling renewals. It is important that there is adequate

provision in the next control period for expenditure to maintain the serviceability of the network, particularly in the context of an output-based incentive regime. Inadequate allowance for this activity was a major flaw in the current control period and we hope that this will not be repeated in the next.

CORPORATE FINANCE ISSUES

We disagree with aspects of the Regulator's approach to estimating the cost of capital, although this methodology will be reviewed by the Competition Commission in the light of appeals against OFWAT's recent regulatory review which adopted the same method. We support the Regulator's acknowledgement of the need to ensure that the allowed rate of return is sufficient to enable Railtrack to raise new finance without difficulty, but are concerned that his provisional conclusions do not do this. In particular the allowed cost of debt does not reflect the impact of the recent credit rating downgrade.

We believe that the initial value of the regulatory asset base should see an uplift at the top end of his 10–15% range or higher. In rolling forward the RAB, we will have spent £1.9bn more in the current control period than was allowed for when access charges were set. It is therefore disappointing that the Regulator is suggesting that only £320M of this expenditure should be rolled forward.

EFFICIENCY

We recognise that the unique nature of rail means that the review of charges poses particular challenges for the Regulator. The water and energy regulators can compare performance among different regional utilities. International comparisons can be used in telecommunications regulation. However, we have no direct UK comparisons and benchmarking against overseas railways is difficult because of different operational, ownership and funding characteristics.

The Regulator's assumptions of 5% annual savings in controllable costs – at the top end of the 3–5% range proposed by his consultants – and applying from 1998/99 onwards, is not, we believe, sustainable. It would involve a reduction in costs of about 30% by 2006 – at a time when the company will be delivering a major capital investment programme and improved network outputs.

Allowing for anticipated growth and economies of scale, our true like-for-like efficiency savings are higher than the headline numbers imply. Our proposed efficiency savings of 2% pa in our total costs are equivalent to a reduction in unit costs of around 5% pa – already at the higher end of the range proposed by the Regulator.

The declared forecast efficiencies conceal three factors, which increase the true level of efficiency improvement which we are forecasting in this submission.

First, the stated efficiencies are inclusive of the costs associated with the commitment to deliver additional outputs, such as fewer delay minutes in the next control period. These have been implicitly included within the base forecasts.

Second, one-off costs that are a consequence of reorganising working practices and consequent training costs have not been separately identified.

Third, our input costs rise more quickly than the rate of inflation. This is because 70% of our cost base is labour and the real annual cost increase for labour was assumed to be in the range 1.4–1.8%. This results in a weighted average for all our factor costs of 1.2% above RPI.

Finally, when comparing our efficiency projections against potential efficiency opportunities, account should be taken of unique limitations on our ability to deliver efficiency savings in the second control period. For example, incompatible priorities can arise where demands for improved safety, punctuality, growth and track quality conflicts with demands to improve efficiency.

We also disagree, in principle, with the Regulator's decision to apply his efficiency targets for the next control period from a base year of 1998/99 in this control period.

Summary

The provisional conclusions mark a major step towards establishing a robust and fair regulatory framework. However, a great deal of uncertainty remains on a number of key issues. This means that significant further work will be required to provide the necessary detail for the new framework to be implemented in July 2000.

sustaining





Planning and delivering a sustained network	29
Measuring network outputs	31
Punctuality	32
Network capability	35
Asset condition	40
Asset condition in the next control period	45
Railtrack's safety plan	48
Environment	51
Expenditure plan 2001/02–2011/12	52
Traffic growth	55

Planning and delivering a sustained network

RECORD INVESTMENT

We are providing record levels of investment in the network with spending for the financial year 1999/2000 running at £2bn a year (including CTRL), more than double the level of three years ago. The £2.5bn investment plan approved by Railtrack's Board for 2000/01 is over twice the level ever achieved by British Rail. The renewals component of this is set out in Table 6.

Over the control period, Railtrack has spent £1.9bn more on renewing the network than was allowed for by the Regulator when he set access charges in 1995, Chart 5. This expenditure has been incurred despite the regulatory uncertainty over its treatment, and the Regulator's provisional conclusions have proposed that only £320M of this expenditure would be included in the Regulatory Asset Base.

RENEWAL OF THE NETWORK OVER THE PAST YEAR

At the end of this financial year we will have invested over £360M in track renewals (an increase of £30M from 1998/99) in delivering 515km of rerailing, 410km of resleepering and 433km of reballasting. We will also have invested over £146M (an 8% increase from 1998/99) in delivering 74 structure renewals. We will also have invested a further £290M in stations and depots, to meet our management target for completion of 82% of the SRP by March 2000. As the programme reaches its final phase, our delivery teams have achieved further efficiencies in both unit costs and management on-costs which provides better value for money. The whole programme will be complete by 1 April 2001.

Table 7 shows our achievements to date and the outstanding work which will be completed in the final year of the programme.

OUR CRITERIA AND POLICIES

As a regulated company in an industry which receives public subsidy, it is important that customers and funders can understand the basis for our investment decisions. Our Network Licence (Condition 7) imposes an obligation for us to develop and publish criteria which we will apply to secure the maintenance, renewal and development of the network in accordance with best practice and in a timely, economic and efficient manner, so as to meet the reasonable requirements of customers and funders.

We have published two editions of these criteria following comprehensive industry consultation; the most recent in September 1998. Our criteria are based on the following requirements.

That we will:

- Always carry out maintenance or investment necessary to achieve statutory compliance.
- Make maintenance and investment decisions to ensure that we comply with commitments set out in our contracts with customers and funders.
- Ensure that our maintenance and investment decisions allow us to comply with commitments given in our Network Management Statement.
- Seek to minimise whole-life costs for each route while seeking to maintain an improving trend in route reliability over time.
- Seek to minimise whole-life costs for each discrete asset or group of assets.
- Inform our investment decisions on specific schemes through discussions with customers in order to reach agreement on the basis of what constitutes modern equivalent form.
- Be proactive in developing enhancement investment.
- Carry out enhancement schemes if we can negotiate a fair return through access charges.

We have a duty to review our criteria from time to time to ensure that they remain fit for purpose and a review will be needed once the outcome of the periodic review and the regulatory framework for the next control period are finalised.

CONSULTATION WITH OPERATORS ON OUR PLANS

We recognise that the way we manage the network through our maintenance and renewal contractors can have a significant impact on the way the train operators and PTEs use our network. We are committed to sharing openly our maintenance and renewal plans with each train operator and PTE. This is to ensure that each of them has a reasonable opportunity to procure enhancements as part of our proposed works where it is practicable, economical and efficient to do so, and provided that agreement is reached on the funding arrangements.

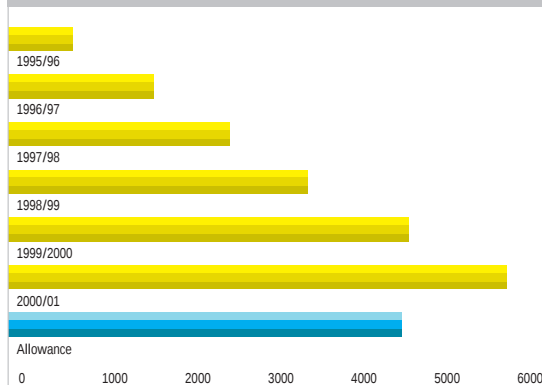
This process for sharing maintenance and renewal plans has been developed on the basis of some key principles. The process should:

- Enable train operators and PTEs to identify any enhancements which they might wish to pay for as additions to existing proposals for work.
- Be at a sufficiently early stage of development to allow meaningful discussions to take place.
- Be consistent with our business planning process to ensure proper integration, tracking and updating.
- Recognise that the contents of our ten-year business plan are likely to change as schemes, priorities and maintenance and renewal plans are refined, costings are firmed up and opportunities for packaging identified.
- Be designed to complement existing contractual and Licence commitments for the sharing of maintenance, repair, renewal or modification plans with train operators and PTEs.

We intend to prepare reports for train operators and PTEs by May each year that will set out plans for five financial years, starting from the following May. The reports will inform train operators and PTEs of all our plans for maintenance and renewal, including:

- 'Plain line' track renewal
- Major track and signalling renewals
- Significant other renewal plans at stations and depots, including Major Stations
- Large-scale planned renewals of other assets managed within our maintenance and renewal programme.

5 Cumulative renewals spend (£M)



Railtrack has spent £1.9bn more on renewing the network than was allowed for by the Regulator.

6 Railtrack expenditure on renewals (£M at cash prices)

2000/01 plan	1340
1999/2000 forecast	1293
1998/99 actual	1166
1997/98 actual	1072

7 Station SRP scheme management targets for completion (%)

31/3/01 plan	100
31/3/00 forecast	82
31/3/99 actual	52
31/3/98 actual	25

Measuring network outputs

INTRODUCTION

At the last periodic review of access charges, the output expectations placed on us were defined primarily by the specific obligations included in access agreements (eg the quantum and quality of access rights in Schedule 5 of track access agreements) and through the Regulator's policy statement (in January 1995) that the level of charges had been set to provide for renewal in modern equivalent form. The concept of renewal in modern equivalent form is now widely accepted to have been poorly defined and therefore difficult to put into practice. In order to try to address this situation, a number of output measures, together with forecast changes expected through maintenance and renewal, were set out in the 1998 and 1999 Network Management Statements.

The current periodic review offers the opportunity to provide greater clarity of the network-wide outputs delivered by the sustained railway. As such, we welcome the Regulator's desire, set out in his provisional conclusions, for a clear regulatory contract where expectations are properly defined.

PRINCIPLES

It is important that the principles behind this approach are clear. We believe that expectations of the network should focus primarily on network serviceability and how it performs for our customers – in other words on outputs, not inputs – and cover realistic areas where improvement is within our control. For the next control period starting on 1 April 2001, these measures will focus on network performance and serviceability, and the capability of the network with condition measures for the major infrastructure assets (track, structures, signalling, stations and depots). We are still discussing with the Regulator the range and precise definitions of these output measures and how they should be dealt with under the regulatory framework.

Our expectations for this range of measures is broadly as follows.

MEASURES FOR THE CURRENT CONTROL PERIOD

The output measures reported in this NMS provide continuity with the measures reported last year. For 2000/01, we are confirming the management targets which we expect to deliver in respect of planned improvements in Railtrack-caused train delay,

improvement in track quality and completion of the SRP. We also report on a number of other measures: temporary speed restrictions, station condition and broken rails. Our plans for next year are based on achieving these management targets. As such, our plans do not provide scope for further improvement in these areas in 2000/01.

REPORTING IN THE NEXT CONTROL PERIOD

The Regulator has proposed establishing an independent Reporter system, similar to that used in the water industry, to verify data on asset condition and network serviceability. We welcome the general proposals which we see as an opportunity to enhance and consolidate the existing regulatory reporting requirements.

The detailed scope of the Reporter's role and the mechanism for reporting to the Regulator will need to be agreed by the end of this year in order to take effect in April 2001.

We are working with the Regulator to develop the future regulatory output monitoring regime based on an annual return with data subject to audit by the Reporter. We would expect this report to be the mechanism through which the Regulator satisfies himself that we are meeting our asset stewardship obligations. This would mean that future Network Management Statements would focus on the prime purpose of providing customers and funders with the performance and development information required to plan their businesses.

However, we remain concerned at how the new regime will be implemented and the nature and level of sanctions should a target be missed. It is important that this uncertainty is addressed in the Regulator's spring 2000 provisional conclusions on the incentives framework.

MEASURES FOR THE NEXT CONTROL PERIOD

The expected outputs and the associated maintenance and renewal expenditure levels set out for the sustained network are based on maintaining the capability of the network and operating it at current traffic volumes. We have also estimated the additional maintenance and renewal costs associated with anticipated growth of traffic on the existing network, which the Regulator has assumed will be remunerated through variable access charges (see page 55). Forecasts of outputs, like any prediction, are subject to some variability around the central estimate. The outputs for the next control period are subject to the Regulator's review of access charges, as are the future monitoring and reporting arrangements for these outputs.

We are in discussions with the Regulator about the scope and definitions of key outputs for measuring our performance in the next control period. Our wish is to ensure that the focus remains on the broad outputs which the railway should deliver and not over-prescriptive outlines of inputs which could impede the efficient delivery of improved network performance. Our proposals for output measurements are described in Table 8.

We believe train performance should continue as the key output measure which is incentivised through the access agreements. Indeed, we believe that our incentives and targets should be defined primarily in terms of the performance of the network and that this should be reflected in the overall design of the output monitoring and incentive regime.

We intend to develop and implement new national condition indices next year. These will cover bridges, signalling, electrification and depot assets to complement measures already reported. The precise coverage of these indices is subject to discussion with the Regulator as part of the periodic review process.

We believe there is a continuing role for appropriate network capability and condition measures if they are properly defined. However, unless any additional targets associated with the capability and asset condition measures complement and support the structure of performance regimes, they are likely to give rise to unclear and conflicting objectives and inefficient outcomes.

In his provisional conclusions, the Regulator has accepted the importance of providing Railtrack with an incentive to increase volumes over the next control period. As such, we would seek to include some measure of volume growth, such as train miles, when considering whether we have met our output obligations.

In the following sections we discuss each of the key output areas in turn.

Punctuality

PERFORMANCE DURING THE CURRENT CONTROL PERIOD

Since privatisation, we have delivered a sustained reduction of more than 45% in train delays caused by infrastructure failures and other causes attributable to Railtrack. Railtrack's share of industry delays has dropped from 70% to just over 40%. This has been achieved while accommodating a 25% growth in passenger-train kilometres. In areas where the network is operating at close to full capacity, additional trains can present considerable risks to performance. Our analysis also suggests that on average a 1% growth in passenger-train kilometres leads to a 2.5% increase in delays which puts our performance into context.

As Charts 9 and 10 show, there was a sharp reduction in delays in the first year of our operation as a private company. This was due to the concerted effort made to target key performance initiatives which would bring rapid short-term improvements. The rate of decrease has since slowed, but this is not unusual in newly restructured industries where early gains are then followed by a lower rate of improvement as longer-term strategic solutions take time to make an impact.

MODERNISING RAILTRACK – PERFORMANCE

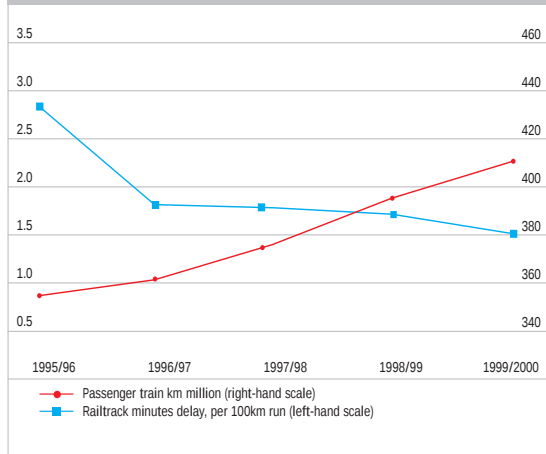
In order to continue our focus on reducing delays, a Director of Performance was appointed in December 1997 to implement 'Project Prompt'. This initiative targeted four key areas: analysing the root causes of delay, creating a formal process for performance improvement (PfPI), improving local performance management processes, and supporting local performance teams.

As part of this initiative, Area Delivery Groups (ADGs) were established. These are multifunctional teams which bring together staff specialising in contract management, production, finance, business development and representatives of our maintenance contractors. These ADGs set a target for the minutes' delay and produce budgeted action plans based on best practice to drive reductions in their area. The ADGs are then monitored against their agreed budget. This process has made the management of performance proactive rather than reactive. It has given accountability to local teams who are closest to the problems and who know how best to tackle them.

8 Railtrack's proposals for output measurement and reporting for 2001–06

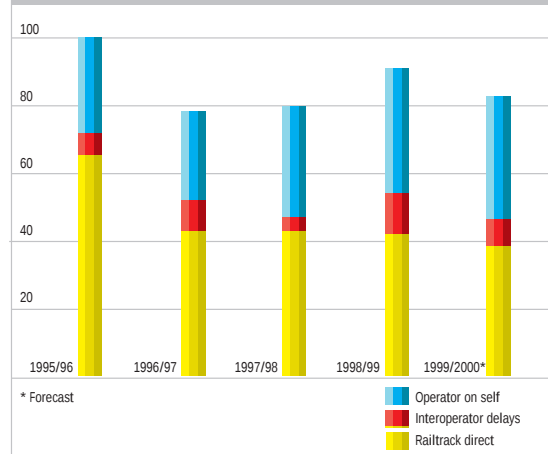
Class of measure	Contractual measures	National measures
Network performance and serviceability	Delay to train service Station performance (response to repair obligations)	Railtrack-attributed delay by cause
Network/station capability	SSRA baseline IOSs	Linespeed capability Freight loading gauge Axle loads Station facilities
Asset condition		Track quality Broken rails Condition of track, temporary speed restrictions (outside Rules of the Route) Condition of structures, temporary speed restrictions (outside Rules of the Route) Bridge condition index Signalling (route relay interlockings) condition index Electrical equipment (substation and contact system) condition index Station condition index Light maintenance depots condition index Carriage washer quality
Volume/utilisation	Volume incentive built into structure of charges	Capacity utilisation

9 Passenger train growth and Railtrack delays



Delays have been reduced while accommodating a 25% growth in passenger km.

10 Passenger train delays index



Delays caused by Railtrack have fallen every year since privatisation.

The ADGs' particular focus in the coming year will be on improving the effectiveness of maintenance. As maintenance accounts for 40% of our operating costs and 70% of our share of delays, it is an area which could reap great benefits. Four thousand key assets which are critical to the performance of the network have been identified and their maintenance regimes intensified to prevent failures. Successful implementation of IMC2000, the new form of maintenance contract, is another ADG priority for this year.

Clearly passengers and freight customers wish to see their trains become more reliable and punctual and they have little interest in which part of the railway industry causes delay. Since the Deputy Prime Minister's Rail Summit in February 1999, Railtrack and the train operators have been working together in the National Performance Task Force. This meets monthly and provides a forum for senior managers of train operating companies and Railtrack to discuss joint industry approaches to tackling delays and ensure that best practice is adopted across the network. This task force has promoted a range of joint industry initiatives. These include co-ordinated action with train operators at particular locations where there have been particularly significant levels of delay. This activity ranges from deployment of additional train despatch staff to timetabling solutions and signalling adjustments. The task force will continue to promote and co-ordinate best practice across the industry and will report on progress at the next Rail Summit in May.

PERFORMANCE DURING THE PAST YEAR

Delays caused by Railtrack have fallen again, as they have done every year since privatisation. We have continued to devote considerable management effort and resources to this issue, acknowledging the importance of reliability to passengers.

The initiatives outlined above have been developed and extended. One of the major programmes this year has focused on tackling the effect of leaves on the line which is a significant cause of delay in the autumn. The leaves adhere to the line making it difficult for the trains to grip the track causing consequent delays and disruption. Our initiatives to tackle this problem included the deployment of over a thousand trackside works; the use of sandite trains and multipurpose vehicles; and vegetation management activity. This constituted the biggest ever autumn programme on the railway. All these measures, some of which have been trialled for the first time this year, are being reviewed to determine which were the most effective.

We believe that the total reduction in delays per passenger train by the end of the year will be approximately 10%. Although the initiatives taken over the autumn were successful, progress was undermined by extremely high delays on just three days. The scale of these delays means that about 3.5% of the annual delay total was incurred on these three days alone. This means we are unlikely to meet the Regulator's target of 12.7% reduction in delays if these days are included.

TARGETS FOR FUTURE PERFORMANCE IMPROVEMENT

Our goal is to deliver improvements in train service punctuality year on year. For 2000/01, we have set ourselves a target reduction of 5% compared with this year, consistent with the expected level stated in last year's Statement. For the next control period to 2006, we are forecasting an improvement of 11.9%, equivalent to annual improvements averaging 2.5%. Details are given in Table 11. The extent to which this will be possible depends on the rate of traffic growth, the speed of new train introduction, the disruption caused by the investment programme, the incentive regime that is put in place and other variables.

Railtrack believes that correctly set incentives are the most efficient means of delivering future performance enhancements, and that this has been demonstrated by the scale of Railtrack's overall improvement in performance since privatisation. Railtrack has advocated the need to increase the value of the incentives facing the industry in a planned and systematic way to reflect the full value of performance to passengers and society as a whole.

OPTIONS FOR FURTHER PERFORMANCE IMPROVEMENT

Following a performance improvement of more than 45% since privatisation, future improvements will become progressively more expensive to achieve. We have calculated that a further 5% pa improvement in performance, over and above that to which we are already committed (Table 11), would cost £90M pa and a 7.5% pa improvement, £425M. Moreover, while continuing growth on the network is welcomed in providing an improved service to passengers, the resulting network congestion presents significant challenges for performance management.

11 Delays to train services (seconds)

Railtrack-caused delays (per train movement)	1998/99 ¹ Actual	1999/2000 ¹ Estimated actual	2000/01 ¹ Management target (%)	2001/02– ² 2005/06 Expected (%)	2006/07– ³ 2010/11 Expected (%)
Passenger trains	71	64	-5.0	-11.9	-9.6
Freight trains	286	250	-5.0	-11.9	-9.6
Average delay	83	74	-5.0	-11.9	-9.6
Railtrack delays by cause (per train movement)					
Infrastructure (track & structures)	34	30	-5.5	n/a	n/a
Power supply	2	2	-11.0	n/a	n/a
Control system failures	17	16	-5.0	n/a	n/a
Other external (eg vandalism)	5	5	-6.0	n/a	n/a
Maintenance and renewal-related causes	59	53	-5.6	n/a	n/a
Other Railtrack causes ⁴	24	21	-3.5	n/a	n/a
Total Railtrack delays	83	74	-5.0	-11.9	-9.6

Notes:

1 Delays per train (seconds): Delays are currently measured on a per-train-movement basis; from 2001/02 onwards, the primary measure will be delays 'per 100 train kilometres'. The delay totals are based on all delays recorded for attribution of responsibility. Base year (1998/99) delay-per-train figures have been revised for actual results and improved definitions of relevant train movements.

2 % change: The management target percentage improvement is relative to the actual level achieved in 1999/2000. For 2000/01 only, passenger and freight totals are management targets; other figures shown are expected.

3 Cumulative % change: Equivalent to an average annual improvement in delay-per-train kilometre of 2.5% pa for 2001/02–2005/06 (five years) and 2.0% pa for 2006/07–2010/11 (five years).

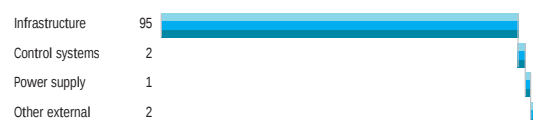
4 'Other Railtrack causes' include delays due to scheduling and operation of the network, fatalities and other causes.

Causes of passenger train cancellations due to maintenance and renewal activities* (%)



This represents 0.3% of scheduled train movements

Causes of freight train cancellations due to maintenance and renewal activities* (%)



This represents 0.3% of actual train movements

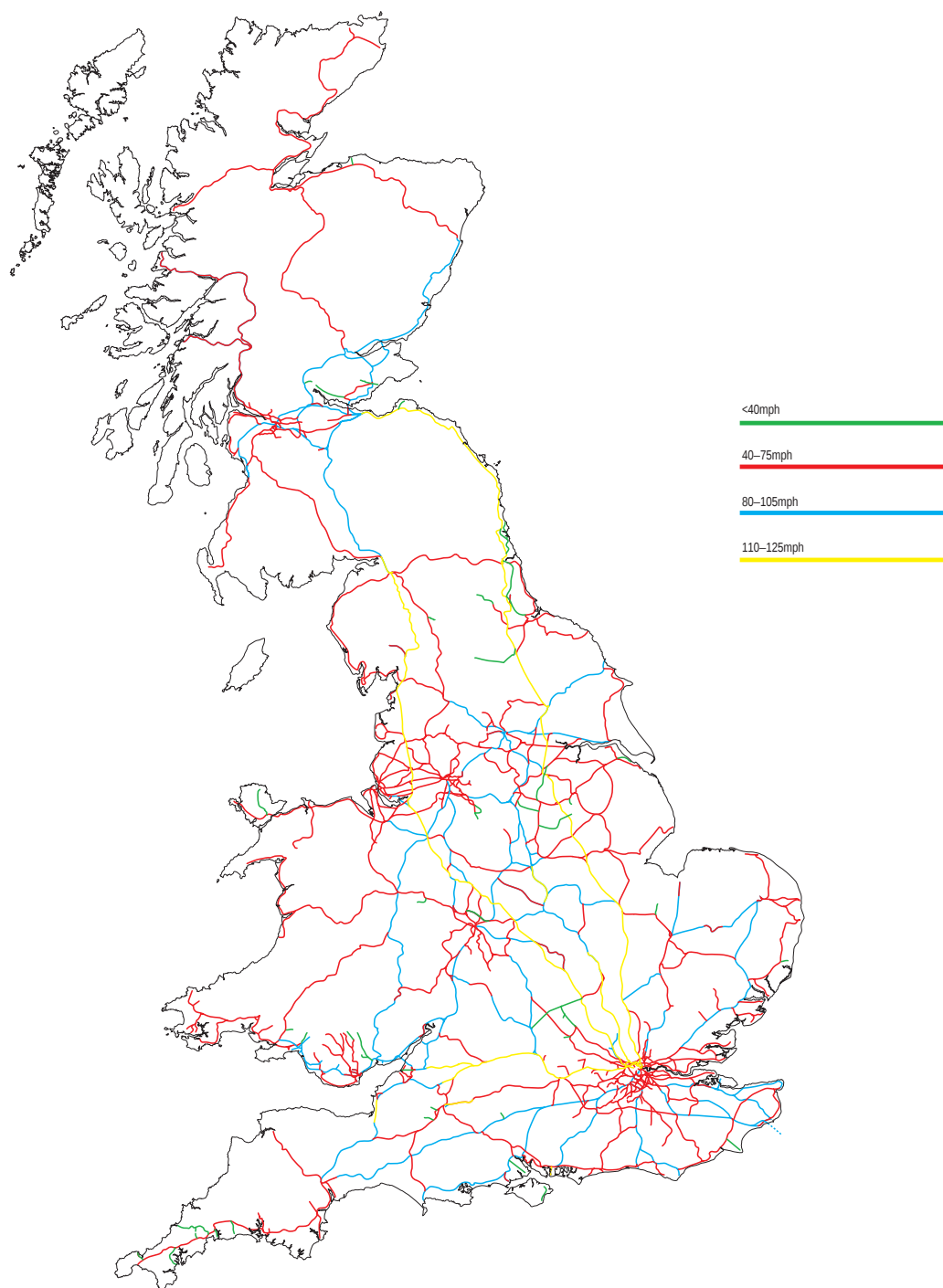
**Includes both partial and full cancellations*

We have already delivered a sustained reduction in train delays attributable to us with a reduction of more than 45% since privatisation. Our management target for next year is to reduce total Railtrack delays by 5% for both passenger and freight. In the next five-year control period, we expect to deliver improvements of 12% and then a further 10% in the five years to 2011.

Network capability

We would expect the network-carrying capability of the network to be sustained by our maintenance and renewal programme. Opportunities for improvements in functionality or capability through renewal would, typically, only arise where there are technological advances in design and equipment nationally available at the time of renewal. Capability improvements would, therefore, generally arise from enhancement. Any proposed reductions in capability would need industry approval through the change procedures in the access conditions.

Further details of current and future network capability are set out in the maps on pages 36 to 39.

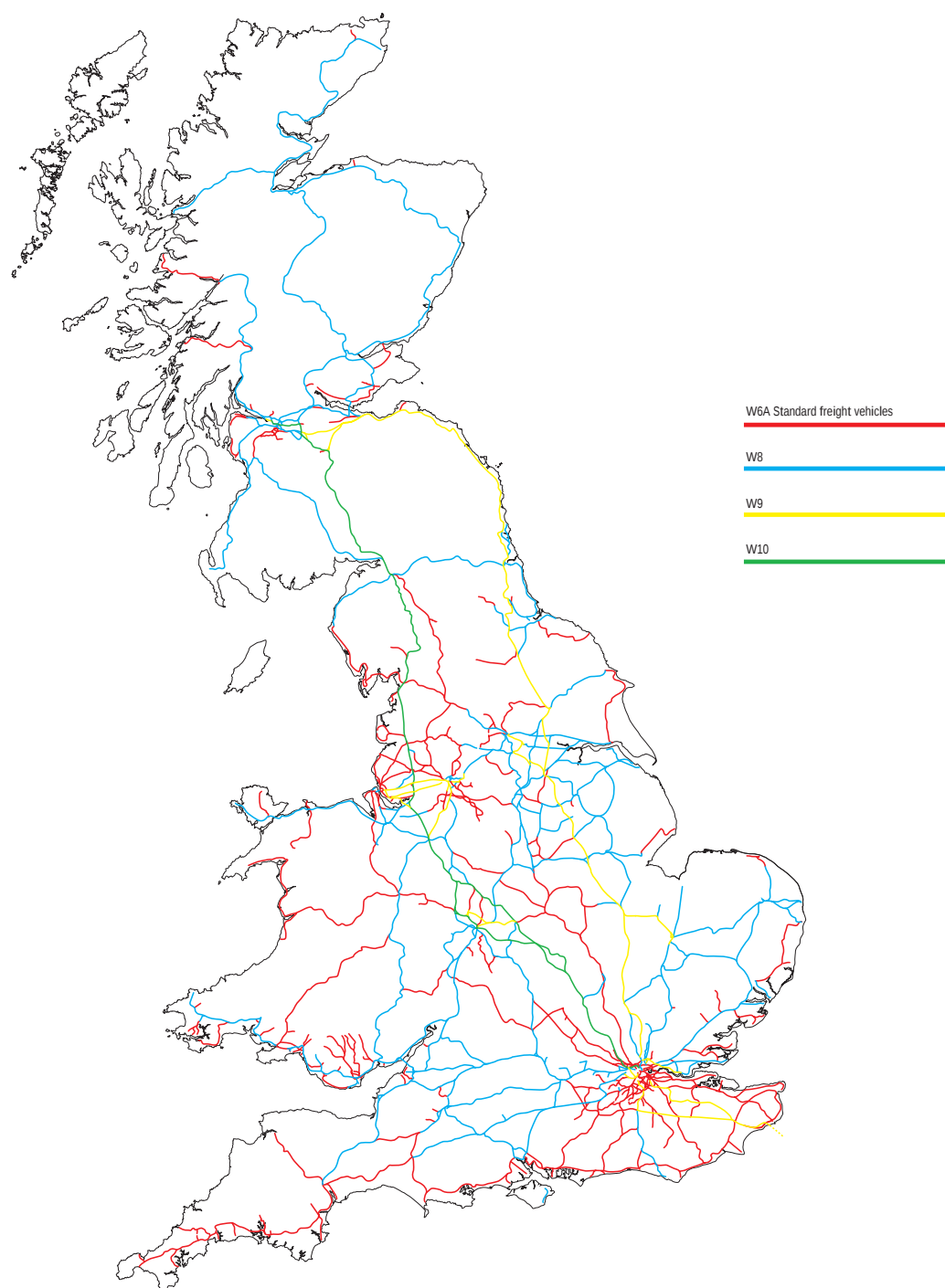


12 Journey times and linespeeds (km of track by speed band)

The current linespeeds shown on the map and the types of train currently in operation, together with their timetable and stopping patterns, produce the actual journey times for rail services.

Speed	1999/2000	2000/01*	2005/06	2010/11
km of track up to 35mph	3598	3598	3537	3537
km of track 40–75mph	17236	17104	16992	16992
km of track 80–105mph	7459	7591	7113	7113
km of track 110–125mph	2553	2553	2791	2791
km of track for speeds over 125mph	0	0	391	391
TOTAL	30846	30846	30824	30824

* Plans and expenditure for sustaining the network from 2001/02 will maintain capability at levels shown. The forecasts in this table are based upon both the maintenance and renewal expenditure and the completion of committed enhancement schemes set out in this NMS. The sum of the figures may not match totals due to rounding.

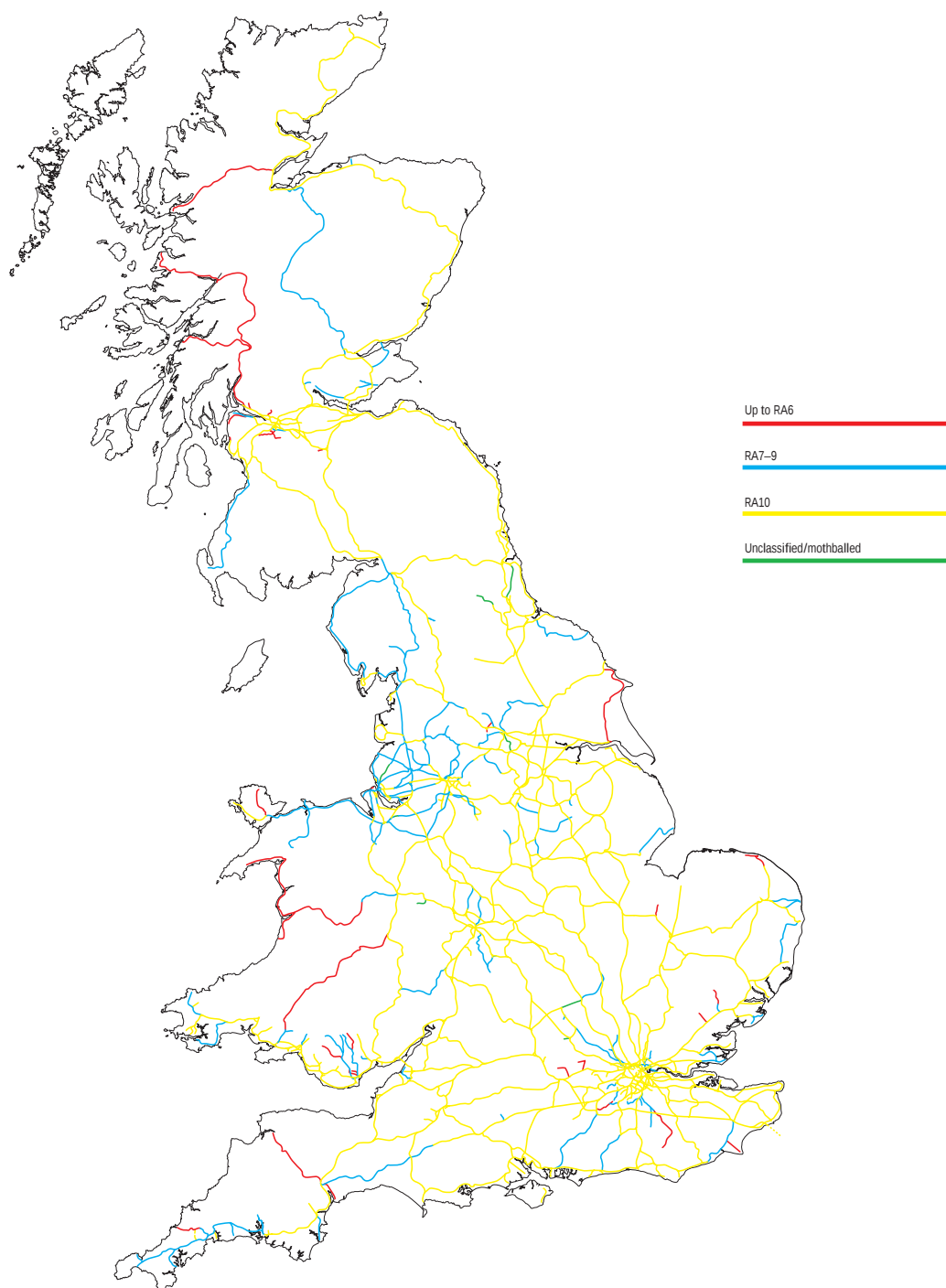


13 Loading gauge (km of route by loading gauge)

This stipulates the maximum height, length and width of a vehicle that can travel on the network. The size varies by route, primarily because of bridge and tunnel clearances. All passenger-carrying vehicles are constructed to a similar height and width. The primary variable is the length at 20m or 23m. Generally, there are few restrictions on passenger vehicles but, for freight vehicles, the capability of the network in ascending order of size (as set out in the key above) is shown on the map.

Gauge	1999/2000	2000/01*	2005/06	2010/11
km of route W6A	16522	16522	16511	16511
km of route W7	13097	13097	13105	13105
km of route W8	10467	10467	10482	10482
km of route W9	2249	2365	2655	2655
km of route W10	800	916	1247	1247
km of route W11	0	0	0	0

* Plans and expenditure for sustaining the network from 2001/02 will maintain capability at levels shown. The forecasts in this table are based upon both the maintenance and renewal expenditure and the completion of committed enhancement schemes set out in this NMS. The sum of the figures may not match totals due to rounding.



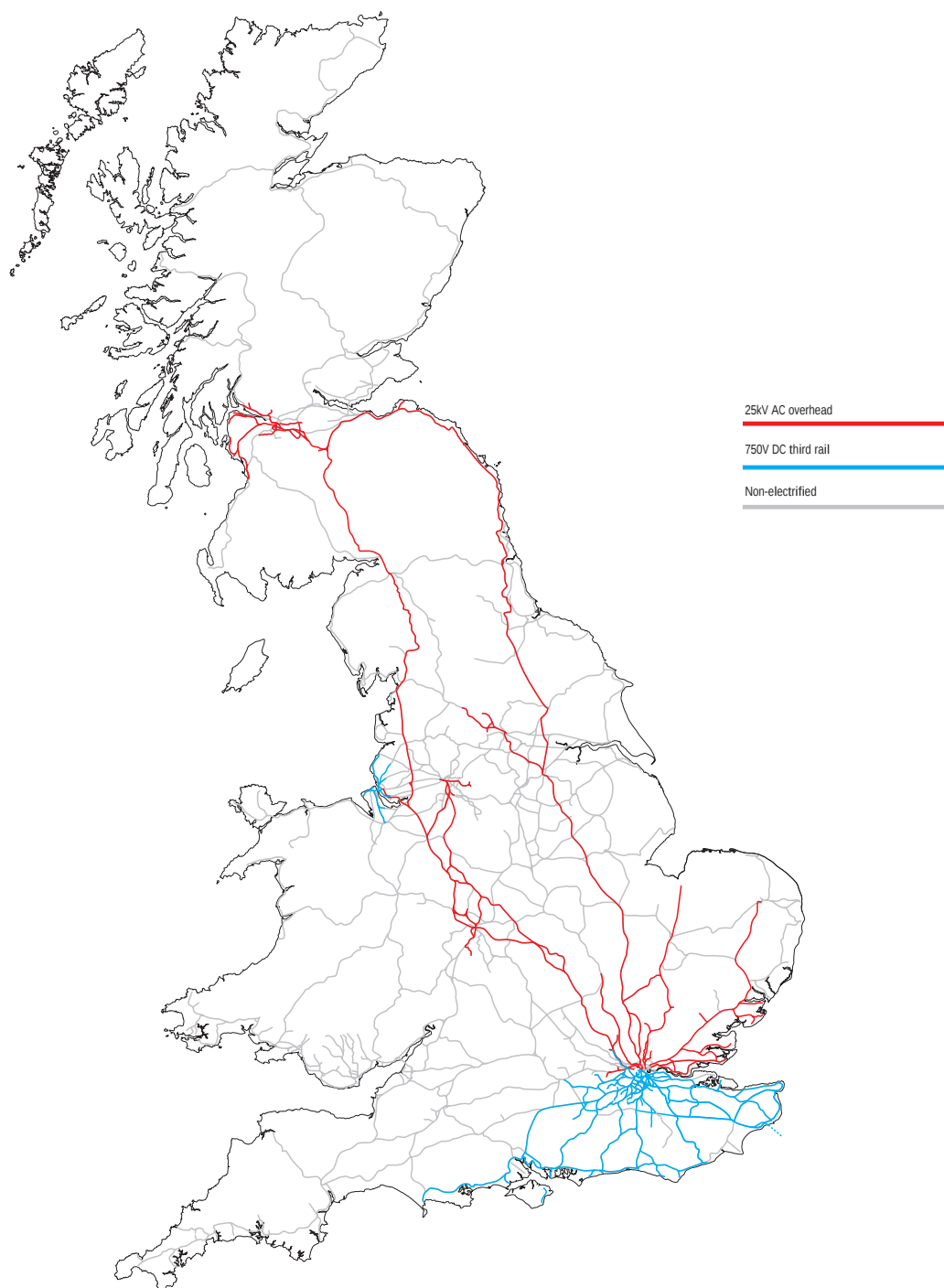
14 Permitted axle weights (km of track by axle-weight band)

The maximum axle weights that the current network can carry vary according to the engineering characteristics of each route particularly of the under-line bridge and viaduct structures. Axle-weight limits are classified into Route Availability (RA) values between 1 and 10, of which the key groupings are: RA1-6 up to 20.3 tonnes, RA7-9 up to 24.1 tonnes, RA10 up to 25.4 tonnes.

The route availability map indicates the ability of underbridges to carry different vehicles based on their weight and weight distribution. The capability of the track on a route to carry traffic is dependent on its construction, and the renewals and maintenance regime in place. There are some routes where an increase in traffic can be accommodated only with a prior increase in renewals and maintenance.

Axle weights	1999/2000	2000/01*	2005/06	2010/11
km of track up to 20.3 tonnes	2725	2725	2727	2727
km of track 20.4–24.1 tonnes	14729	14729	14691	14691
km of track 24.2–25.4 tonnes	13392	13392	13406	13406
TOTAL	30846	30846	30824	30824

* Plans and expenditure for sustaining the network from 2001/02 will maintain capability at levels shown. The forecasts in this table are based upon both the maintenance and renewal expenditure and the completion of committed enhancement schemes set out in this NMS. The sum of the figures may not match totals due to rounding.



15 Electrification (km of electrified track)

One-third of the rail network is currently equipped with electrification. Two systems are used: 25kV AC overhead line and 750V DC third rail. Their coverage is shown in the map.

Electrification	1999/2000	2000/01*	2005/06	2010/11
km of 25kV AC overhead line	7576	7578	7618	7618
km of 750V DC third rail	4285	4285	4284	4284

* Plans and expenditure for sustaining the network from 2001/02 will maintain capability at levels shown. The forecasts in this table are based upon both the maintenance and renewal expenditure and the completion of committed enhancement schemes set out in this NMS. The sum of the figures may not match totals due to rounding

Asset condition

MODERNISING RAILTRACK – ASSET MANAGEMENT

At privatisation, Railtrack inherited an asset base which had been neglected for many years and very poor data records, many of which were still paper based. Over the past two years, we have undertaken a thorough review of our asset management activities. As a result, in April 1999, a new asset management organisation was put in place to provide a stronger focus on each asset type and to introduce improved business processes. Our asset management programme has also benefited from discussions with other infrastructure operators, particularly other regulated businesses, who are facing similar challenges. We are building on their knowledge and experience.

Central to this approach to asset management is the introduction of improved business processes supported by new information systems. These business processes integrate previously separate activities including asset data management, maintenance work scheduling, managing the trade-off between maintenance and renewal, contractor management, and development of asset strategies. This approach to asset management is starting to provide us with improved fact-based tools and processes that inform decision-making. This is shown in Charts 16 and 17.

This better understanding of our assets is enabling us to develop a management strategy by asset class. The knowledge of an asset's cost, usage, condition, remaining life, quality and performance is critical to developing the optimal trade-off between maintenance and renewal as shown in Chart 18. The expert asset teams are defining best practice for each asset and will prescribe a consistent approach across the network. This supports a devolved decision-making process within a coherent national framework. In many cases, local variations (such as traffic type or density) will dictate a different way of working. Our maintenance and renewal policies for our principal assets is given in the section below.

ASSET DATABASE

A key part of our asset strategy is the improvement of our systems to support the new business processes. This started in 1999 with the rollout of the Railtrack Asset Register (RAR), developed and trialled in our Scotland Zone. This is the migration of a number of different databases into one common format with common descriptors for asset types, location, and other asset characteristics. RAR currently contains data on about 800,000

assets and a validation process is under way to ensure data accuracy.

The next step is the implementation of a complete asset management system. We have adopted a commercially available system used by other regulated network businesses here and overseas. The first phase is an interim version that will be implemented alongside the IMC2000 contracts in April 2000. The full version will be developed for implementation in October 2000 for the next tranche of maintenance contracts.

The link with the new IMC2000 maintenance contracts is key as the old RT1A contracts inherited at privatisation did not provide us with full access to the key data necessary for effective asset management.

MAINTENANCE CONTRACTS

Maintenance represents 40% of Railtrack's operating costs. It is the dominant factor in asset condition, particularly track quality and broken rails, and consequently in train delay.

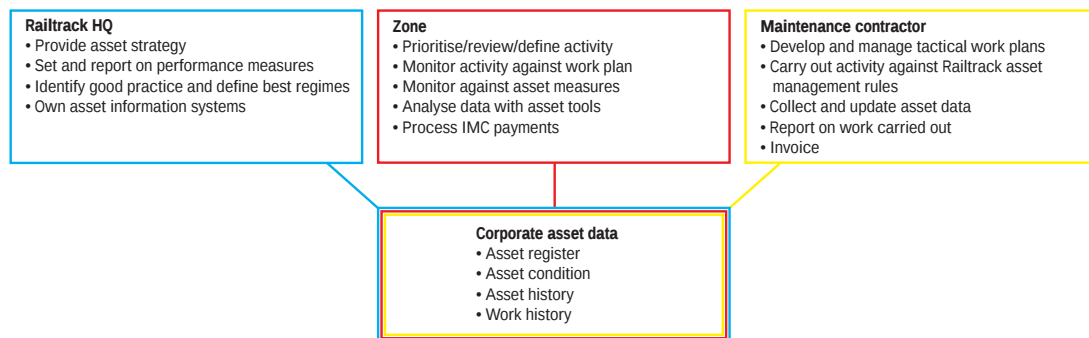
We are in the process of competitively retendering the maintenance contracts we inherited at privatisation. Last year, we successfully retendered the first tranche of contracts which represented about one-quarter of our maintenance work by value. As part of retendering the contracts, we are taking the opportunity to rationalise the number of contract areas. Currently, we expect the number of contracts to be reduced to 18 from 36.

The retendering process is also resulting in new-style contracts, the first of which was let in 1999 using the IMC2 form of contract. These include a greater focus on train performance delivery, a wider range of output measures, mechanisms for more efficient monitoring of the contractors' work and other improvements over the existing contracts.

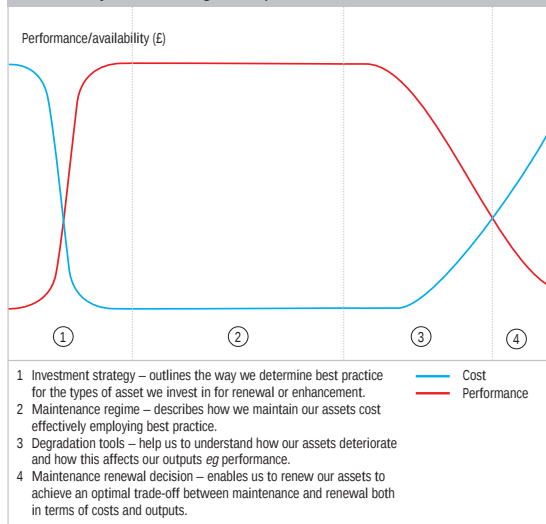
In the past year, we have undertaken further development work on the next generation of maintenance contract – IMC2000. These adopt a more radical approach and continue the move away from fixed-price contracts towards cost-reimbursable, open-book pricing. These new contracts provide us with increased transparency over maintenance activity, our associated costs and the outputs that can be delivered. They will also ensure, as highlighted above, a more efficient and detailed flow of information about the assets that the contractors are maintaining, linking to the implementation of the new asset management systems. The monitoring of the work also benefits from a larger suite of performance indicators covering train performance, track quality and measures of reliability, efficiency and condition of assets.

Four of these new IMC2000 contracts will start in April 2000.

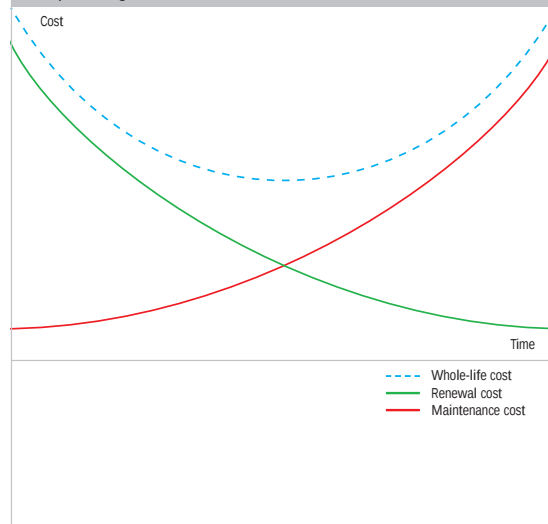
16 Developing Railtrack's asset management systems



17 Four key asset management processes



18 Optimising whole-life asset costs



MAINTENANCE AND RENEWAL POLICIES

Our asset management work is identifying improved asset management regimes for most of our major assets.

TRACK The growth of traffic on the network, particularly heavy freight, has a major impact on the deterioration of track and the renewal policies needed to maintain that track in appropriate condition. We have developed our asset management processes to ensure that renewals are targeted at locations where they will have the most impact on track condition and performance. Our spending on track renewal and the volumes being renewed are now the highest for many years.

The significant increase in traffic has led us to re-evaluate the best way to deal with renewals on the most heavily used routes. We are currently considering whether it would be appropriate to move to cyclical renewal of particular high-tonnage routes. The advantages of such an approach, which is used on many European railways, allow long-term planning of work on the network and help customers plan their businesses.

Another development which will help the network cope with increased growth is the introduction of UIC60 rail. This is the standard rail used in Europe. It is stronger than that traditionally used in this country and requires less track geometry maintenance. We are also using RT60 switches and crossings which complement the UIC60 rail and provide greater reliability and improved track geometry.

Volumes of rerailing have also been increased significantly to deal with the problem of broken rails with a programme for an extra 560km of rail replacement scheduled for the next five years. The total amount of rail ordered this year is higher than in any year since 1988 with 68,000 tonnes of new rail delivered.

STRUCTURES Civil engineering structures, such as bridges, tunnels, culverts and retaining walls, are very diverse and have long lives – often in excess of 150 years. The diversity means that it is necessary to appraise the condition of each structure individually and to define site-specific actions. Our general policy for structures is to maintain rather than renew, since this is normally the action indicated by whole-life costing methods.

To improve our maintenance and renewal decision-making processes, we are developing two asset management tools specifically for structures:

- A numerical condition-marking index to replace the current condition descriptors for bridges of 'good', 'poor' and 'fair'. The index will be graduated from 1 to 100 to provide the detail necessary to support robust decision-making.
- A robust maintenance/renewal decision tool incorporating commercial data for the route. This enables optimal decision-making for individual structures.

SIGNALLING Our signalling asset base is characterised by complexity and diversity, both in terms of the technologies employed and the age profile of individual systems. Our strategy is to ensure continued safe and efficient operation by renewing assets when functionality and condition dictate, and to improve performance and delivery by exploiting modern control technology and by improving our processes for installing and maintaining assets. In general, we envisage targeted renewals of signalling components rather than the renewal of entire installations, since this will usually optimise whole-life costs.

This approach is leading to smaller and less-costly renewal schemes targeted at those parts of the systems that are approaching the end of their useful life. Many of the technology changes that we are already implementing are well suited to this type of work, particularly for extending the life of many of the installations of the 1960s and 1970s which are prone to localised component degradation. There are still cases, however, where the best option is a conventional wholesale renewal.

In the past year, we have refined our approach to the introduction of new signalling technology. Three suppliers of signalling equipment and control systems, new to Great Britain, are working with us to install new technology on the network. These are Vaughan Harman on the Norwich–Sheringham line, Siemens in the Bournemouth area and Ansaldo on the Manchester South signalling scheme. In addition new technology is being introduced by Adtranz on the Horsham scheme and Westinghouse on the Nairn scheme.

The conclusions from our assessment of signalling technology for the West Coast Route Modernisation and the proposed EU convention on interoperability directive suggest that ERTMS level 2 signalling should be installed on the WCML and other high-speed routes when signalling systems are renewed.

19 Signalling technology options

	Freight route	Rural route	Suburban route	Secondary main line	High-speed main line
Existing	Mechanical	Mechanical/RETB	Relay/SSI	Mechanical/Relay/SSI	Relay/SSI
Short term renewals	Relay/small electronic	Relay/small electronic/RETB	Medium/large electronic (including SSI+)	Medium/large electronic (including SSI+)	Medium/large electronic (including SSI+)
Medium term renewals	Relay/small electronic	Relay/small electronic/RETB	Medium/large electronic	Medium/large electronic	Medium/large electronic
Long term renewals	ERTMS (R)	ERTMS (R)	Medium/large electronic	ERTMS L2/3	ERTMS L2/3

The signalling strategy for Railtrack has been developed on a system and route basis. The system strategy is based around the concept of four complementary system levels, comprising the following:

- Train control and protection systems
- Signal interlockings
- Remote control (SCADA) systems
- Business management systems.

The signalling technology strategy is driven by condition-based renewals and improving performance from the existing infrastructure. Where new systems can demonstrate whole-life business improvements over non-life expired assets, a replacement strategy will be considered in advance of condition-based renewals. A separate initiative exists to enhance the performance of existing equipment to satisfy short-term performance improvement needs.

The signalling technology strategy for area renewals is based upon matching the system types to the particular route type (freight only, rural, suburban, secondary mainline, high speed mainline) with a requirement that the various types of equipment have interface designs to allow interchange of system components. This will allow more cost-effective renewals of certain system elements to be implemented independently of other parts of the signalling system.

Table 19, details our renewal strategy based around known technology types and method of control. New systems will be considered for each category on the basis of safety, performance and cost.

For the medium term, we are pursuing a policy of supplier and technology diversification. This will give us access to the required range of technologies for the various route types, from

small processor-based systems for rural and freight routes, through to high-capacity, high-performance computer-based interlockings for our major commuter and high-speed main lines. It will also give us an expanded supply base to meet the demands of the signalling investment programme over the coming years. Of crucial importance is the need for development to support our existing large installed base of Solid State Interlocking (SSI) and Integrated Electronic Control Centre (IECC) systems, and we expect the signalling supply industry to meet this need. This is referred to as SSI+ in the table.

In the longer term, as further European standards begin to emerge, we will increasingly move towards standard off-the-shelf technical solutions in common with other European countries. Railtrack is already participating in an initiative to produce specifications of a standard European interlocking system, known as Eurointerlocking. This will build upon the success of European Rail Traffic Management System/European Train Control System (ERTMS/ETCS) the emerging standard for train control and cross-border interoperability to allow even greater competition and choice in the procurement of signalling systems for the future. The term ERTMS (R) is used to indicate a low-cost radio-based ERTMS system for rural low-density railways. The trainborne equipment is expected to be identical to that used for ERTMS L3 operation.

STATIONS AND DEPOTS We are developing a new stations and depots model that will enable us to make informed decisions about their maintenance and renewal programmes. This model relies upon detailed, up-to-date asset condition data which has been developed to build on the extensive inspections carried out in 1994/95. We have used this data to inform our cyclical Asset Management Plan. Further inspections which focused on the significant elements (in cost terms) of the station such as roofs, platforms, car parks, fencing and lighting have been carried out to improve our knowledge of these assets further. This programme estimated the renewal schedules for these assets and applied cost data from the SRP. The model is designed to optimise the whole-life costs for each station element indicating the best approach to renewal which may not necessarily result in a like-for-like replacement. Exceptions to this are where the listed or 'heritage' nature of a station requires like-for-like renewal.

Our maintenance and renewal plans based on this model are then prioritised on the basis of a number of different factors: our customers' needs and priorities, health and safety considerations, operational priorities, contractual requirements, efficiencies and the opportunity to incorporate the work into enhancement works through the Route Strategies. These detailed plans are designed to contribute to maintaining the average station condition measures (see page 94).

The SRP is continuing and has made significant progress towards improving the average asset condition at stations.

Through this programme we are taking every opportunity to seek out innovative ways of working to minimise disruption to the public and our customers' business and deliver efficiencies. Examples include new means of scaffolding for station work such as sliding scaffolding which avoids the need for full crash decks under roof work and purpose-built scaffolding beams (eg Charing Cross). Another is a method for rejuvenating asphalt and macadam surfacing with infra-red technology; it is quiet and allows overnight working with minimal disruption to local residents.

TELECOMS The telecommunications network may be considered as two elements – the fixed and radio networks. The fixed network is approaching life expiry and we are undertaking a strategic review to determine how best to deliver the telecommunications needs of the evolving modern railway. Major advancements in telecoms technology and the liberalisation of the UK telecoms market will enable us to satisfy the demand for greater capacity and greatly improved reliability. The work currently

under way on the West Coast Route Modernisation project is consistent with this approach.

Radio network strategy is driven by a number of factors including the imminent life expiry of our key radio systems, the European directive on train interoperability and the planned future reallocation of the UHF band by the Radio Communications Agency.

We have participated in the development of a new international train radio system based on GSM, and this work, which will be completed this year, has resulted in a new international standard for rail radio called GSM-R. Our analysis shows that GSM-R is the most appropriate solution to meet the radio requirements of the modern railway. GSM-R is the bearer for the European Rail Traffic Management System (ERTMS) which is the new European standard signalling system, and this will be deployed first in the UK on the West Coast Main Line upgrade. A feasibility study is under way to determine the optimum timing for a national roll out, to identify the costs, and to ensure synergy with the fixed network renewal.

ELECTRIFICATION, PLANT AND RAILFLEET We have a condition-driven strategy which is based on targeted component renewal to minimise whole-life costs rather than wholesale installation renewal. We aim to make best use of equipment life extension, exploiting new technology where applicable and ensuring that our decisions are based on robust data.

We are currently developing structured methods for assessing asset condition, and to assist with this, we are evaluating a software tool aimed at optimising the maintenance and renewals trade-off. We are carrying out a review of signalling power supply systems with a view to establishing best practice and improving future designs and standards.

As part of the railfleet renewals programme, we are buying 26 Multi-Purpose Vehicles (MPV), the first tranche of which has already been delivered. These will replace the existing life expired rail-head condition vehicles and, with the use of latest technology, will serve to reduce adhesion-related train delays. We are also exploring other uses for the MPVs beyond their usual seasons of activity during the autumn and winter.

We are continuing to support R&D activities and are about to embark on the second stage of a European project to develop equipment that will boost 25kV system voltage levels. This will allow more cost-effective and energy-efficient enhancement of electrification systems.

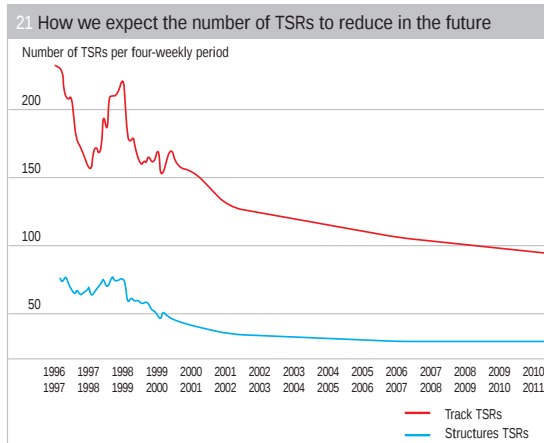
Asset condition in the next control period

At a national level, we would expect the overall condition of assets to remain broadly stable year on year. At individual asset level, there will always be degradation in condition within the optimal renewal cycle of the asset governed by our policy to minimise whole-life costs for each discrete asset or group (route) of assets. In some areas, it is possible that an increase in demand, either in terms of train kms or tonnage, could result in the worsening of other measures (eg tonnage increases impact on expected number of broken rails).

TRACK QUALITY Track quality deteriorated between the formation of Railtrack in 1994 and our privatisation in 1996 and has improved steadily since. We have put a programme in place to return it to 1994 levels. This involves a combination of maintenance and renewal work at 18,000 sites across the network. This programme will be completed by April 2001 and we would then aim to keep track at that standard while focusing on the poorest-quality track to improve that to better levels.

BROKEN RAILS We have seen a rise in the number of broken rails on the network in the past two years. While broken rails are caused by a number of factors, it is clear that some of the rise is linked to increased traffic. We have put a range of initiatives in place to tackle this problem including substantial additional rerailling; increased use of the Ultrasonic Test Unit which can detect defects in the rail before they break; installation of wheel-impact load detectors to prevent badly maintained vehicles damaging the network; and more stringent maintenance requirements in IMC2000 contracts. The early benefits of these programmes are beginning to be seen and we would hope to see a halving of the number of broken rails over the next ten years. However, the precise extent of any reductions will depend to some degree on the levels and types of traffic using the network.

20 Asset condition				
	Estimated actual 1999/2000	Expected 2000/01	Expected 2005/06	Expected 2010/11
Speed restrictions				
No of temporary speed restrictions in operation for more than three months*	147	122	100	80
Track				
No of broken rails	916	811	661	500
No of condition of track temporary speed restrictions*	145	118	95	80
Structures				
No of condition of structure temporary speed restrictions* [†]	29	22	18	16
* Outside Rules of the Route. The expected levels in this table are based on the maintenance and renewal expenditure set out in this NMS. † The number of structures with TSRs currently averages less than 0.06% of the total number of structures on the network.				



22 Average condition of stations

Station category	1994 actual	1999/2000 estimated actual	2000/01 expected	2005/06 expected	2010/11 expected
A National hub	2.6	2.4	2.3	2.2	2.2
B Regional hub	2.6	2.3	2.2	2.2	2.2
C Important feeder	2.6	2.3	2.2	2.2	2.2
D Medium, staffed	2.6	2.2	2.2	2.2	2.2
E Small, staffed	2.7	2.2	2.2	2.2	2.2
F Small, unstaffed	2.8	2.3	2.2	2.2	2.2
All stations	2.7	2.3	2.2	2.2	2.2

The station condition scores reflect the average condition of stations within each station category, as defined within the station facilities section. 1 is the highest possible condition rating and 5 is the lowest. The 1999 NMS-recorded condition scores for 1998/99 (2.3 overall average condition rating) were based upon the inspections of approximately 22% of the total number of stations (544 inspections). We have now inspected approximately 2,480 of our stations. The increased number of inspections has confirmed a slightly higher overall average condition score for 1998/99 than was predicted when the table was published for the first time in the 1999 NMS. However, we remain on target for an overall average condition score of 2.2 by April 2001.

The current average condition of Category A stations, which includes our Major Stations, together with our score predictions for the future, reflects the deferral of major maintenance and renewal works in anticipation of significant redevelopment works at some of these locations. This was not reflected in the results published in the 1999 NMS which were based upon the sample of inspections. Asset management of maintenance and renewals will result in the average overall condition score across all categories of stations being sustained within the range of 2.2 and 2.3 for years 2000/01 and beyond.

The score predictions in the table are based upon the maintenance and renewals expenditure set out in this NMS.

23 Distribution between the five condition ratings

Station category	Condition 1	Condition 2	Condition 3	Condition 4	Condition 5	TOTAL
A 1994	0	12	16	1	0	29
2000	1	15	13	0	0	29
B 1994	0	28	36	0	0	64
2000	0	52	13	0	0	65
C 1994	0	96	148	0	0	244
2000	8	186	51	0	0	245
D 1994	1	120	171	3	0	295
2000	16	216	66	0	0	298
E 1994	1	197	456	22	0	676
2000	29	509	135	2	0	675
F 1994	23	284	732	139	3	1181
2000	66	784	326	12	0	1188
All stations 1994	25	737	1559	165	3	2489
2000	120	1762	604	14	0	2500

The table above shows the current distribution of condition ratings for each of the station categories compared with the ratings in 1994. For the purposes of this table, the average condition score for each station has been rounded to the nearest whole number. The results of the inspections for the 2000 ratings of approximately 2,480 stations have been extrapolated for the total 2,500 stations.

24 Electrification and signalling

Electrification	1998	1999
No. of OLE wire alignment exceedances*	1813	1522
Signalling†		
No. of repeat failures	8752	8218

* During 1999 the vehicle used to record OLE wire alignment exceedances developed a major fault and was temporarily withdrawn from service. Prior to withdrawal it checked 3,000 track km and recorded 1,522 exceedances.

† Number of signals and items of associated control equipment failing four or more times within the year. This measure records the number of repeat failures associated with the main signalling components, namely track circuits, points and signals. If a failure occurs, signalling systems are designed to display aspects to maintain the safety of the network.

25 Quality of carriage washing at depots

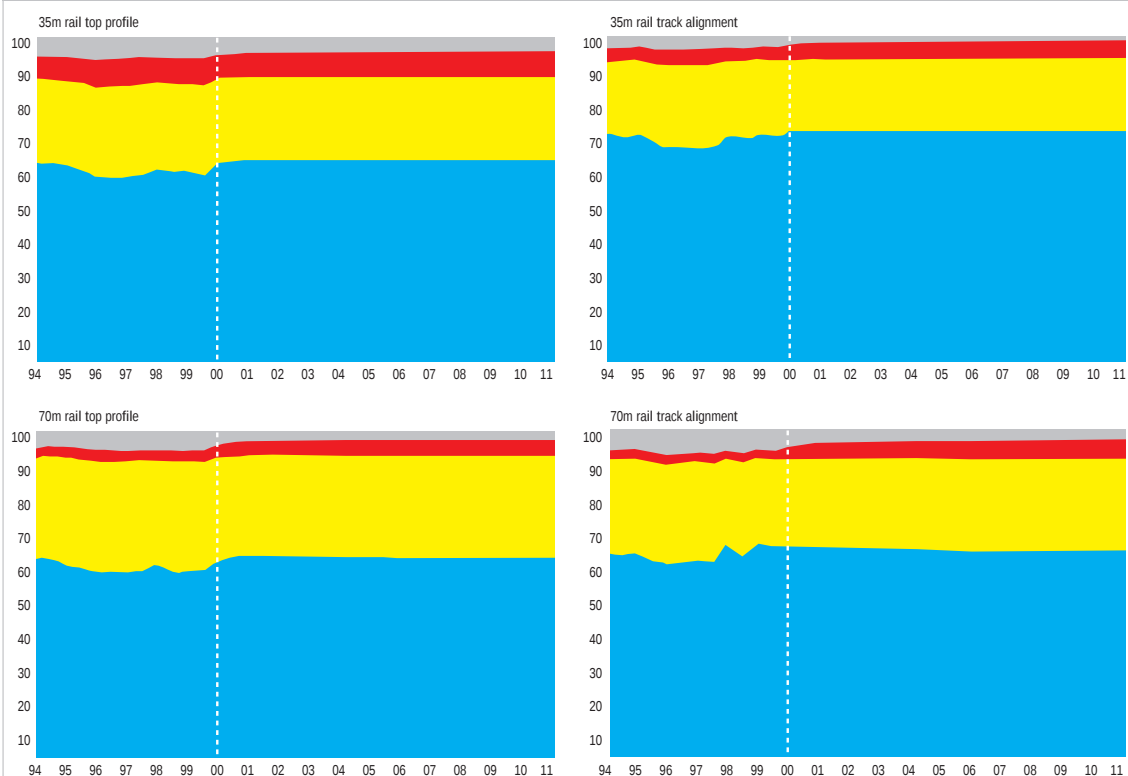
Quality of carriage washing at depots	1999/2000 actual	2000/01 expected	2005/06 expected	2010/11 expected
No. of light maintenance depots	89	85	85	85
No. of carriage washers	75	74	74	74
Quality of carriage wash provided (%)	54	55	59	62

We believe it is important that the output of carriage washers is measured, and to do this we commission survey reports on the quality of wash provided by each of the carriage washers on the network. The results of these surveys, which are compiled by an independent consultancy, were used as the data source for the derivation of the quality index included in the table above. It should be noted that the results of these surveys are heavily influenced by the manner in which equipment is operated, and also by the speed at which vehicles are driven through the washer.

The score predictions in this table are based on the maintenance and renewal expenditure set out in this NMS.

We have prepared a proposal for measuring the average condition of our light maintenance depots and this has been discussed with the Regulator. This proposal will be finalised with the Regulator with a view to providing condition data in the 2001 NMS.

26 Track quality



Track quality In order to monitor track quality, regular recording runs are undertaken by specialist vehicles equipped with geometry sensors connected to computers. A number of parameters are measured including the top profile (vertical dips in the track) and track alignment (variations in design measured in the horizontal plane). These are recorded over both 35 metre and 70 metre wave lengths.

We aim for 50% of the track to meet the highest standard, 90% to meet the second standard, and 100% to meet the third standard. For track which does not meet the required standard, we have a programme in place for appropriate renewal and maintenance work.

The data in these graphs is based on the maintenance and renewal expenditure set out in this NMS and assumes no traffic growth and no redistribution between routes.

Percentage of track that does not meet the third standard
 Percentage of track that meets the third standard
 Percentage of track that meets the second standard
 Percentage of track that meets the highest standard

Railtrack's safety plan

Safety is the most fundamental network output and our highest priority.

Rail remains the safest form of land transport (18 times safer than travelling by car and three times safer than bus and coach travel) and in recent years, the industry's safety record has improved. However, the tragic accident at Ladbroke Grove has strengthened our resolve to improving that record further. Within the 2000/01 Railway Group Safety Plan, the industry has reaffirmed the demanding target of a 50% improvement in accident fatalities over the ten years to March 2009.

Since the accident, our safety management systems have been subject to nine reviews and audits by both external and internal bodies. These include an HSE audit which has concluded that there was no evidence of a conflict between our commercial processes and safety, and the Davies report into train protection systems which has confirmed our approach. In addition, we commissioned the consultants DuPont to conduct a review of our safety processes along with those of train operators and contractors. These are in addition to the formal public inquiry. We will continue to review and revise our safety management in the light of the results of these inquiries to ensure that the railway provides the highest standards of safety possible.

A key issue arising out of the Ladbroke Grove accident has been the debate over the best means of train protection. As was outlined in the 1999 Network Management Statement, Railtrack has been working with Her Majesty's Railway Inspectorate (HMRI) on this issue and agreed the installation programme for the Train Protection and Warning System (TPWS), at a cost of £310M, in order to comply with the Railway Safety Regulations 1999. Railtrack has committed to speeding up the installation of TPWS with implementation starting in April 2000. This will allow installation at signals to be completed by the end of 2002, a year earlier than originally planned.

A key advantage of TPWS is that it requires a relatively simple addition to the existing AWS equipment on the train. This intervenes to stop the train if the driver ignores a red signal or approaches a particular location at too great a speed. This means that TPWS is expected to reduce by about 70% fatalities resulting from SPAD incidents within four years as shown in the following graph (Chart 27). As Automatic Train Protection is likely to take at least ten years to complete, installing TPWS will make a significant interim contribution to improving the safe operation of the railway.

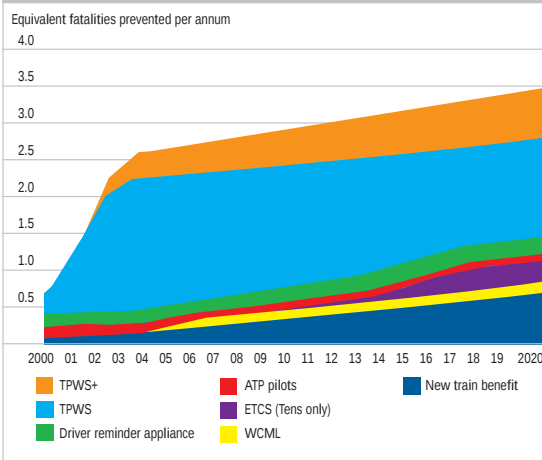
We are also focusing even more closely on action to reduce the number of Signals Passed at Danger (SPAD). This includes working with train operators, reviewing driver training requirements and undertaking a review of all signals which have been subject to multiple SPADs. The latest figures for the numbers of SPADs have shown a welcome decrease and the current rate is 14% better than the average of the last six years. We will continue to focus on this issue to ensure progress is maintained and equally, as recommendations from the formal inquiries into the Ladbroke Grove accident emerge, we will incorporate them into this work.

We have also been taking forward issues raised from the Deputy Prime Minister's rail safety summits which took place in autumn 1999. This includes the establishment of the National Safety Task Force which is chaired by Railtrack and involves representatives of train operators, trades unions, contractors and ROSCOs. This will ensure a co-ordinated cross-industry approach to the key issues.

In conjunction with train operators and contractors, Railtrack is working to implement a confidential reporting system (CIRAS). The system is currently in general use in Scotland and by GNER and Virgin trains. It is completely independent of Railtrack and the Railway Group and was developed by the Centre for Applied Social Psychology and the University of Strathclyde. It is designed to enable staff to report accidents or incidents with safety implications without fear of disciplinary action. This opens a channel of information which would not otherwise be available and allows the acquisition of a deeper understanding of the root causes of accidents. At the Deputy Prime Minister's railway safety summit in October 1999, it was agreed to develop CIRAS into a national system which we are on target to implement by September 2000 and will cover not only Railtrack employees but also contractors in safety-critical roles.

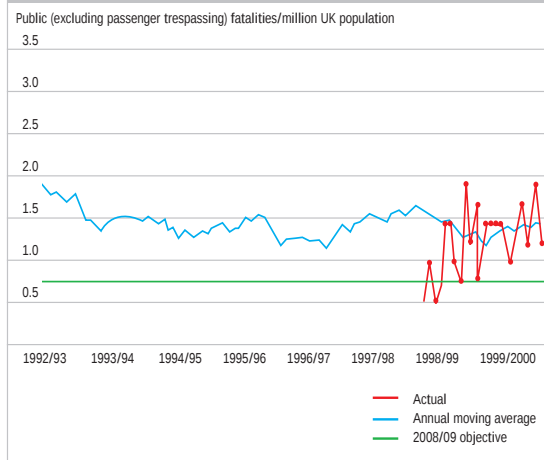
All these activities are integrated into the Railtrack Line Safety and Environment Plan. This provides the framework by which Railtrack Line (the licensed operating activities of Railtrack which are separate from Safety and Standards Directorate) will deliver a safer and more environmentally friendly railway. The plan's objectives are fully integrated into the business as a whole and support the Railway Group Safety Plan (issued by the Safety and Standards Directorate to the whole industry). It has been provided to suppliers and contractors who play a key role in delivering a safer railway.

27 Reduction in ATP preventable risk due to fitment of TPWS and TPWS+



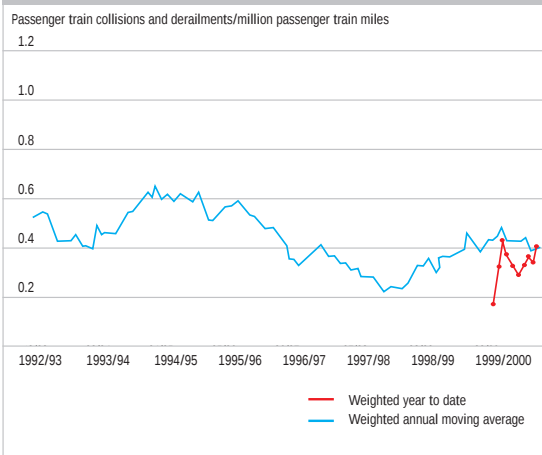
TPWS is expected to reduce fatalities resulting from SPADs by about 70% within four years.

28 Public accidental fatalities



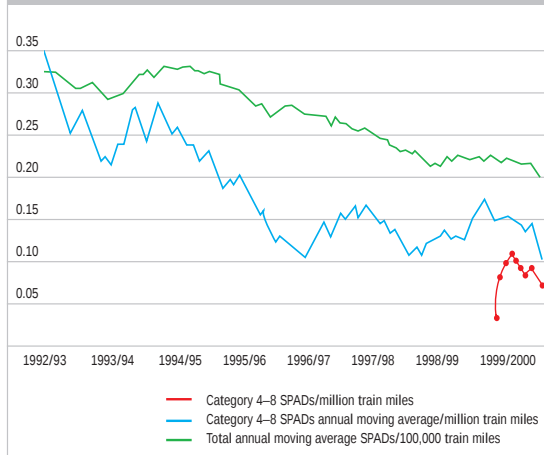
The objective is to reduce the number of public fatalities to 0.63 per million UK population by 2008/09. This will require a 48% improvement on current levels.

29 Passenger train collisions and derailments



The weighted average number of passenger train collisions is currently 23% better than the average for 1992–97.

30 Category A SPADs



The number of Signals Passed at Danger (SPADs) has been reducing. In particular the number of serious SPADs (categories 4–8) is now 49% better than the average for 1996–99.

The plan looks at all areas of risk to those who use or work on the railway including trespass and vandalism which presents a considerable risk to railway safety. Up to 62% of train accidents are attributed to vandalism and malicious behaviour and between 70 and 80 people a year are killed while trespassing on the railway. Therefore, action to reduce this behaviour, which is particularly prevalent among school-age children, is a high priority. Efforts are being directed at schools and a resources pack outlining the dangers of trespassing on the railway is being sent to every school within two miles of a railway line, to be followed up by school visits where appropriate. This is being carried out in conjunction with the HSC's Railway Industry Advisory Committee to ensure a consistency of approach and to ensure that best practice is shared across the railway industry.

Improving the safety of the workforce is a key priority and measures to reduce the risks to trackside workers and drivers are being implemented. Where possible, work on the track takes place within what is known as a 'green zone' where workers are protected from train movements. However, in some cases it is not possible to stop trains running and this means work takes place in what is known as a 'red zone'.

Action plans are being developed to ensure better collaboration between train operators, contractors and Railtrack to create the maximum possible level of 'green zone' working. When these cannot be implemented, then 'red zone' working must be used only when workers can be protected by automatic trackside warning systems. We will also continue to promote a safety culture among all those who work on or near the railway and to ensure that proper monitoring and supervision of contractors takes place when they are working on site. The number of fatalities in the last two years has shown a disturbing increase although is still below the levels of the early 1990s.

Railtrack manages the Rolling Stock Acceptance Board (RSAB) that provides safety and technical approval for new rolling stock to operate on the network, and for existing rolling stock to be cleared on new routes. Clearly, safety considerations have to be paramount, but equally we are working hard to ensure our systems minimise any delays in new trains coming onto the network.

The matters considered by RSAB are technically demanding, and require Railtrack to have a comprehensive and accurate knowledge of the clearances for structures on the network and the electrical characteristics of signalling and control systems. To

assist in generating the necessary data, Railtrack has established the National Gauging Project and the Safety Case Data Initiative. These activities will prioritise data collection to match the programme of new train introductions.

Significant progress has been made with acceptance of a number of new trains completed this year, and the Alstom 'Juniper' (Class 458) trains for South West Trains entered service in February 2000.

Environment

While we recognise that rail travel brings major environmental benefits, we are also very aware that our operations have an impact on the local environment and local communities.

Over the past year, we have made further progress in managing and mitigating the effects of these impacts. We have reviewed our Environmental Management System (EMS) which is structured around these key impacts and sets our environmental objectives to address them. During 1999, work was also done to align management of safety and environmental issues, taking advantage of the synergies which exist between the two. This has led to the publication of combined safety and environment objectives presented in the Line Safety and Environment Plan for 2000/01.

At present, we are reviewing our Environmental Policy in line with our commitment to do this every two years. As part of this process, we will be consulting key stakeholders to ensure that the new policy addresses their concerns.

In our Environment Plan for 1999/2000, we made a commitment to send 800 of our managers on an environmental-awareness training course. We are on target to achieve this and will report progress in our Corporate Responsibility Report in the summer.

Since many of our impacts on the environment result from the activities of our contractors, it is imperative that their management of environmental issues is constantly monitored. During 1999, our process for approving core contractors' safety systems and competence was expanded to cover environmental issues. In addition, all new contracts for physical works now include requirements for appraisal of environmental issues and planning for their mitigation through a management plan.

We have also begun looking at the impact of our suppliers, most notably through our commitment to ensure all timber sleepers conform to the Forest Stewardship Council (FSC) standard. This standard ensures that the wood has been grown and logged in a sustainable manner. Progress has been made in finding and testing new supplies and the first consignments of FSC-certified hardwood sleepers recently arrived in the UK.

In order to encourage good practice, we launched the Chairman's Environment Awards during summer 1999. Awards were presented to staff, business units and contractors for environmental achievements.

We have also been assessing other issues such as noise, vibration, litter, diesel spillage and energy consumption. We are actively involved with all industry parties, in particular through the Railway Forum Environmental Group, to look at ways of reducing and mitigating these effects.

One step already taken involved Railtrack and EWS implementing a no-idling policy for EWS trains waiting at signals in sidings and loops. This means that, where a train will be waiting for more than 15 minutes, the signaller will inform the driver so that he can shut down. It is estimated that this has saved over £1M-worth of fuel and reduced the disturbance to our lineside neighbours.

Railtrack is a major landowner and our land contains several thousand protected habitats including Sites of Special Scientific Interest and Areas of Outstanding Natural Beauty. We are therefore working closely with our environmental regulators to ensure that we are looking after these sites appropriately. Recently, we agreed a joint objective with English Nature on management of SSSIs. Our work with the Environment Agency continues at corporate and local levels through the Memorandum of Understanding we have signed with them.

During 1999, we also became more involved in European environmental issues. At present we are the only UK railway company to field a UIC Environment Co-ordinator. The UIC co-ordinates research on many issues including the environment. We are also representing the UK railway industry on a European Railway Noise Working Group.

We have continued our commitment to public reporting on environmental issues and published our first *Corporate Responsibility Report* in July 1999. More recently, we have been developing the environmental section of our website (www.railtrack.co.uk/environment). Our second report is in production and will be published in July 2000. The report sets out our performance against last year's objectives and our plans for the coming year.

Expenditure plan 2001/02–2010/11

In setting our access charges in the periodic review, the Regulator must take account of our expenditure requirements for the next control period (see Periodic review, section 1). To inform his view, we have made a series of submissions outlining expenditure plans for the next two control periods, 2001/02–2010/11, which are consistent with the sustained network outputs set out in the 1999 NMS.

Railtrack's submissions have included projections for base costs, the costs of growth and improved efficiency. The forecasts are the most robust and comprehensive that we have ever prepared as they are based on detailed bottom-up analysis. The maintenance and renewal spending projections are based on an improved knowledge of the asset base by asset experts who undertake a top-down review of the forecasts. There is also a much-clearer understanding of the relationship between inputs (ie expenditure and volumes of work) and outputs (ie network performance, reliability and condition).

The level of renewals has been determined by our asset management strategy which is broadly condition based rather than age related. For track and structures, the level of renewals was determined using an Asset Management Plan (AMP) methodology which employs statistical techniques similar to those used in other regulated businesses. These projections were validated, where possible, by independent, engineering-based assessments. In the case of track, structures and signalling, the relevant AMPs have been recently updated.

The expenditure forecasts have also benefited from a rigorous peer review process between the Zones where the forecasts and activity levels for each asset type have been compared. In addition, more detailed forecasts have been prepared for areas such as information systems which place a greater focus on strategically important systems for asset management, timetabling, investment planning, etc.

These expenditure plans also take account of the revised forecasts for the costs of upgrading the West Coast Main Line and our obligations to enhance the network to provide TPWS (see Safety plan, Section 2) and comply with the Disability Discrimination Act (see Section 3).

As part of his review of charges, the Regulator has used consultants to examine these expenditure plans. The consultants concluded that there is greater scope for improvement in

efficiency than we assumed but, on the basis of available information, Railtrack's planned level of maintenance and renewals activity in track and signalling may not be sufficient to maintain the current capability and condition of the network. We have since revised our estimates for the level of future track renewals to allow for over 2,000km of rail renewal to take place over the next five years. On signalling, WS Atkins has produced a revised AMP which has also led to a revision upwards of our forecast expenditure.

The Regulator has not yet decided what level of expenditure he will assume when setting our access charges for the next control period. He is currently examining a number of different scenarios which are explained in Section 1. He has asked us to carry out further corroborative work on our maintenance and renewal projections. The results will be reflected in a further cost submission to be made in advance of his final conclusions in July.

Our current expenditure plans are set out in the following tables but these are subject to the outcome of the periodic review of access charges.

31 Expenditure to sustain the network (£M – 1999/2000 prices)												
	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Maintenance	676	661	626	617	604	587	578	560	553	535	519	504
Renewals												
Type of asset												
Track	362	335	396	383	355	319	250	221	213	205	216	234
Structures	191	173	220	205	181	173	159	152	146	143	140	137
Signalling	253	302	565	583	562	618	634	787	290	270	265	260
Electrification	48	88	128	93	76	63	37	38	31	41	41	44
Plant & Machinery (incl IT)	93	129	113	102	88	82	76	73	72	72	71	71
Telecoms	46	63	108	109	85	81	76	51	56	61	68	63
Stations	272	165	112	106	104	118	106	94	72	75	74	73
Depots	18	20	26	20	21	24	25	26	24	24	23	23
Other	11	11	6	5	5	5	4	4	4	4	2	2
RENEWALS TOTAL	1293	1306	1676	1605	1477	1481	1369	1446	907	895	901	906
TOTAL MAINTENANCE & RENEWALS												
2000 NMS	1969	1967	2302	2222	2080	2068	1946	2006	1460	1431	1420	1409
1999 NMS	1880	1808	1849	1748	1676	1565	1626	1544	1504	1473	–	–
There will be additional maintenance and renewal expenditure resulting from the forecast traffic growth which for the purposes of this document we have assumed to be fully remunerated through cost-reflective increased access charges.												

32 Renewal of network				
Renewal	1999/2000 estimated actual	2000/01 expected	2001/02– 2005/06 expected	2006/07– 2010/11 expected
Rail renewed (km per year)	515	527	437	310
Sleepers renewed (km per year)	410	497	574	425
Ballast renewed (km per year)	433	648	765	600
Signals renewed (km per year)	82	280	n/a	n/a
Structures renewed (no of structures)	74	46	101	98
The expected values in this table are based on the maintenance and renewal expenditure set out in this NMS. An annual average value only is provided for 2001/02–2010/11. We believe the measure for signalling renewal volumes (km per year) does not provide a good guide to the volume of activity and no forecasts are provided for 2001/02–2010/11. We have developed an alternative which provides a better guide to the volume of work required eg cable lengths, signal heads, points, track circuits, level crossings and interlockings renewed.				

33 Major renewal schemes being developed

Name and description of scheme	Timescale	Cost (£M)*	Cost accuracy	Route Strategy
Great Western Main Line signalling A strategy to extend the life of existing installations where practical and introduce interim technology until ERTMS level II is available. Targeted renewals in the interim will improve reliability, ensure that safety standards are maintained and facilitate customer requirements. Phase I Slough–Bristol/Oxford; Phase II for ERTMS Bristol–Swansea/Gloucester	Phase I Completion currently planned for 2008/09 Phase II Completion currently planned beyond 2009/10	Currently assessed at: Phase I — 175 Phase II — 160	1	3 7
London–Stansted Renewal of signalling equipment at the south end of the West Anglia network combined with improving line capacity, speeds and track layouts to enable additional services to operate	1999–2004	237	3–5	15
London Bridge area signalling and track renewals Driven by the Thameslink 2000 project, we plan to renew substantial parts of the London Bridge signalling area, co-ordinated with Thameslink 2000 works in the area	2006	330	2	6 19
Manchester Piccadilly–Cheadle Hulme Renewal of signalling equipment and increased capacity	2001/02	150	4–5	1
East Kent Renewal of signalling in North and East Kent with opportunities for improving capacity	2013	50	1	18
Glasgow Central–Polmadie/Rutherglen signalling equipment renewal Renewal of signalling. This will improve reliability and flexibility of the existing track layout	2003	28	3	1 39
Portsmouth area Renewal of signalling	2006	27	1	21
North London Line Renewal of signalling	2007	25	0	26
Colchester–Clacton Renewal of signalling	2005	24	0	16
Basingstoke–Farnborough resignalling Renewal and life extension of signalling equipment in the Basingstoke–Farnborough area	2008	45	1	21
Alton Line Renewal of signalling	2009	19	1	21
Glasgow–Gourock–Wemyss Bay signalling renewals Renewal of signalling driven by the condition of equipment giving improved reliability. The scheme will facilitate future capacity improvement work. Capacity improvements and junction rationalisation are being undertaken	2005	19	2	39
Dorset coast resignalling Renewal and life extension of signalling equipment in the Bournemouth area	2002	18	5	21

Traffic growth

The level of usage of the network is its most important output. In fact, the most significant success of the privatised railway industry has been the extra traffic attracted to the network. There has been a 25% increase in passenger kilometres over the past four years with 100 million more passenger journeys being made than two years ago and a thousand more trains a day on the network. At the same time, there has been a 35% increase in freight tonne-kilometres in the past three years. The analysis we set out in Section 3, Developing, demonstrates that further traffic growth is likely to occur.

The present network can accommodate a further significant increase in the volume of passengers and freight carried over many route sections. Some of this can be achieved through timetable restructuring and increased train length, but much will require additional infrastructure, as set out in the next section.

During the past year, we have undertaken several studies into the impact of growth on asset degradation, maintenance and renewal costs and on overall network reliability. These show that the marginal costs are higher than had previously been believed. However, these costs do not all arise immediately; many maintenance and renewal costs can be significantly lagged. The expenditure projections we have set out in this section do not include the further incremental costs of extra traffic on the existing network.

In addition, this NMS sets out our proposals for network outputs in the next control period and beyond. These are based on no further traffic growth and the effect of traffic growth on these outputs will need further assessment as part of the Regulator's periodic review of access charges.

The challenge for the Regulator in his periodic review will be to provide a regulatory and financial framework for the next control period which will allow us to accommodate and finance further growth. Under the current structure of charges, 91% of access charges are fixed and only 9% vary with traffic volumes. This structure does not properly reflect our variable costs, and does not provide appropriate signals to operators about the true costs of growth. The Regulator's periodic review of charges is expected to lead to changes in the charging structure so that the costs associated with additional growth are reflected in variable access charges which cover the marginal costs involved. This is the assumption the Regulator has used in his December provisional

conclusions. However the approach to paying for growth needs to be considered in the context of the proposals on the structure of charges and incentives, which the Regulator is expected to publish in April.

developing





Introduction	58
Assessing future demand	60
Route Strategy analysis	62
Increasing network capacity	67
Network level capacity issues	68
Cost estimation	71
Evaluation of options	72
Committed enhancement schemes	74
Options to enhance the network	75
sSRA and franchise replacement	86
sSRA incremental outputs	87
Stations	92
Station condition and facilities	94
Major stations	97
Delivering the options	101
The way forward	103

Introduction

STRUCTURE OF THIS CHAPTER

This section outlines our existing commitments to develop the rail network and options for its further enhancement.

We begin with an assessment of demand. This derives from two basic sources: the views of customers and funders, and modelling work we have carried out. We then move on to describe the process of Route Strategy analysis that we have developed and applied systematically to each of our routes. This considers ways of enhancing the network, covering capacity, journey time and freight capability.

A particularly critical aspect of network enhancement is the provision of network capacity. This is an area where we have a key duty under our Licence to make proposals. We set out in a series of maps the current level of network utilisation, and the levels implied by our demand forecasts. These highlight capacity bottlenecks, *ie* places where utilisation exceeds 90%. Capacity issues are not always, of course, confined to individual routes, so we also consider issues along key axes, and around key nodes such as Leeds, Manchester, Birmingham and London.

We describe our approach to costing enhancements, and the stages that projects pass through in their development. We also describe our techniques for evaluating options, using both financial and social/environmental benefits.

We then set out our committed schemes for network enhancement and the options that have emerged from our analysis. We describe the sSRA's franchise replacement process, and the options for incremental network enhancement included in their Incremental Output Statements. In addition, we look at stations, including the major stations that we operate ourselves, and put forward options for their development.

The section explores the issues and constraints surrounding delivery of enhancements and finally we put forward our recommendations. We focus particularly on capacity schemes to relieve parts of the network where utilisation is already 90% or more (category A). We look at the financial and social/environmental benefits of each scheme, and recommend that we should proceed with those that show significant benefits. Subject to the outcome of the current Regulatory Periodic Review, this programme will leave us sufficient funding capacity also to undertake a selection of other schemes chosen by funders from the various options we have presented. These could cover other capacity schemes, journey-time improvements, freight capability, sSRA IOSs, and new and reopened lines.

GOVERNMENT POLICY OVERVIEW

Government transport policy, set out in the White Paper of July 1998 and the subsequent Transport Bill, outlines plans for integration across modes and for better public transport. We share its aims of delivering a safe, modern and high-quality transport system and see the railway playing a key role in that system. We will play a full part in trying to meet its aspirations for a railway which will rival the best in Europe with improved stations, faster journey times and more reliable services.

All parties, Government, the sSRA, Railtrack and the train operators agree that the railway will need to grow to meet increasing passenger and freight demand. The challenge for Government and all those with an interest in developing the railway will be to determine which of the options set out in this section should now proceed and how these can be funded. We look forward to the publication of the Government's ten-year plan for transport which will set out the kind of longer-term investment programme which the transport sector needs.

CONSULTATION WITH CUSTOMERS AND FUNDERS

As outlined in the 1999 NMS, we use an account-planning process to consult with customers on their aspirations for the network and to agree plans for improvements. Over the past year, we have built on that process to ensure that it balances the needs of individual customers with the interests of the development of the route as a whole. Each individual route may serve several customers with differing aspirations which need to be properly assessed and integrated. We therefore take an overview of each route and then, with customers, draw up Account Plans which in turn feed into the overall Business Plan. We will continue to review this process to see where it can be improved further. To develop an understanding of the requirements of the rail network at a strategic planning level, we have also held extensive discussions with the sSRA, Scottish Executive and Welsh Executive.

A key part of account planning is the Customer Reasonable Requirements process. The feedback we have had from customers is that they are broadly happy with the system and that it has led to an improvement in the service we provide. The sSRA has participated this year through its Incremental Output Statements.

During the year, customers and funders have set out a further 522 individual proposals of reasonable requirements which vary widely in scope. 859 of all reasonable requirements have been dealt with and there are now 1,800 proposals being undertaken or subject to discussion. A summary of the types of requirements received from customers and funders is shown in Chart 34.

Further details of the requirements of each individual customer are set out in the Customer Plans in Volume 2. An example of a scheme arising from this process is the work we are doing with Virgin CrossCountry. They are acquiring rolling stock and we are working with them to deliver increased service frequency, provide regular service intervals and some linespeed enhancements.

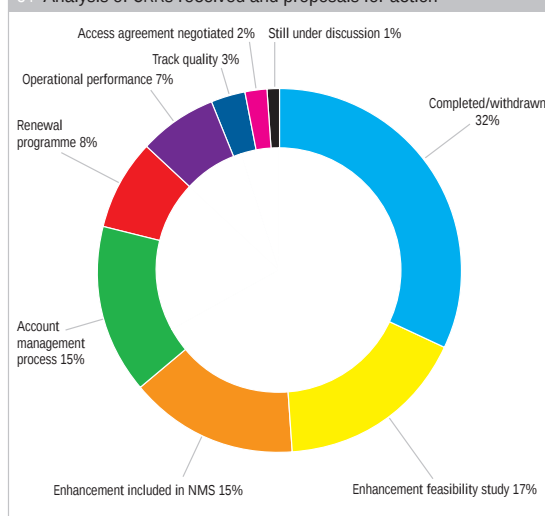
Having discussed requirements with passenger and freight train operators and the Passenger Transport Executives, we have then set out ways of delivering those requirements. Some requirements can be incorporated into our overall plans for maintaining and renewing the network. Other requirements relate to the enhancement of the network and, in such cases, options for funding the projects will need to be examined.

The agreed outcome of these discussions is reflected in the relevant Route Strategy. Where the requirements relate to performance or track quality, these have been incorporated into the network-wide commitments to improvement. Action plans have been agreed with customers on how their requirements are to be taken forward. These either include further feasibility and development work or proceed directly to implementation. A small number of requirements (32) is still being discussed with customers.

We also undertake consultation with regional planning authorities, local authorities and user groups on their aspirations and requirements for the development of the network. Railtrack is helping local authorities in drawing up their Local Transport Plans (LTPs). In many areas, the railway can play a greater role in meeting local transport needs and the LTP process will provide an opportunity to bring rail into the planning process and ensure that it is properly integrated with other modes of transport.

Many requirements can be met from proposals already being developed. In some cases, however, we are developing and implementing specific network developments which local authorities are funding. The details of these are included in the relevant Route Strategy in Volume 2.

34 Analysis of CRRs received and proposals for action



Assessing future demand

PASSENGER SERVICES

For many decades there was almost no growth in passenger demand but over the past three years demand has increased rapidly on the network. It has become increasingly important that we have robust methods for forecasting future growth. We have therefore carried out work jointly with the Association of Train Operating Companies (ATOC) to produce a network-wide forecasting tool giving an industry view of the impact of key demand drivers.

The joint research has concentrated on explaining growth over the last ten years and has recommended revised forecasting parameters based on an improved understanding of the drivers of growth.

RECENT TRENDS IN DEMAND FOR RAIL

The major drivers of rail demand are the state of the economy (represented by GDP growth, and by employment levels in London affecting commuting flows), the costs of the various modes (including rail fares, the price of petrol and road pricing) and their journey times (crucially including congestion on roads).

In the past decade, three distinct trends have become apparent:

- Non-commuting flows to and from London have been significantly boosted by the effects of road congestion and the cost of motoring (due primarily to the application of the fuel duty escalator).
- Non-London flows have grown more quickly than in the past. Some of these flows are influenced by increasing road congestion, but not to the same extent as London flows. The growth appears to be largely related to increases in motoring costs.
- Trends in commuting to London have remained closely linked to trends in London employment. Rail has traditionally held a large share of the market, but the share has continued to increase as road congestion and parking restraints have placed increasing limits on car usage.

These trends have been most apparent over the last three years as the industry recovered from a period of low growth in the mid 1990s. During this period, the climate has been very favourable for rail growth, the economy has continued to grow at a healthy rate, petrol prices have risen above inflation, regulated rail fares have been limited to rises 1% below inflation and road congestion has continued to worsen.

Our joint work with ATOC has developed a new forecasting framework to take account of these trends. The model has been applied at a national level by aggregating passenger flow data to a series of flows between areas.

We believe that this work represents a significant step forward in improving our growth forecasts by ensuring that they are based on better research, a more consistent approach and collaboration with train operators who are closest to the end markets.

Forecasts have been produced using a model which applies forecasting parameters for 11 flow categories and three journey purposes. The flow categories cover urban or interurban, to London, from London and non-London flows. The journey purposes are commuting, business travel and others (principally leisure travel).

The revised growth forecasts are shown in Chart 35. They are set out as a series of scenarios. The low scenario assumes average GDP growth of only 1.5% pa, the abolition of the fuel-duty escalator and no road pricing. In other words, it describes a set of circumstances which would be extremely unfavourable to rail market growth. This gives a growth forecast of an increase in passenger kilometres of 23% in the next ten years. The high scenario assumes 3% GDP pa growth, the fuel duty escalator staying as it is at 6% real increase a year and the introduction of road pricing in London. In other words, it describes a set of circumstances which would be very favourable to rail. This gives a growth forecast of 64% over ten years. Our central scenarios assume a GDP growth of 2.25% pa which is the current Treasury forecast. We have presented this case with the fuel escalator at varying levels: at its current rate of a real 6% increase a year, at a reduced rate of 3%, and its abolition. The Government recently ended the policy of automatic annual real increases but has not yet decided the future level. The planning assumptions in this NMS are based on our central growth scenario with the fuel duty escalator continuing at 6% but with no road pricing. This produces a 47% increase in passenger demand over ten years.

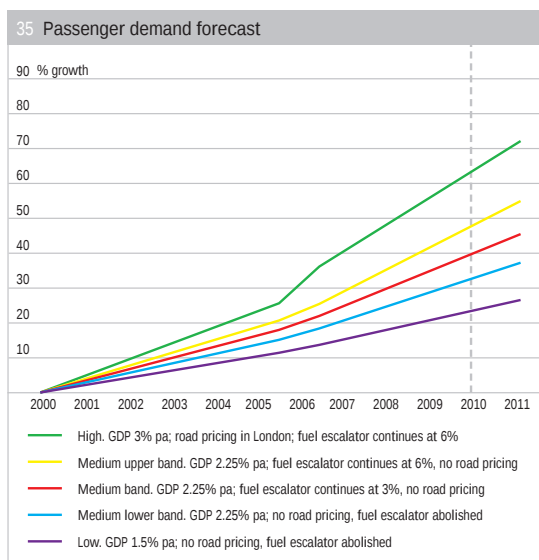
It is important to note that there are factors which have a significant impact on growth which are outside the control of the railway industry and are heavily dependent on Government policy. Consequently, we have set out this wide range of scenarios to reflect the inevitable uncertainty in predicting Government policy over a ten-year period – the forecasts range from 33% growth over ten years if the fuel escalator were to be abolished to 48%, if the fuel escalator were to continue at its current rate. The introduction of road pricing has an effect of roughly the same magnitude.

Having set out the forecasts, we can begin to look at options for meeting that future demand. This can include rolling-stock improvements and longer trains, using the timetable to make more efficient use of the network, and infrastructure enhancements to provide extra capacity bottlenecks both on the track and at stations.

We analyse where the demand for additional train paths will arise in the central scenario (with the fuel-duty escalator assumed to continue at its current rate) and how those paths can be provided. These include services designed to induce passenger growth mainly resulting from enhancements to the network. Where capacity provided by these services is insufficient to accommodate forecast passenger growth, we have made an assessment of the way in which train operators would respond to this lack of capacity. We have assumed that train operators will wish to increase frequency where it is physically impossible to lengthen trains, or where the net revenue effect of increasing frequency is beneficial compared with lengthening trains. We have then mapped the forecast demand on the network against the capacity, and identified those areas where the forecast demand is likely to exceed planned capacity. These areas and options for solutions are set out in the individual Route Strategies.

FREIGHT

There is a high degree of uncertainty over the future growth in rail freight because it is so heavily dependent on a wide range of factors, many of which are outside the direct control of the railway industry. We have therefore set out a number of scenarios which would support different levels of growth. We forecast a 39% increase to freight volumes over ten years if the industry works together to improve its services but Government policy does not change. An 86% increase in volumes is likely if service improves and Government provides an investment subsidy, and growth of 150% is possible if subsidies are combined with increases in taxes on road freight and service and capacity are improved. These scenarios are outlined in greater detail in Section 4.



Route Strategy analysis

We plan network development around our 45 NMS routes. We have continued to develop strategies for each of these routes, which set out visions for their future development. Our Route Strategy analysis aims to answer three key questions:

- What are the options for developing the routes?
- What physical outputs should the routes deliver?
- How should these outputs be achieved?

Implicit within these is the additional question of the optimal timing of any investment needed to provide additional outputs.

Our current process examines route enhancement options covering both capacity and capability. It examines the case for enhancements from a wide range of perspectives including passenger and freight demand forecasts, customer requests, funding options, local authority interests, etc.

CAPACITY CONSTRAINTS

Demand forecasts are the starting point for Route Strategy analyses: we examine underlying passenger demand growth and estimate how this underlying demand will translate into additional train paths on each route. This estimate is adjusted to take account of known aspirations of our passenger and freight customers to arrive at an overall view on future train-path demand. Changes in linespeed and freight capability are also examined.

Chart 36 shows how the constraints on capacity operate. The overall capacity of a line is determined by the intervals between trains, as required by the signalling system. In the route shown (Leeds–York) this is 20 trains per hour. However, it is not practical to run trains at this frequency with no contingency to allow for perturbation. An allowance is therefore built into the process reducing the number of trains it is feasible to run to 15 per hour. The problem is complicated by the mix of traffic which has different speeds and stopping patterns meaning that the effective capacity of the line is nearer eight trains per hour. Having carried out this analysis, it is then possible to look at adjustments to the timetable or the construction of passing loops to accommodate fast trains which could increase the capacity of the line.

JOURNEY-TIME IMPROVEMENT

Chart 37 shows the analysis of linespeeds by route which can be used to explore ways of reducing journey times. The shaded areas show the speed limits on the line and the current speed patterns of both existing and new rolling stock. This shows that speed is affected by physical restrictions such as bridges and station approaches as well as the acceleration and top speed of the rolling stock which cannot always reach the speed limit. This analysis can help determine the best areas for infrastructure improvements to increase speed. In this case, the proposed new, more powerful rolling stock would be able to exceed current speed limits.

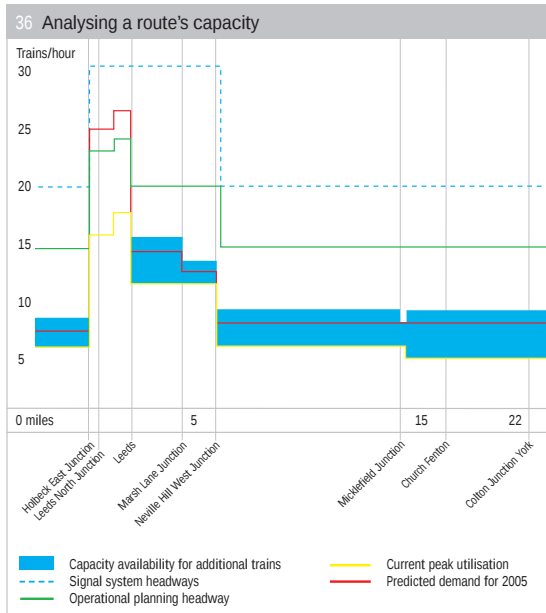
Therefore the Route Strategy would look at whether those limits could be raised to allow the new trains to travel at their full potential and bring subsequent journey-time reductions.

CAPACITY UTILISATION

The map on page 64 shows utilisation of the network for the current timetable based on the peak part of the day. The maps on pages 65 and 66 show how that utilisation would increase by 2006 and 2011, respectively, if no infrastructure enhancement takes place.

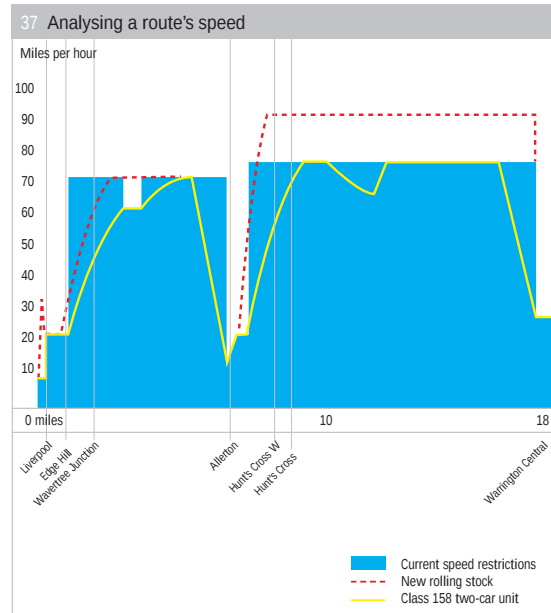
High levels of utilisation such as 90% or more are shown in red on these maps. It is possible to operate at such a high level of capacity utilisation for limited periods, and indeed this happens on commuter routes around London and other major cities, but service reliability is necessarily at risk, and the knock-on effects of delays can compound rapidly. The flexibility to change services in response to customer demand is also compromised.

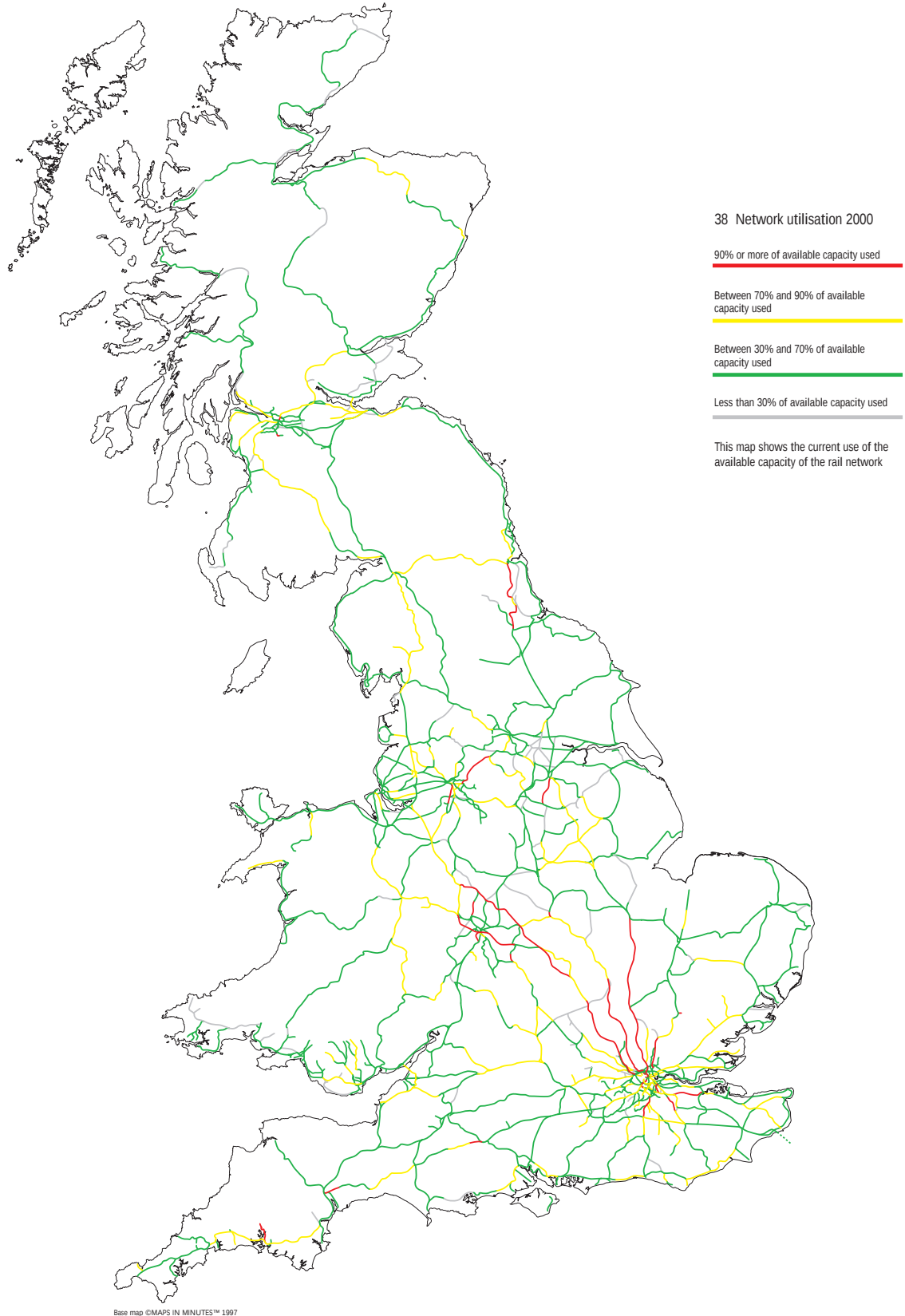
We therefore put forward options to enhance capacity when utilisation reaches 90%. These are given on pages 78–82. The long lead times required to develop and deliver enhancement schemes mean that actual usage may rise above this level before the extra capacity is delivered. This is particularly important for the lines shown in red on the first map overleaf, since here utilisation is already at 90%. We therefore focus on these areas in more detail later in this section.

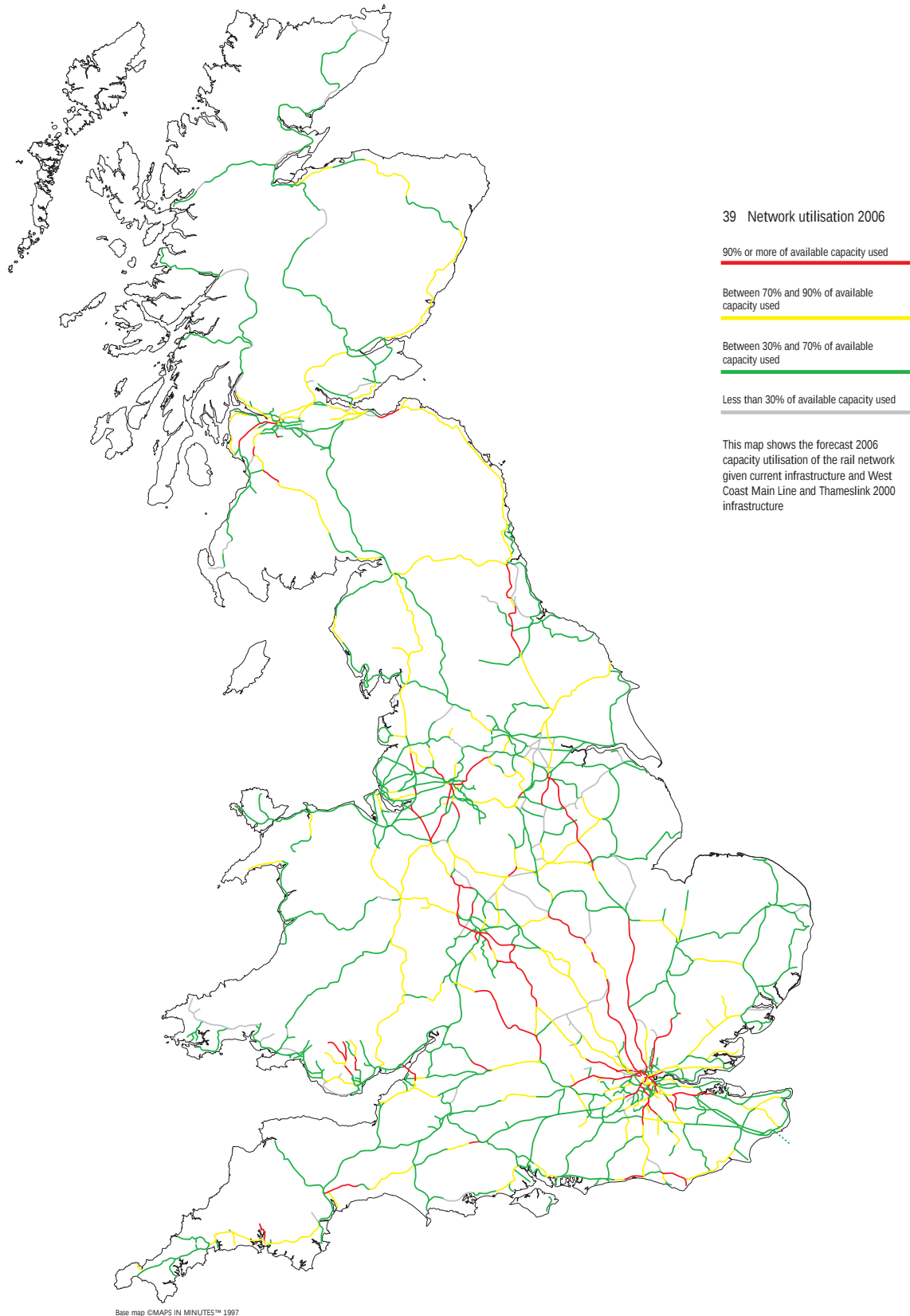


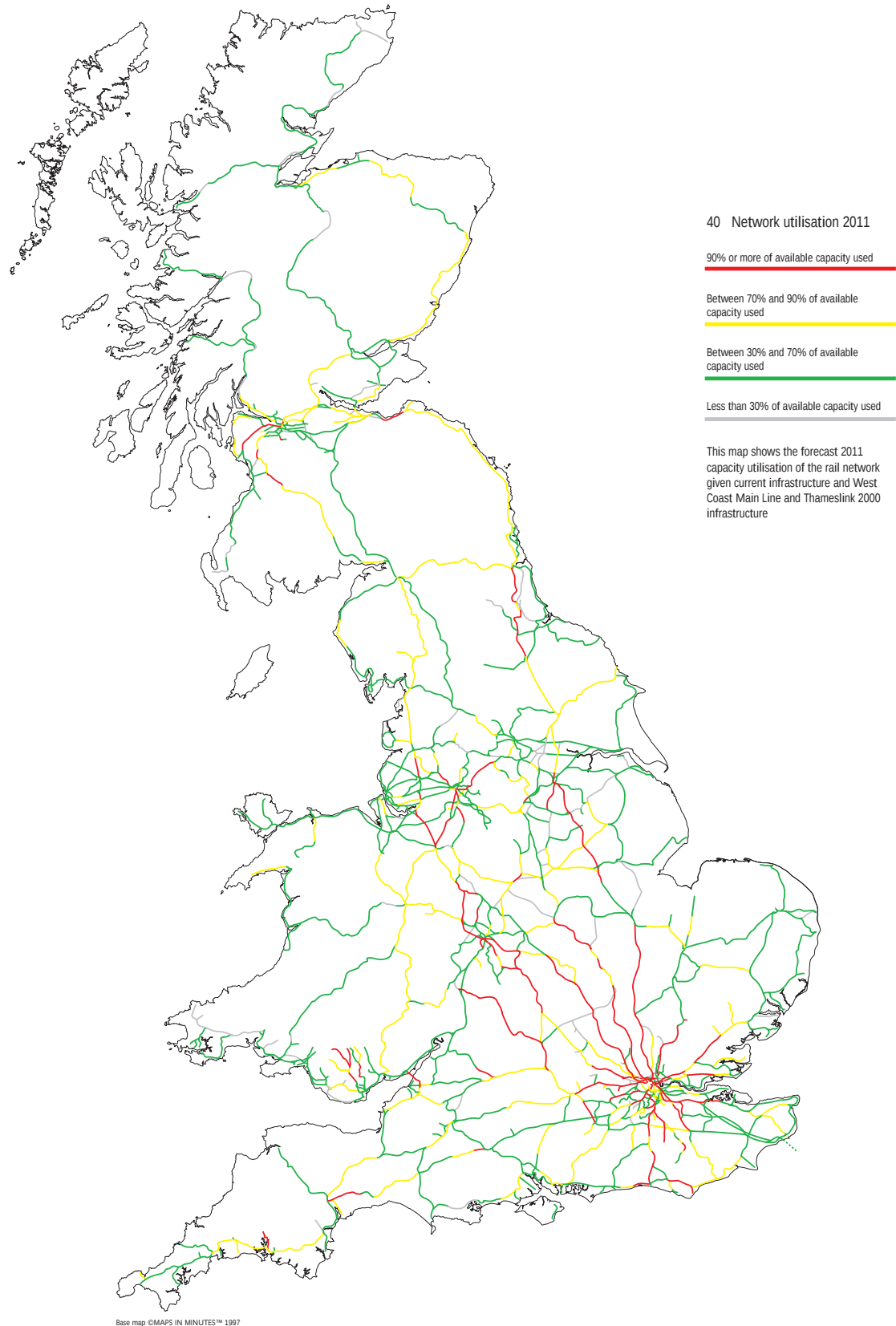
The capacity available for additional trains is the difference between the current peak utilisation and current effective maximum capacity. This effective maximum capacity is less than the operational planning headway as a result of the traffic mix on the route in terms of speeds, train performance capability and stopping patterns.

The chart shows that future demand can be accommodated with existing route capacity except between Holbeck East Junction and Leeds Station. We are addressing this through the East Coast Upgrade Phase I scheme.









Increasing network capacity

There is a wide range of possible ways to provide additional network capacity and no two capacity problems are the same. Provision of additional infrastructure is only one option, and is considered only after more cost-effective alternatives, which are quicker to implement, have been examined.

We set out below some of the generic solutions to capacity constraints which are examined in the course of Railtrack's Route Strategy process.

- Retain existing timetable and infrastructure, running longer trains where necessary: this will involve no expenditure on additional infrastructure and, where necessary to meet demand, will involve the running of longer trains within the existing infrastructure.
- Operate more trains within existing timetabling constraints: this will involve using a larger percentage of the theoretical train-path capacity of the route. As in the option above, this will not involve the provision of additional infrastructure.
- Operate more trains by relaxing timetabling constraints: this could include the introduction of pathing time, the rerouting of certain trains, or retiming trains, the effects of which could include foregoing regular interval timetables.
- Enhance infrastructure to allow an increased length of trains: generally lengthening of platforms and associated works to allow longer trains to run, which deliver more capacity.
- Invest in additional capacity to run more trains: this can range from small-scale investments in infrastructure through to major route upgrades.
- Segregation by service type. Routes with train services with similar speeds and stopping patterns will, all things being equal, support more train paths than routes with a mix of train speeds and stopping patterns. It is possible in some cases to deliver more capacity by separating trains with different characteristics onto different routes.

TIMETABLING SOLUTIONS

The drawing up of the timetable is a key activity at the core of our business and at the heart of ensuring that the railway provides an efficient and convenient service to passengers and freight. We therefore continually look for ways to improve its compilation. As a result, we made substantial changes to the way in which the 2000 summer and winter timetables were drawn up. We believe that the new system, based on transparent and collaborative working, has improved the process considerably to the benefit of the end user.

A three-day conference was held last year in Manchester at

which all passenger and freight train operators were represented. A series of meetings was held between Railtrack and individual customers, along with wider forums to discuss multiuser routes, where service aspirations of the participants were debated to try to reach agreement on future service levels.

The previous process had been based on confidential discussions with each operator. The inability to share information made it difficult for capacity to be optimised and was unhelpful to most parties. It was therefore a major step forward that operators and Railtrack were able to proceed in this open and collaborative way and make informed decisions about the services they wished to run.

The new process for drawing up the timetable helps to create capacity as there is room for negotiation and we have facilitated meetings between train operating companies which have proved helpful in reaching agreement on more efficient intervals between services. Another conference will be held this summer, building on the success of last year. In order to streamline the final discussions, it is intended to hold preliminary meetings and to prepare indicative timetables beforehand.

While the new process will encourage more efficient use of the network, there is a limit to the role of the timetable in providing increased capacity because of the constraints within existing access agreements. These give train operators rights to particular train paths which obviously limits the scope for timetabling solutions. The franchise replacement process provides an opportunity to provide more flexibility and encourage optimal use of the network.

We are also improving our forward-planning process and are already looking at timetables for the services which will be required by the West and East Coast Main Line upgrades. These are long-term collaborative projects with train operators which should help make best use of the network in the future.

Timetable solutions are, however, limited when a route has to carry a mix of train types. A mix of fast and slow trains will take up more capacity than if all trains ran at similar speed and there are also limitations arising from the different acceleration and braking characteristics of rolling stock. We believe that the timetable process will take on increasing importance as traffic growth continues and so we are employing additional resources and staff in this area. At the same time, improved computer systems are being introduced. The capacity management system we are developing will allow us to model future capacity in various scenarios and to look at the effects of congestion. We are also investing heavily in train-planning systems and undertaking a feasibility study into replacing the existing engineering planning system so that we can integrate the planning of engineering work with timetable planning.

Network level capacity issues

We have described so far a series of route-based analyses. It is inevitable that sometimes solutions for different routes interact. This is particularly true for freight flows. We describe here three other particular considerations to be taken into account at the network level.

- Key north-south routes.
- Key nodes on the network including London.
- Key interchange points.

NORTH-SOUTH ROUTES

Our forecasts indicate significant and sustained growth on these interurban routes. Our strategy is to adopt a phased approach in overall capacity provision.

WEST COAST ROUTE MODERNISATION Part of the early phase of our north-south strategy is the committed upgrade of the WCML. This upgrade is currently scheduled to deliver enhanced outputs in two tranches. The first, for delivery in 2002, will reduce key journey times, and increase frequency to Manchester, Birmingham and Preston/Glasgow. The second, for delivery in 2005, will further reduce journey times and deliver additional frequencies to key destinations.

EAST COAST MAIN LINE UPGRADE We are in discussions with funders and customers about the major upgrade of this route. While the phasing and scope of the delivered outputs are still to be finalised, the early phases are expected to result in a total of five off-peak high-speed paths per hour, together with additional capacity for freight trains, and reduced journey times between London and Edinburgh of approximately 20 minutes. The third phase of the upgrade would reduce the London–Edinburgh journey time by a further ten minutes, and create an additional high-speed path per hour. A further phase of this scheme will deliver an additional high-speed path together with more capacity for services in the North East England and Borders.

MIDLAND MAIN LINE UPGRADE This route is already at, or close to, capacity south of Bedford, and will require additional capacity to deliver the Thameslink 2000 timetable specification for 2006.

Our analysis shows that further work north of Bedford will be required to accommodate forecast demand by 2010. This would increase capacity between London and Leicester and

London and Sheffield. We have also identified opportunities to reduce journey times.

If growth on these three north-south routes continues beyond 2011, additional capacity will be required. Continued incremental upgrade of existing routes eventually becomes extremely expensive, and it may be appropriate to consider a new route. This would have the benefit of not disrupting existing routes during construction. We have briefly considered options although the potential problem is outside the ten-year horizon of this NMS. We will develop this theme for the 2001 NMS.

KEY NODES STRATEGY

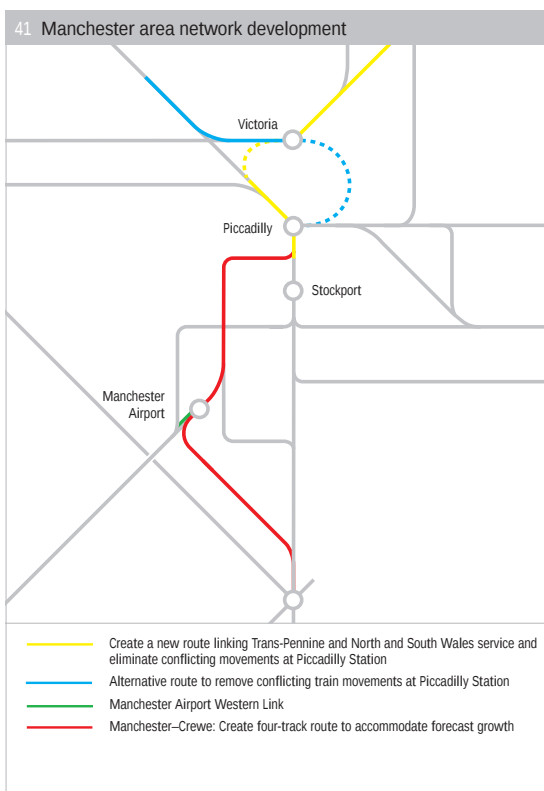
There are a number of key nodes on the network which are critical to the smooth functioning of the network timetable. These nodes are characterised by complex interactions of different services. We are undertaking a series of studies to understand what future demand these nodes will need to support.

LEEDS (SEE ROUTES 2 AND 8) We are currently implementing an upgrade programme at Leeds, which will increase capacity from approximately 28 to 40 trains per hour. This will allow growth in local and London services, and is a prerequisite for our plans to upgrade the North Trans-Pennine Route. Works are scheduled for completion at the end of 2001.

MANCHESTER (SEE ROUTES 12 AND 33) The growth in services around Manchester will lead to requirements for additional capacity in Central Manchester and on its southern approaches. Since publication of the 1999 NMS, we have undertaken a major study of the Manchester hub and propose the following options for further development (Map 41). There are three components which will provide additional capacity and journey opportunities to meet the aspirations of our customers and of end markets.

The first will involve the provision of a fifth platform at Stockport, and other minor upgrading works.

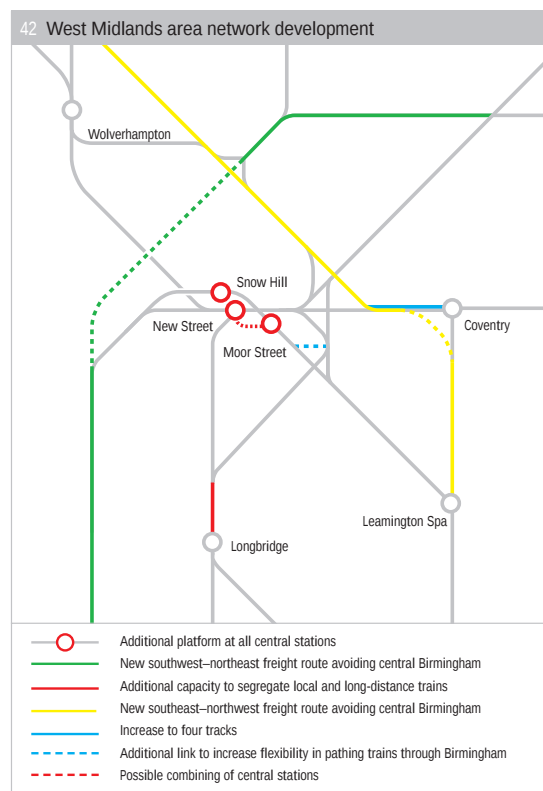
The second component, subject to consultation with stakeholders, involves a mixture of service rerouting and new infrastructure. This would involve the creation of additional capacity at Victoria and the construction of a new chord at Ordsall Lane. The North Trans-Pennine services from Leeds would run into Manchester Victoria Station. From there, in each hour, one train would continue to Liverpool via the Chat Moss route, and one train to North Wales via Warrington, replacing the existing



Manchester Piccadilly–North Wales service. Two trains per hour would run via Deansgate and Piccadilly to Manchester Airport. In addition to enabling a doubling of frequency of North Trans-Pennine services to Manchester Airport, the rerouting would improve reliability by avoiding the need to cross the busy throat of Piccadilly Station. The Buxton–Blackpool service would be replaced by two separate services to and from Manchester.

The third component would involve extending the existing railway to Manchester Airport westwards via a new link to join the Altrincham–Chester Line. This would dramatically improve access to Manchester Airport. These services could link with services running northwards via Manchester to provide new through-journey opportunities, for example from South Wales to Leeds.

Further capacity enhancement could be provided at a later date by the reinstatement of the Midland Curve, linking the east side of Piccadilly with Victoria. This would allow expansion of cross-Manchester services and provide flexibility of routing. The capacity released through Deansgate could be used to run a through service from the Calder Valley to Manchester Airport.



These proposed changes make maximum use of the existing infrastructure and enable services to be provided for all key markets, linking at Manchester itself and with the airport – an integrated transport solution.

WEST MIDLANDS (SEE ROUTES 1, 7, 30 AND 43) We are participating with the sSRA, Centro, the Government Office for the West Midlands and Birmingham City Council in a strategic capacity review of the West Midlands area. We will use the conclusions of the review as a framework for the development of our strategy for this key node of the network. Using initial results from the study, Map 42 shows how the predicted long-term service requirements in the West Midlands area could possibly be handled involving reopening routes to create new freight corridors avoiding Central Birmingham, increasing the number of tracks on certain routes and additional platforms at central Birmingham stations.

We are discussing the first phase of this strategy to provide additional tracks between Coventry and Birmingham with the sSRA to agree the specification for the project and funding arrangements.

LONDON Our strategy for London is to create a comprehensive infrastructure that promotes the development of new train services, designed to improve the service to existing customers, and to attract new customers, with the long-term aim of reducing the region's dependence on the private car.

Much of the infrastructure needed to provide this network of cross-London and orbital transport links already exists in some form, although a number of key enhancements are needed. Projects like Thameslink 2000 are already planned to provide significant enhancements. However, there are many other possible enhancements. The West London Line illustrates the difficulty in accommodating various services on a mixed-use railway. Running between Willesden Junction in north London and Clapham Junction in south London, it provides a vital link across the capital. The present mix of trains nearly exhausts the existing route capacity. Providing additional services on this route (either additional trains or new stations) will therefore require additional infrastructure.

The East London Line (ELL) is another example where plans to extend the line and reintegrate it with the national rail network have been around for many years and well developed by London Underground who have already invested over £100M. The integration of the East London Line with Railtrack's network is a significant missing piece of the rail jigsaw that, when completed, will provide a network of orbital routes embracing both the north London and south London lines. If powers are granted to build and operate the railway, and assuming a funding agreement is in place, construction could begin on both northern and southern extensions of the ELL in 2002.

CrossRail (see Routes 3 and 16) would run from Liverpool Street to Paddington creating a network of new cross-London services to the east and west of the capital. The proposed route has been safeguarded for planning purposes. The heart of the project is the construction of new twin tunnels through the centre of London, with new stations at Liverpool Street, Farringdon, Tottenham Court Road, Bond Street and Paddington. The existing Great Western and Great Eastern Main Lines would be linked by the CrossRail tunnel, creating the opportunity for new services. The sSRA is currently reviewing all east-west integration options including the interface between CrossRail, Airtrack and other schemes that need capacity enhancements on the Great Western Main Line.

READING (SEE ROUTES 3, 7 AND 21) We are currently developing detailed plans for Reading as part of Phase I of the Great Western Renaissance upgrade. This node has a significant number of conflicting moves each hour between north-south and east-west fast and slow services. Additional platforms, and the provision of a flyover and reinstatement of an underpass would remove many of the conflicts, and allow new journey opportunities.

KEY INTERCHANGE STRATEGY

The third element of our capacity enhancement strategy is to ensure that passenger capacity at key interchanges is adequate to handle the predicted growth in demand, and to ensure that benefits of the north-south and nodal strategies are maximised.

Key interchange strategies include:

- **EUSTON STATION** In tandem with the West Coast Route Modernisation, we are planning a significant enlargement of the station concourse area. We also aim to improve the interchange with the London Underground Station at Euston.
- **KING'S CROSS STATION** We have developed an option of a major concourse on the western side of the station with escalator links to platforms, and improved interchange facilities with other modes.
- **MANCHESTER PICCADILLY** As well as improved concourse capacity, this proposed scheme would include a new car park and improved traffic-management facilities.

Cost estimation

PROCESS

We have developed a process to describe more accurately the stages of development of an enhancement scheme. This also provides an indication as to the level of certainty associated with the cost estimates. The process uses a scale from 0–5, as set out in Table 47 overleaf, and describes the progress of a project from idea through feasibility and design stages to physical implementation. Risks are progressively quantified and, where possible, mitigated.

The process is such that any scheme that has progressed beyond level 2 may be said to be under way, since the essential design stages have then begun.

For each scheme it is possible to give an indication of the timescale to progress through each of the stages and the cost of doing so. Cost and scale varies considerably from scheme to scheme, depending on size, complexity, location, technology, planning requirements, etc. For all except the smallest schemes advancing beyond level 1 will involve significant development costs. For a scheme to reach level 5 will typically incur 10% of the total scheme cost.

When developing a cost estimate for a scheme, the following elements are considered and, where required, are included:

- Project management (including contractors and consultants)
- Project preliminaries and facilities (accommodation, telephones etc)
- Engineering design
- Installation (equipment, labour and management)
- Engineering trains
- Railway operational planning (temporary timetables, alternative routes, etc)
- Engineering possessions
- Safety procedures
- Materials
- Land purchase
- Planning approvals (eg TWA)
- Compensation payments to TOCs
- Compensation payments to others (residents etc)
- Inflation.

The cost estimate is prepared by a multidisciplinary project team with appropriate knowledge and competency. They make use of a cost database that contains current and predicted market rates for work.

Estimates for larger more complex schemes are separately validated and reviewed by competent assessors independent of the project team. They review in detail the costs, risks and proposed programme against the technical solutions being proposed to deliver the required outputs from the investment. The increasing use by Railtrack of partnering and alliancing allows the early involvement of contractors and consultants, particularly in value and risk management.

RISK MANAGEMENT

We have developed and implemented procedures for project risk management which conform to accepted best practice as developed in the oil and defence industries. The risk management process has six stages:

- Identification of the risks, usually through one or more brainstorming sessions.
- Assessment of the risks – quantifying them in terms of likelihood and impact.
- Recording the risks on a risk register, used for their ongoing management.
- Carrying out a Quantified Risk Assessment (QRA).
- Decision on appropriate management actions for each risk, and putting action plans in place to ensure they are managed.
- Ongoing review of the risks, identifying new ones, monitoring the action plans, and closing risks as they are mitigated.

All significant projects must carry out a QRA on cost before applying for investment authority. This covers the first four of the six stages above. It involves a statistical technique called Monte Carlo simulation to explore the range of possible outcomes for the project. The QRA will produce a graph of the possible range of costs as in the example in Chart 48 overleaf.

The project is usually authorised at the 80% cost, ie the project has an 80% chance of being delivered for that cost or less. Items which are considered as part of the QRA process include:

- Accuracy of cost estimates
- Design or implementation problems
- Unidentified work
- Buildability
- Possession requirements and possible overruns
- Resource constraints
- Management
- Interface with other projects
- Planning problems
- Disruption
- Contract problems/disputes.

Not included are:

- Major scope changes
- Business case risks
- Demand risk
- Regulatory risk.

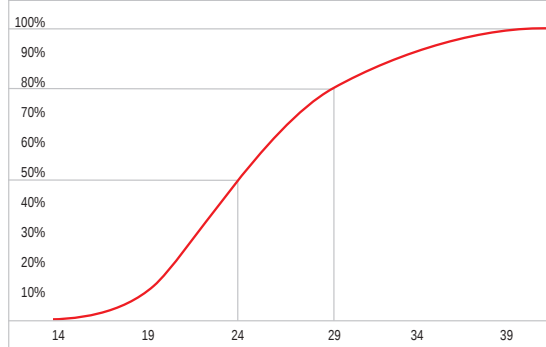
A continuous review process is used throughout the project life to ensure that risks are managed appropriately. This covers the final two of the six steps.

47 Railtrack's approach to rating project progress

0	Project scope is not defined and hence neither are inputs or outputs No understanding of technical impact of project Cost and programme are unknown The project is no more than an aspiration
1	Project has entered pre-feasibility phase Strategic scope has been developed. Principal inputs and outputs identified Initial engineering options identified Order of magnitude cost estimate developed Project contains extremely high levels of uncertainty and risk
2	Project pre-feasibility work nearing completion/completed Outline project scope developed and major elements of work and options identified Outline programme developed Workstream costs developing from order of magnitude estimate Project contains high level of uncertainty and risks Project developed to the point of commencing feasibility phase
3	Project is within feasibility phase Project scope inputs becoming detailed with engineering studies and option development well under way Outline programme developed Value and risk management workshops completed Works costs evolving Project contains moderate levels of uncertainty, known risks have been qualified
4	Feasibility phase works nearing completion/completed Project scope and preferred engineering solution identified Project programme developed and budget assessed Estimate developed for all work packages Project contains moderate levels of uncertainty, all risks have been quantified Project developed sufficiently to commence detailed design
5	All design development work completed Engineering design completed Programme fully costed and resource loaded Cost plan established and contracting strategy defined Approvals and consents obtained Project developed to the point of commencing physical implementation

The timescale for reaching a level 5 rating is as follows:

- 1 Renewals type of scheme of a simple nature – 4–6 months
- 2 Single-discipline simple enhancements – 9–12 months
- 3 Complex multidiscipline enhancements, usually simple section of route or site – 12–18 months
- 4 Major route upgrade – in excess of 18 months. In many cases such schemes would require TWA or other planning processes where we do not control the timescale.

48 Illustrative QRA cost range for a sample scheme (£M)

The project would be authorised at £29M with an 80% chance of the final cost of the project not exceeding £29M.

Evaluation of options

FINANCIAL BENEFITS

In assessing the viability of options that emerge from our Route Strategy analyses, we look at both financial and non-financial benefits. We assess financial benefits at the level of the rail industry as a whole, rather than for Railtrack in isolation. This means that we compare capital costs of the option with the changes in operating costs and farebox income to derive financial measures such as net present values (NPVs). We do this partly because we think this is the right thing to do, and partly because, at present, the basis on which Railtrack will be remunerated for investment is not known in advance of the Regulator's review of our access charges.

SOCIAL AND ENVIRONMENTAL BENEFITS

The social and environmental benefits of rail travel are well known. By attracting more traffic to rail and away from roads, air and noise pollution can be reduced, the risk of accidents reduced and congestion on the roads relieved. In addition, investment in rail infrastructure and services can help increase mobility and travel opportunities for disabled people and those living in rural communities. As a result, investment to increase the capacity of the railway can play a significant role both in helping to meet the Government's wider environmental agenda and in supporting policies on integrated transport and social inclusion.

The 1999 Network Management Statement set out the results of initial work on assessing the social and environmental benefits of the development of the railway. That work has continued this year and has been informed by the Government's new approach to appraisal (arising out of the roads review), OPRAF's 1999 Planning Criteria and most recently the DETR's multimodal transport corridor studies and guidance on methodology for those studies. Our evolving approach has been integrated into the Route Strategy models, and will be used to help assess investment proposals.

We believe it is important to assess carefully the social and environmental benefits of railway schemes and to develop a coherent and accepted methodology for measuring these benefits. In particular, information regarding the potential benefits of enhancement schemes can aid prioritisation of investment options, and can help to inform the parties in grant and franchise bids and negotiations. We have therefore undertaken studies to evaluate the potential social value of a suite of proposed enhancement schemes and to develop a benefit:cost ratio for investment by route. We have taken care to align our methodologies with those recommended by Government and the EU.

OUR APPROACH

The methodology can be used to evaluate enhancement schemes that may not be viable in a strict commercial sense but which, when measured against broader criteria, have social and environmental benefits. The approach has three steps: a monetary quantification, emissions quantification and qualitative appraisal. The first step involves applying standard monetary values for quantifiable impacts, derived from academic studies, to the passenger km and freight-tonne km growth arising from the enhancement, for different economic scenarios. Where an enhancement results in a journey-time reduction, the value of time savings to existing passengers is also generated by the model. Some of the values used in our model for the external costs of road and rail transport are shown in Table 43.

The second step calculates the change in emissions of the main polluting gases as passengers shift out of their cars and onto the rail network. Average emissions by mode are shown in Table 44.

There remains a large number of impacts for which no generally accepted method for monetary or physical quantification exists. The final appraisal stage therefore provides a qualitative assessment against the criteria of environment, safety, economy, accessibility and integration. Details of each scheme and the data generated through this approach are then assembled into an enhancement appraisal summary table, which includes the benefit:cost ratio for the scheme. Examples of two of the enhancement schemes that have been considered are shown as case studies, with preliminary results of potential benefits under different economic assumptions for modal shift. These results are compared with those produced by applying our methodology using unit values from the latest IWW Infrast report (2000) on the external costs of transport, which was commissioned by the UIC.

CONCLUSION

We have been able to quantify many of the social and environmental benefits that arise from use of the rail network. This gives us an idea of the magnitude of the social value that can be ascribed to rail-enhancement schemes. These calculations, along with changes in emissions and qualitative information, can be used to inform development of the railway, and we have used this approach to estimate the benefits of our proposals set out later in this section.

We will continue to undertake research in this area in order to enhance the model. Further information and details of the methodology are outlined on our website.

43 Average road and rail external costs

	High	Road Central	Low	Rail
Environment				
Noise and vibration	0.57	0.47	0.26	0.35
Air quality	1.05	0.83	0.61	0.17
Climate change	0.56	0.35	0.19	0.26
Safety				
Accidents	2.87	1.32	0.81	0.24
Economy				
Congestion	14.33	2.68	1.05	0.05
Unit values in pence per passenger km, 1999 prices. Source: ExternE (1998), Maddison et al. (1996), Pearce et al. (1993), Newbery (1995), ECMT (1998), RCEP (1994, 1997) and Peirson and Vickerman (1996).				

44 Passenger rail and road emissions to air

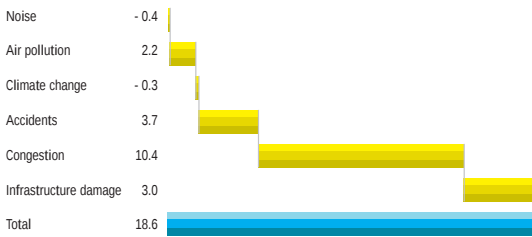
	Diesel* trains	Electric trains	Car urban	Car non-urban
CO	0.07	0.01	9.59	6.10
NOx	0.98	0.21	0.78	0.86
PM10	0.01	0.03	0.02	0.02
SO ₂	0.07	0.06	0.03	0.02
HC	0.04	0.01	1.67	0.95
CO ₂	70.55	68.49	129.80	121.57
Unit values in grams per passenger km Note: *Diesel figures are for standard DMU Source: ExternE (1998), Railtrack assumptions and values from London Research Centre and AEA Technology.				

45 West Anglian route capacity enhancement (WARM)

This route serves commuter flows into London from Cambridge. The mix of services cause capacity and timetabling difficulties. These problems are likely to be exacerbated by the expected growth in demand for Stansted Airport. The proposed enhancement would facilitate a doubling of train frequency to four trains per hour (see Route 15 for details).

The following Chart shows the NPV of social and environmental benefits over 25 years for WARM. Assuming that 70% of increased rail passenger km have switched from road, and taking central values to calculate the road externalities avoided, we calculate the potential NPV of social and environmental benefits of the scheme to be £19M. (This compares with an NPV of £15M in benefits generated using the IWW Infras results). The scheme also has significant journey-time savings, which can be valued at approximately £145M, over the 25-year period. This means that total social and environmental benefits of this scheme, less road tax reduction, are £153M.

NPV of social and environmental benefits (£M)

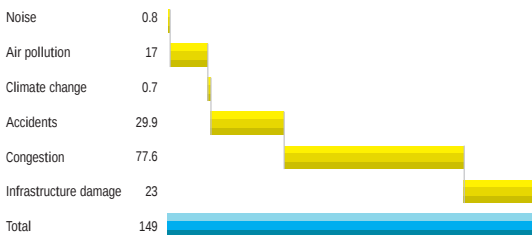


46 North Trans-Pennine route capacity enhancement

The route crosses the country from Liverpool–Hull and Scarborough via Manchester, Leeds and York. There is limited capacity on the route and the proposed enhancement would improve the infrastructure to allow more express services to operate. Combined with new high-speed rolling stock, the enhancement would significantly reduce journey times on interurban services (see Route 8 for details).

The following Chart shows the NPV of social and environmental benefits over 25 years for the North Trans-Pennine upgrade. Assuming that 80% of increased rail passenger km has switched from road, and taking central values to calculate the road externalities avoided, we calculate the potential NPV of social and environmental benefits of the scheme to be £149M. (This compares with an NPV of £130M in benefits generated by using the IWW Infras results). The scheme also has significant journey-time savings, which can be valued at approximately £440M, over the 25-year period. This means that total social and environmental benefits of this scheme, less road tax reduction are £404M.

NPV of social and environmental benefits (£M)



Committed enhancement schemes

We are already committed to many different enhancement schemes; the three largest are described below. Details of other projects are given in the Route Strategies.

WEST COAST ROUTE MODERNISATION (WCRM)

The West Coast Main Line is the principal rail corridor linking the London and South East England with the West Midlands, North West England and Scotland. The route covers approximately 650km from London Euston–Glasgow Central with diverging routes to Birmingham New Street, Manchester Piccadilly, Liverpool Lime Street, and Haymarket (Edinburgh).

The upgrading of the West Coast Main Line is one of the biggest and most complex railway modernisation projects ever undertaken. The first phase will deliver significant improvements to the route by May 2002. This focuses mainly on infrastructure improvements and timetabling changes to reduce journey times and accommodate Virgin Trains' 125mph services using tilting trains. There will also be additional services to Manchester, Birmingham, Preston and Glasgow and improved punctuality.

Phase II of the upgrade will be completed by May 2005. These additional works will reduce journey times further with trains running at a maximum of 140mph. This will also provide for further services for Virgin Trains to Manchester (a total of three trains per hour), Birmingham (a total of four trains per hour), and to Chester and Holyhead a total of six per day. An additional 42 slow line paths per day between London and Crewe will be available together with five additional high-speed paths over a two-hour period. The enhancements will also lead to improved reliability and punctuality for our customers.

Following discussions in November last year, the Regulator issued a draft Final Order regarding the upgrading of the West Coast Main Line. We are continuing to discuss the terms of the draft Order with the Regulator and the costs of the scheme in connection with the periodic review.

THAMESLINK 2000

The objective of this project is to provide the infrastructure to allow a major expansion of Thameslink services which have experienced substantial growth since their introduction in 1988. The programme will:

- Reduce overcrowding on Thameslink and other London commuter services.
- Reduce overcrowding on London Underground.
- Reduce the need for interchange between mainline and underground services.
- Provide for the introduction of new cross-London services to improve access to public transport in south-east England.
- Facilitate the dispersal of passengers from St Pancras following completion of the Channel Tunnel Rail Link.

The programme includes a new sub-surface station at St Pancras which will be built as part of the CTRL works to reconstruct the mainline station for international services.

Improvements and revisions to the programme were developed during the period that the CTRL project was under review. These were incorporated into a supplementary Transport and Works Act application which was submitted to the Deputy Prime Minister in September 1999. He has announced that a public inquiry into the project will start mid 2000.

SUNDERLAND DIRECT: AN EXTENSION TO THE TYNE AND WEAR METRO

We announced in February 2000 our commitment to designing, building and maintaining an 18.5km extension to the Tyne and Wear Metro. The extension will provide a new six-train-per-hour service between Newcastle and Sunderland and South Hylton. It involves the dual running of light and heavy vehicles on some tracks and makes use of both our existing network and some new railway. Work is about to start and is due for completion in late 2001.

The scheme has a target cost estimate of £90M and is being funded in a partnership between Railtrack, the Government, the European Union and NEXUS – Tyne & Wear PTE.

Options to enhance the network

In the tables overleaf, we set out options to develop the network which have emerged from the Route Strategy analyses. These cover:

- Capacity to relieve bottlenecks
- Journey-time improvement
- Freight capability
- sSRA incremental output statements
- Reopened and new lines.

Options to upgrade stations are shown later on pages 99-100.

OPTIONS TO RELIEVE CAPACITY BOTTLENECKS

We focus particularly on options to enhance capacity to relieve bottlenecks. This is a key aspect of our network Licence, and one where we have a duty to propose ways forward.

The capacity bottlenecks are those revealed by the capacity utilisation maps on pages 64-66. We have divided them into three categories

- Category A – where current network utilisation is over 90% (page 64)
- Category B – where we predict network utilisation will reach 90% by 2006 (page 65)
- Category C – where we predict network utilisation will reach 90% by 2011 (page 66).

We put forward options to relieve each of the bottlenecks in each of the three categories. Later on in this section, we focus particularly on the category A bottlenecks, which are the most pressing. We analyse in more detail the financial and social benefits of the options to relieve them, and propose that we take some of them forward.

Committed enhancement schemes							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
Network	Train Protection Warning System	To prevent or reduce the consequences of Signals Passed at Danger (SPADs) on a national basis.	Reduction of fatalities resulting from SPAD incidents by about 70% within four years.	New TPWS loops at 40% of all signals. Train operators will need to upgrade equipment in over 8,000 driving cabs.	310	2 years	3–4
Network	Automatic Train Protection	To implement an Automatic Train Protection System based on the European Standard ERTMS technology.	Further long-term reduction in SPADs. Incremental operating capability.	Detailed specification to be determined.	N/A	N/A	1
Network	Disabled access improvement at stations	To upgrade stations to meet DDA legislation requirements.	The scores of station facilities for accessibility would increase towards 100%.	Works to provide new facilities.	290	Phased	1–4 depending on station
1	West Coast Route Modernisation Phase I	Provides a further significant increase in capacity and speed. Permits tilting trains.	Route capable of operation at 125mph and an increase in capacity from today's six fast-line services per hour to nine fast-line services per hour in 2002.	Substantial renewal and upgrade works to OHLE, track, structures and power supplies.	440	2 years	5
1	West Coast Route Modernisation Phase II	Provides a further significant increase in capacity and speed. Permits tilting trains.	Route capable of operation at 140mph between London and Crewe and an increase to 11 fast-line services per hour in 2005 plus an additional 42 slow-line and 35 fast-line paths per day.	Signalling renewal and upgrade works, provision of additional running lines and grade-separated junctions.	1500	3 years (after Phase I)	4–5
Multiroute	Thameslink 2000	To provide a substantial increase in passenger capacity for existing and new north–south cross-London services.	Extensive, frequent network of longer (12-vehicle) services, including 24 trains per hour peak service through central London and connection of the existing Thameslink route to ECML; station capacities will be significantly increased.	Substantial works in a corridor extending from Bermondsey through to a new station at St Pancras Midland Road, extensive track remodelling and station refurbishment/reconstruction.	830	6 years	4–5
37	Sunderland Tyne & Wear Metro extension	To enable Tyne & Wear Metro trains to run over Railtrack network to Sunderland and South Hylton.	Additional 6 trains per hour Metro trains from Pelaw to South Hylton with 3 trains per hour heavy passenger trains and freight services sharing the line.	New junction at Pelaw, new 5km two-track railway from Sunderland to South Hylton, resignalling of the whole route and electrification to power the Metro trains, eight new and four refurbished stations.	90	2 years	5

Committed enhancement schemes							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
6	Waterloo–Fawkham Junction enhancements for CTRL	To facilitate services between Waterloo International and Fawkham Junction following completion of CTRL Phase I.	4 trains per hour for Eurostar trains in addition to existing train operator access rights.	New underpass beneath the Chatham Slow Lines at Shortlands Junction. Track signalling and electrification enhancements.	80	3 years	4
14	New freight depot at Aberdeen	New freight terminal Raithes Farm near Dyce Airport, Aberdeen	New freight terminal.	New main-line connection, signalling alterations, and development of the freight depot on greenfield site.	10	2 years	5
3	Cardiff Central Station enhancements	To refurbish the station, provide an additional platform and improve the station approach.	Improved station environment, additional staircase to platforms 6 & 7, improved circulating areas for crowd control, and one additional four-car platform to handle additional traffic in connection with the Millennium Stadium.	Refurbishment of ticket hall, subways, platforms and buildings, improved signage, redesign and repaving of station forecourt and approach, new platform and associated access.	13	Substantially completed	5
2, 8	Leeds Station	To provide suitable environment for customers resulting from the Leeds 1st project.	Provision of new roof, improved platform access and interchange arrangements, additional car-park capacity.	New roof, footbridge with escalator access to platforms, platform lighting and surfaces. Additional multistorey car park.	34	2 years	5 main project, 2 for car park
Multiroute	Other smaller committed schemes				634	Various	Various
TOTAL					4231		

Options to relieve capacity bottlenecks (Category A*)							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
2, 8	East Coast Main Line upgrade: Phase I (Leeds 1st)	A phased programme of work to increase route capacity to accommodate demand while enabling significant journey-time reductions to be achieved.	Increased capacity through Leeds west end from 25 trains per hour to approximately 40.	Remodelling of Leeds Station west end including three new platforms and widening the approach to six tracks; associated improvements to east-end layout in progress.	110	1 year	5
2	East Coast Main Line upgrade: Phase II	A phased programme of work to increase route capacity to accommodate demand while enabling significant journey-time reductions to be achieved.	One additional high-speed train per hour, King's Cross–Leeds 1hr 45min, King's Cross–Edinburgh 3hr 40min.	Various works including the upgrade of GN/GE joint line to create a four-track railway Peterborough–Newcastle.	930	3 years after Phase I	3
2	East Coast Main Line upgrade: Phase III	A phased programme of work to increase route capacity to accommodate demand while enabling significant journey-time reductions to be achieved.	One additional high-speed train per hour, King's Cross–Edinburgh 3hr 30min.	Hitchin flyover, four tracks south of Peterborough, replace Newark flat crossing, Doncaster remodelling, traction power upgrade.	340	2 years after Phase II	2
3	Great Western Renaissance Phase I	Phased programme of work to increase route capacity to accommodate projected demand. The first phase addresses immediate capacity constraints.	Additional main-line capacity.	Remodelling of Reading station, more platforms. Increase the number of platforms at Paddington. Additional capacity through Severn Tunnel, Filton Junction and Bristol Parkway. Additional platforms at Bristol Temple Meads.	450	5 years	1–3 by component
8	North Trans-Pennine route upgrade	To increase route capacity and reduce journey times between Manchester and Leeds and Liverpool (see Manchester area capacity).	To provide clockface pattern of 4 trains per hour (fast), 2 trains per hour for freight services between Manchester & Leeds. Key journey times: Leeds–Manchester 45min, Leeds–York 22min, Manchester–Liverpool 42min.	Remodelling of various junction layouts, reopening of second bore at Standedge Tunnel. Realignment of track and signalling upgrade to deliver higher speeds. Excludes contribution to Leeds/Manchester nodes.	110	3 years	3
Multiroute	Manchester area capacity Phase I: Crewe–Manchester	To increase capacity on this route, by a second parallel route via a new link between the airport stations and Manchester–Northwich route. Opportunity to create new through-services by linking existing services together (see Phase II).	Creates a second Manchester–Crewe route (doubling capacity to approximately 20 trains per hour) and opportunities to review train service pattern in NW England.	A combination of new line, track and signalling alterations to enhance capabilities of existing routes. Subsumes existing plans for Styal Line resignalling and additional Manchester Airport platform capacity.	370	4 years	1
Multiroute	Manchester area capacity Phase II: central Manchester	To increase capacity of routes in central Manchester. Creates opportunities for new through-train services.	Additional 4 trains per hour approaching Manchester and 7 trains per hour through Manchester Victoria.	Create link between Manchester Piccadilly and Victoria stations, increase platforms at Victoria Station, construct a chord in NW Manchester to segregate routes.	100	Phased	1

* Category A capacity bottlenecks are those where current utilisation is over 90%

Options to relieve capacity bottlenecks (Category A*)							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
1	Coventry–Birmingham capacity upgrade	To increase capacity of the route between Coventry and Birmingham to accommodate demand.	Additional capacity between Stechford–Beechwood Tunnel for up to 5 trains per hour.	Additional two tracks between Stechford and Beechwood Tunnel.	370	5 years	1
15	London–Stansted route capacity upgrade	To increase number of services between London and Stansted and other destinations. Reduce journey time to Stansted Airport.	4 trains per hour London–Stansted all day; 41min journey time; all day 2 trains per hour Stratford–Bromley; additional 2 trains per hour off-peak Harlow–Liverpool Street.	Enhancing track layout through a number of junctions, providing third track Cheshunt–Bromley.	90	4 years	4
Multiroute	Additional Thameslink works	To provide Thameslink works additional to the existing Thameslink 2000 agreement.	Enhanced station capacity and facilities; additional platform and train capacity through London Bridge. Improved Underground interchanges at Blackfriars and Finsbury Park.	Doubling single line, a further platform and through line at London Bridge. Platform lengthening and associated works at outer stations on Thameslink routes.	200	6 years	4/5
6 & 18	London commuter area capacity – South Eastern	To increase seating capacity on South East London and North Kent and suburban services.	Allows 12-vehicle trains on London–Gillingham via Dartford, London–Hayes and London–Sevenoaks routes.	In addition to the works provided by the Thameslink 2000 project, platform extensions and associated works to allow 12-vehicle trains.	40	3 years	2
19	Brighton Main Line upgrade	To increase capacity of this route to enable more and longer trains to operate.	7 trains per hour; between London and Brighton 5,500 seats/hour.	Enhance track layouts at Redhill, and provide a grade-separated junction at Windmill Bridge Junction. Additional platforms at Gatwick Airport. Other works at Brighton and Wandsworth.	360	10 years	1
19	London commuter area capacity – South Central	To increase seating capacity on trains from Victoria and London Bridge on London South Central suburban network.	Increase permitted train length from 8 to 10 vehicles at key stations creating additional 3,000 seats/peak hr.	Platform lengthening at selected stations on Victoria via Norbury–Purley and London Bridge–Epsom via Forest Hill routes.	100	5 years	1
21 & 23	London commuter area capacity – South West Phase I	To increase seating capacity on main line and suburban routes into Waterloo.	Increase train length to 12 vehicles (20m) on suburban routes and 13 vehicles (23m) on main-line routes.	Major works at Waterloo Station. Platform lengthening and associated works at all stations on this network.	800	5 years	1
TOTAL					4370		

* Category A capacity bottlenecks are those where current utilisation is over 90%

Options to relieve capacity bottlenecks (Category B*)							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
7	Didcot–Oxford capacity	To increase capacity of the route between Didcot and Oxford to accommodate demand.	Additional 5–10 trains per hour, avoidance of conflicting movements.	Resignalling and additional running lines, grade-separated junctions at Didcot East.	110	6 years	0
7	Banbury–Birmingham–Coventry capacity	To deliver significant increases in passenger and freight train movements on this route, in line with our current discussions with customers.	Additional 5 trains per hour.	Resignal and either four-track Dorridge–Tysley or create additional capacity Leamington–Coventry (using Coventry–Birmingham capacity) or create a parallel route Oxford–Birmingham using the Cotswold Line and reopening Honeybourne to Stratford-upon-Avon.	200	3 years	0
2	East Coast Main Line upgrade: Phase IV	A phased programme of work to increase route capacity to accommodate demand while enabling significant journey-time reductions to be achieved.	Additional capacity including 1 train per hour peak, 1 off-peak.	Four track Welwyn Viaduct and tunnels; further four track south of Peterborough, additional Edinburgh platform.	510	3 years after Phase III	2
Network	Freight route capacity enhancements	To increase the capacity of the network to accommodate freight traffic.	Ability to accommodate long-term sustained growth and longer trains up to 775m.	Improved junctions resignalling and associated works:			
9, 15, 16				Felixstowe–Nuneaton.	200	3 years	1
3, 7, 21				Southampton–WCML.	75	5 years	1
Various				Freight around London.	75	5 years	1
3	Great Western Renaissance Phase II	Phased programme of work to increase route capacity to accommodate projected demand. The second phase addresses medium-capacity constraints.	Additional main-line capacity. Grade separation of north–south flows at Didcot.	Reading–Didcot grade separation of junctions. Swindon Station remodelling. Bathampton–Bristol Temple Meads increase in capacity. Severn Tunnel–Margam upgrade of slow lines.	430	5 years	1
13	Sheffield area capacity improvements	To increase capacity on the routes in Sheffield area to accommodate additional services.	Significantly more paths for all operators including services to London, Birmingham, Manchester and Leeds.	Remodelling Sheffield Station layout, doubling single-lead junctions at Dore and Holmes, additional tracks between Dore and Sheffield and in the Swinton area.	100	5 years	1
Multiroute	CrossCountry journey-time and frequency improvements	To enable CrossCountry to introduce new trains and a new timetable, increasing frequency and reducing journey times with tilting trains at up to 125mph.	Significant increase in the number of trains per day. Reduced journey times Birmingham to Reading/Bristol/ Manchester and Leeds.	Enhance track layouts and signalling in Bristol, Severn Tunnel, Reading and Didcot areas.	80	3 years	2/3

* Category B capacity bottlenecks are those we predict 90% utilisation by 2006

Options to relieve capacity bottlenecks (Category B*)							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
25	Chiltern upgrades	To improve network capability, to increase service frequency and reduce journey times.	Increase of 1 train per hour Banbury–Birmingham, increase of frequency – Marylebone–Aylesbury. London–Birmingham journey time 2hr.	Double Aynho–Bicester; Princes Risborough headways, Beaconsfield fast lines, West Ruislip–Northolt four tracks, Bicester–Princes Risborough headways.	70	2–3 years	2
38	Glasgow and South West upgrade capacity	A phased upgrade of the route to provide a major freight corridor and a viable diversionary route for WCML traffic.	A phased enhancement of speed and capacity for freight and passenger traffic.	Addition of loops, track doubling and associated signalling work.	20	5 years	2
39	Barrhead–Kilmarnock capacity	To increase capacity to accommodate SPTE's aspirations for more trains.	Capacity raised from 3–5 trains per hour (both ways) to allow regular half-hourly Glasgow–Kilmarnock service.	Provide a loop on the single line section between Dunlop and Stewarton.	10	3 years	2
27	Cotswold Line capacity	To increase capacity between Worcester and Oxford.	2 trains per hour peak direction and 1 train per hour in the other direction.	Track improvements to increase linespeed, addition of loops and associated works.	50	5 years	0
43	Stourbridge–Walsall	Reinstate route for freight creating additional capacity on SW and NE approaches to Birmingham.	New shorter freight route. Southwest–northeast capacity raised from 2–3 trains per hour.	Upgrade disused route track, structures and signalling.	50	2 years	0
TOTAL					1980		

* Category B capacity bottlenecks are those we predict 90% utilisation by 2006

Options to relieve capacity bottlenecks (Category C*)							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
5	Midland Main Line upgrade	To improve network capability to meet customer's aspirations of increased service frequency and reduction in journey times.	Increase of 2 trains per hour London–Leicester and London–Sheffield. Journey times of London–Sheffield 1hr 40min and London–Leicester 55min.	Track realignment for 125mph running and signalling replacement. Additional lines and grade separation.	350	5 years	1
22 & 23	London commuter area capacity – South West Phase II	To increase seating capacity on main-line and suburban routes into Waterloo.	Provide clearances to permit double-deck trains.	Alterations to bridges and structures to allow operation of double-deck trains.	800	5 years	1
28	Rhymney Valley capacity	To provide a significantly increased capacity to meet SWIFT's aspirations.	Increase in capacity tapering from 10–12 trains per hour at the bottom of the valley to 4 trains per hour at the top.	Resignalling and linespeed improvements.	20	4 years	1
28	Cardiff Queen Street capacity	To increase capacity between Cardiff Queen St and Cardiff Central to 24 trains per hour to match the additional capacity being provided north of the station.	Increase in capacity from 12 trains per hour to 24 trains per hour between Cardiff Queen St and Cardiff Central.	Track and signalling. Provision of an additional track, associated alteration to junction layouts, signalling and structures.	20	5 years	1
7	Birmingham–Water Orton capacity	To deliver significant increases in passenger and freight train movements on this route, in line with our current discussions with customers.	Additional 8 trains per hour.	Increase Water Orton–Birmingham to four tracks throughout.	50	3 years	0
14	Aberdeen–Inverness linespeed and capacity	To create a fast, frequent rail corridor between Aberdeen and Inverness.	Raise the linespeed to 100mph and introduce an hourly service.	Major changes to structures and track including building a long loop.	20	3 years	2
1	Central Birmingham capacity	To relieve the long-term demand for train movements through Birmingham New Street.	Up to 10 additional train paths per hour in each direction through Birmingham New Street.	Possible works include additional platforms below the existing ones, with new approach tunnels to handle cross-city and other local services.	500	6 years	0
15	Stansted Airport second tunnel	To double the Stansted spur.	Increase train movements from 6 trains per hour each way to 12–15 trains per hour.	Bore second tunnel, lay track and possibly provide turnback sidings at the airport station.	30	3 years	1
New route	Cheltenham–Honeybourne–Stratford	Reopening of line to create additional capacity on southwest and southeast approaches to Birmingham.	Additional capacity up to 5 trains per hour. New route for freight.	Reinstate trackbed, structures, signalling and associated works.	300	5 years	0
3	Great Western Renaissance Phase III and enhanced access to Heathrow	Phased programme of work to increase route capacity to accommodate projected demand. Addresses long-term capacity constraints and increases access to Heathrow.	Additional capacity to Airport Junction of 16 trains per hour, additional main-line capacity.	Increase Acton–Airport Junction to six tracks with grade-separated junction. Increase Didcot–Swindon to four tracks. Provide grade-separated junction at Wootton Bassett and alternative route Swindon–Newport via Gloucester.	915	7 years	1
TOTAL					3005		

* Category C capacity bottlenecks are those we predict 90% utilisation by 2011

Options for new lines							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
New route	CrossRail	To provide capacity for east–west cross-London travel by creating a new route between Paddington and Liverpool Street.	24 trains per hour in central section, trains from Oxford, Reading/Slough, Heathrow, High Wycombe–Stansted, Southend, Ipswich, Shenfield and Gidea Park.	Tunnelling from Paddington–Liverpool Street with stops at Paddington, Bond Street, Tottenham Court Road, Farringdon and Liverpool Street, requires electrification and upgrade works on the Great Eastern and Great Western Main Lines.	3500	11 years	1–3
New route	East–West Rail link	To provide capacity on a new east–west route, so creating new rail journeys avoiding travel via London.	Services between Cambridge and Oxford via Letchworth, Sandy, Bedford and Bletchley. Phase 1 likely to be Bristol–Oxford–Bletchley–Bedford.	Route reopening Bicester–Bletchley and reinstatement Bedford–Sandy, new chord at Hitchin.	240	Phased	1
New route	Buxton–Matlock route reopening	To create a new direct link between the East Midlands and Manchester, adding north–south capacity to the network and capturing new traffic to rail from the Peak Park area.	50km of new railway with capacity for 4–6 trains per hour.	Reinstate track bed, structures, signalling and associated works.	100	5 years	1
40	Edinburgh CrossRail	To upgrade an existing freight branch line to provide a new half-hourly Edinburgh CrossRail passenger service to reduce car traffic flows from the A1 and the City Bypass.	2 trains per hour on 3km of upgraded track with two new stations, 600-space car park (with expansion potential).	Signalling and track upgrade, provision of two new stations and a 200m turnback siding.	5	2 years	4
39	Glasgow Airport Rail Link	To provide capacity on a new rail link from Paisley to Glasgow Airport.	4 trains per hour Glasgow Airport –Glasgow Central (and possibly beyond).	4km new line Glasgow Airport to Paisley, additional track and signalling Paisley–Shields Junction, electrification of City Union Line	60	3 years	2
39	Larkhall–Milngavie	To provide a new line from Larkhall–Hamilton and an enhanced cross-city service to Milngavie.	Additional 2 trains per hour and extension of Glasgow–Maryhill trains to Anniesland.	6km new route, four stations and signalling alterations.	30	2 years	4
LUL & new route	East London Line	Extension of the East London Line creating a new north–south cross-London route.	An additional 8 trains per hour through the core of the route (Whitechapel to Surrey Quays). Facilitates new services such as Highbury and Islington, Finsbury Park and Willesden Junction–West Croydon, Crystal Palace and Wimbledon.	New and reinstated routes, new stations at Surrey Canal Road, Bishopsgate, Hoxton, Haggerston, Dalston and Primrose Hill. Associated North London Line works.	500	6 years	1
23 & new route	Southern link to Heathrow (Airtrack)	To enable train services to operate through Heathrow and provide direct services to the airport from a large range of destinations.	12 additional train paths per hour through Heathrow, new train routes/ journey opportunities.	New length of railway from Central Heathrow–Staines. Reinstatement of western chord at Staines.	180	6 years	1
TOTAL					4615		

Options for journey-time improvements							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
4	Great Western Renaissance Phase IV	To reduce journey times on London–Exeter–Plymouth–Penzance via Bristol and Westbury routes.	Journey-time savings: London–Plymouth 15min, London–Penzance 30min.	Upgrade and realign track; resignal for 125mph operation of tilting trains	40	4 years	1
3	Great Western Renaissance Phase V	GWML linespeed improvements: to reduce journey times on London–Bristol–Cardiff–Swansea route.	Journey-time savings: London–Bristol 6min, London–Cardiff 9min.	Upgrade and realign track plus resignalling to raise line speeds for operation of tilting trains	30	4 years	1
14	Edinburgh–Glasgow journey time	To achieve a journey-time improvement between Edinburgh and Glasgow via Falkirk High.	Improvement of journey time to 38min service.	Infrastructure enhancements, including creation of a new loop and relocation of stations to coincide with loops.	20	2 years	2
29	West Wales journey-time improvements	To reduce journey times by linespeed improvements on most sections of the West Wales Line.	Journey-time savings: Swansea–Llanelli 1min, Swansea–Camarthen 3min, Swansea–Fishguard Harbour 10min, Llanelli–Craven Arms 10min.	Track works and changes to arrangements at level crossings	10	4 years	2
11	Aberystwyth–Shrewsbury linespeed	Regular interval timetable with reduced journey times and improved connection opportunities to/from Pwllheli.	Journey-time improvement of 9min.	Track upgrading, renewal of level crossings and a new passing loop at Dovey Junction.	10	3 years	1
TOTAL					110		

sSRA Incremental Output Statements options							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
Multiroute	Incremental Output Statements – Tranche 1	Various	Various	Various	650	Various	1/2
Multiroute	Incremental Output Statements – Tranche 2	Various	Various	Various	2000	Various	1/2
Multiroute	Incremental Output Statements – alternative enhancement tranche	Various	Various	Various	3000	Various	0
TOTAL					5650		

Options to improve freight capability							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
Network	Freight gauge enhancements	To increase the structure gauge on the network to W10	To enable 9'6" containers to be carried on rail wagons	Renew overbridges, track slab tunnels and track lower on specific routes and incremental network improvements:			
8				Trans-Pennine	82	5 years	1
9, 15, 16				Felixstowe–Nuneaton	60	3 years	1
3				Cardiff, Avonmouth–London	30	3 years	1
Various				WCML branches	15	3 years	2
2				ECML freight routes	15	4 years	2
6				Channel Tunnel to London	30	3 years	1
17				Tilbury–London (including diversionary routes)	20	3 years	1
4				Bristol–Penzance	40	4 years	1
14				Coatbridge–Aberdeen	35	4 years	1
Various				Other routes	30	Phased	0
3, 7, 21				Southampton–WCML	50	3 years	1
9	Nuneaton–Walsall/ Birmingham electrification	To create an electrified route into central Birmingham for freight services from WCML avoiding the highly utilised Coventry corridor.	Electrification of Nuneaton–Water Orton–Birmingham–Walsall with 25kV OHLE.	Track and structures changes and signalling immunisation to permit installation of OHLE.	100	3–4 years	2
3	Colnbrook Euroterminal	To provide infrastructure servicing a new intermodal and conventional freight terminal at Colnbrook to/from the existing Poyle branch line.	New intermodal and conventional rail freight terminal for European and domestic traffic.	New holding loop at West Drayton, Western chord connection to Poyle branch line; additional signalling and S&C	40	5 years	3
TOTAL					547		

Other options							
NMS route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
	Other schemes				2315	-	-

sSRA and franchise replacement

The sSRA launched its programme for franchise replacement during the latter part of 1999 with the intention that most franchises of shorter duration (expiring by 2004) would be replaced in the near future. The sSRA has indicated that bids should not necessarily be constrained by the current franchise map geography. In addition, the bids should offer significant investment in improving the capacity, punctuality and reliability of the current passenger services. Softer quality issues will also be considered. In return, the sSRA is prepared to consider longer franchise terms of between 10 and 20 years.

The process, while welcome, has increased short-term uncertainty. Meanwhile, we are adopting an active role in franchise replacement through providing assistance to bidders in preparing their proposals. There are three phases to this activity:

- 1 **PROJECT DEVELOPMENT** This phase captures the bidders' aspirations of what can be achieved within the current infrastructure configuration and timetable and where necessary, explores the options for infrastructure enhancement using our Route Strategy process described earlier. These infrastructure projects typically involve improvements to service frequency and train performance, or car-park enlargement and new stations. They are designed to support the bidders' proposals. We are also providing preliminary costings for these projects.
- 2 **COMMERCIAL NEGOTIATION** Once the scheme has been developed, the share of the costs and benefits are negotiated between the parties.
- 3 **CONTRACT** This represents the formalisation of the commercial agreement with our customers.

To date, most of our effort has been focused on the first phase. With all bidders, we are working to ensure that bids are as well informed as possible, with preliminary costings and plans to the extent that they can be developed in the time available. It is our desire that every bidder should be in as strong a position as possible to put its case to the sSRA. In some cases, like the East Coast Main Line, there are already well-developed projects. Our ability to provide robust, detailed and costed work is affected by how well developed particular new project proposals are and the extent to which they need to be worked up at short notice and to tight timescales.

Our expenditure plans set out in this NMS may have to change to reflect specific requirements resulting from franchise replacement.

FIRST BATCH

The first batch of franchise replacement involves three franchises: East Coast Main Line, Chiltern and South Central. Decisions on the award of these replacement franchises by the sSRA are expected early this summer. In each case, the present franchise operator has been pre-qualified. Other established franchise operators have also been selected, as well as one new company – Arriva – an established bus operator. At this stage, the competitive nature of the process and the related confidentiality issues make a full description difficult here, but some broad outlines of the proposals are given below.

EAST COAST MAIN LINE The pre-qualified bidders for East Coast Main Line are Sea Containers (the current holder of the franchise) and Virgin Rail Group in conjunction with Stagecoach.

This franchise is already subject to a major enhancement proposal, the ECML upgrade, which provides improvements wider than the East Coast franchise alone. The ECML upgrade is a well-advanced proposal following development with the sSRA, PTEs, local authorities and other interested parties. It is described in detail in Route 2. The current franchise discussions are a subset of the ECML project and some other associated enhancements beyond its scope. We are discussing options with both pre-qualified bidders.

Current discussions include the building of new parkway stations, station redevelopment with improved access, car parking, transport interchanges and station facilities, improved network performance and capacity and possible 140mph running.

CHILTERN The Chiltern franchise has three pre-qualified bidders: M40 Trains (the current holder of the franchise), Go-Ahead (franchisee of Thames Trains) and Arriva.

There is already a relatively well-developed project for the Chiltern franchise covering the route between London Marylebone and Aynho Junction (where the line joins the Oxford–Banbury Line). Discussions are also under way with bidders about the development of the line between Aynho Junction and Birmingham.

SOUTH CENTRAL The South Central franchise has three pre-qualified bidders: Connex Rail (the current holder of the franchise), GoVia (franchisee of Thameslink) and Stagecoach (franchisee of South West Trains).

This franchise area has benefited from some project development work for the Brighton Main Line. The sSRA has also explicitly encouraged the bidders to examine options for adjusting the service arrangement on this franchise.

The project development for this franchise is more difficult than the other franchises because of the complexity arising from the different possible franchise geographies. All three bidders are looking at different service permutations which could lead to a wider range of possible outcomes than for the other franchises.

All three bidders are looking at short and long-term solutions to the problem of passenger overcrowding at peak times on the Brighton–London Route and in the London South Central suburban area. They are looking at providing quality improvements, new service opportunities and greater integration with bus services. Stations and car parks will also be improved, together with investment in rolling stock and depots.

SECOND BATCH

In December 1999, the sSRA wrote to all parties which had expressed an interest in offering proposals for franchise replacement, outlining the process for taking forward the second stage of the Franchise Replacement process.

Interested parties were invited to bring forward innovative ideas and improved services on the following strategic areas of interest:

- Planning and implementing the Thameslink 2000 network of services north, south and through central London.
- Improving London commuter services and easing capacity constraints at Waterloo, Liverpool Street and Paddington.
- Relieving regional capacity bottlenecks around Birmingham and Manchester.
- Introducing new services 'around' London making use of the east, north and west London lines.
- Serving the interests of Wales and the North West more effectively.
- Recognising the value of interurban Trans-Pennine services.

The sSRA had received 36 responses by the deadline of 1 February. At the time of going to press, the Franchising Director was identifying from among these ideas no more than four franchise areas, not necessarily based on the existing franchise maps, against which to invite formal proposals.

sSRA incremental outputs

BACKGROUND

The baseline outputs of the Railtrack network to be determined in the current regulatory review of access charges are expected to include improvements during the next control period which are over and above the levels specified by the sustained network (see Section 2). These improvements are referred to as incremental outputs.

The incremental outputs have arisen as a result of consultation by the sSRA with passenger and freight operators and other funders about possible network developments. This exercise was undertaken as a series of route-based Train Operator User Group (TUG) meetings, from which the sSRA has put together schedules of desired improvements known as Incremental Output Statements (IOSs).

The sSRA has identified two approaches to incremental outputs which it set out in a letter to us on 14 December 1999 and published as an appendix to the Regulator's provisional conclusions on access charges. The first covers the sSRA's generic policies which it wishes us to evaluate for potential inclusion as part of a continually improving baseline for the next control period. The second is a schedule of specific IOS requirements arising from the consultation with customers and funders.

GENERAL IOS POLICIES

This section sets out our response to the sSRA's general policy proposals for incremental outputs.

PROVISION OF INFORMATION We will seek to co-operate with train operators and funders in making information available in a timely manner on the costs, capabilities and implications of network and station enhancement options, in accordance with the provisions of our Network Licence. We envisage that this issue will be covered in the Regulator's proposed Investment Code of Practice.

SAFETY AND OTHER STATUTORY OBLIGATIONS We plan to deliver safety improvements to meet the Railway Group Safety Plan and statutory obligations, including plans for complying with the Disability Discrimination Act (DDA). This NMS includes our plans to deliver TPWS and compliance with the DDA which are treated as enhancement investment but because they are required to comply with statute they are considered part of our committed plans.

PERFORMANCE Our expenditure plans to deliver the sustained network include improving train performance by 11.9% per train km by the end of the next control period, measured as minutes' delay to passengers and freight services to 2005/06. We have already made a submission to the Regulator which costs a range of further improvements in performance. The details are in Punctuality, Section 2.

CAPABILITY OF THE NETWORK Freight-route availability and gauge for the full network is already available on CD-ROM and on our website. We will expand this in time to a full database of all aspects of network capability through our asset database programme. As part of preparing the database, we will be examining the gauge of all our routes. Where appropriate, we shall identify those structures which are of substandard clearance so they can be costed for replacement and provide details of these to the sSRA so it can consider if it wishes to fund them. It could be desirable to address these substandard clearances at the same time as maintenance and renewal activity takes place where this is practical.

FREIGHT We are currently discussing with the sSRA their proposals for enhancements to loading gauge, axle weights and train lengths and we are in the process of refining and agreeing the content of these gauge proposals.

We are also examining the costs of providing train loops which can accommodate 775m train lengths.

MAINTENANCE AND RENEWAL A sustained network should not have a reduced capability or capacity and should not close off opportunities for future enhancements provided this is achieved through no significant additional costs. We are currently implementing a process to enable train operators to comment on our maintenance and renewal plans in order to allow incremental works to be requested. Our proposition is that all proposals for track renewals will include a high-level assessment of the opportunities of increasing speed over the track to be renewed where this does not involve alteration to the signalling system. The results would be included in our consultation on maintenance and renewal work with operators. Expenditure on improving speeds would qualify as enhancement.

The results of our Route Strategy process will continue to be shared with operators and funders to demonstrate opportunities for linespeed and other capability changes which could be available with appropriate funding.

STATIONS This NMS (page 94) provides details on the improvements to station facilities that will result as a consequence of our maintenance and renewal activity. It also sets out a total costed enhancement package to deliver the aspirations contained in the Developing Modern Facilities at Stations concept.

The increase in station facility scores shown in the 1999 NMS are a consequence, rather than a driver, of our maintenance and renewal programmes since they arise on those occasions where we can make an improvement at no extra cost. We will continue to make incremental progress in achieving increased facility outputs. The costs of achieving this are reflected in our current expenditure plans.

We have also set out an enhancement option which indicates the changes to inputs and outputs that would result from an accelerated maintenance and renewal programme. These include:

- The improvements to the average condition of stations, and the consequences of maintenance and renewal in sustaining that higher average condition.
- The accelerated delivery of improved facilities which result from maintenance and renewal.
- A view of the likely impact in terms of the complete rebuild/refit of stations as a result of compressing renewal timescales.

SPECIFIC IOS REQUIREMENTS

Following discussions with train operators and funders, the sSRA has identified a number of potential incremental improvements on the network. These have been discussed with Railtrack and based on an initial assessment, the sSRA specified some 324 separate IOSs they wish to see priced for delivery (see Table 49 and Maps 50 and 51). The sSRA schedule defines three types of output improvement: journey-time reductions, additional capacity outputs and operational flexibility improvements.

The incremental output programme represents a significant level of network-wide investment.

STATUS OF IOSs We have reviewed all the 324 IOS requirements and assessed the resulting scope of work and costs. In particular, we have now presented the information to the sSRA (and to the Regulator) to enable it to finalise the list of enhanced outputs it wishes to see delivered. Some of these requirements were previously identified as CRRs, but many of these requirements are new and are therefore at earlier stages of development.

49 IOSs: Allocation by Zone, output type and by tranche

	Early IOS tranche 1				Later IOS tranche 2				Alternative route proposal				Reviewing with sSRA				TOTAL
	C	J	O	TOTAL	C	J	O	TOTAL	C	J	O	TOTAL	C	J	O	TOTAL	
East Anglia	4	3	6	13	1	3	1	5	2	0	1	3	1	1	1	3	24
Great Western	5	4	20	29	6	14	19	39	4	2	5	11	0	1	0	1	80
LNE	6	1	3	10	7	16	1	24	8	0	1	9	1	0	1	2	45
Midlands	4	3	12	19	2	6	6	14	4	0	2	6	0	1	4	5	44
North West	3	8	4	15	0	5	6	11	4	0	1	5	1	2	2	5	36
Scotland	5	2	5	12	10	10	4	24	1	0	0	1	1	1	1	3	40
Southern	2	3	6	11	4	6	4	14	2	12	6	20	1	5	4	10	55
TOTAL	29	24	56	109	30	60	41	131	25	14	16	55	5	11	13	29	324

C = Capacity J = Journey time O = Operational flexibility

We have formulated a strategy for addressing the IOSs in three tranches and discussed this with sSRA:

- Early delivery – straightforward outputs with anticipated delivery in the first three years of the next control period, ie 2001/02–2003/04.
- Later delivery – outputs with anticipated delivery in the last three years of the next control period.
- Incremental outputs which we believe are best provided as part of alternative Route Strategy proposals to varying timescales, as described in the Route Strategy entries in Volume 2.

In addition, some of the outputs are not feasible to deliver, or only deliverable at very high cost, and these we are reviewing further with the sSRA. The sSRA's consultation with train operators and PTEs was inevitably insufficient to enable a detailed specification to be finalised. The costs shown reflect this.

The Route Strategies contain details of each of the incremental outputs by route section. Further detailed information on the works required to achieve the outputs is due to be provided to the sSRA and the Regulator in early April 2000. It is envisaged that we will be in a position to make a final offer to the sSRA by the end of May. The sSRA will then need to confirm the schemes that it wishes to procure through supporting the inclusion of the enhancement in the baseline outputs funded by the Regulator's final determination of access charges in July 2000. As part of this process, the costs of the proposed baseline outputs will be subject to review by the Regulator.

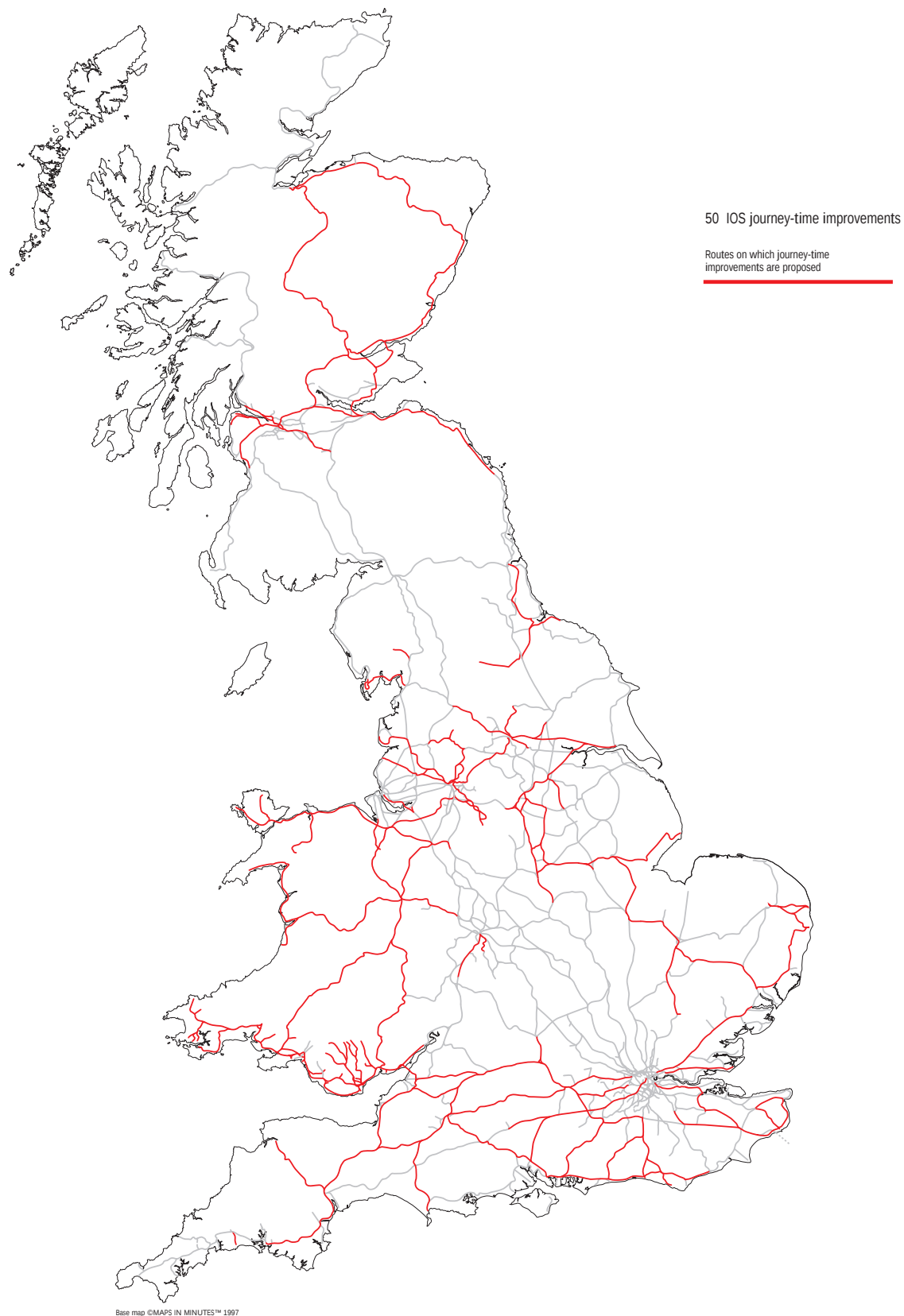
FUNDING We anticipate that many of the schemes to deliver these outputs will form part of the baseline commitments made as part of the periodic review, as set out above, while we consider that others may be more appropriately treated as negotiated enhancements that are separately underwritten during the next control period.

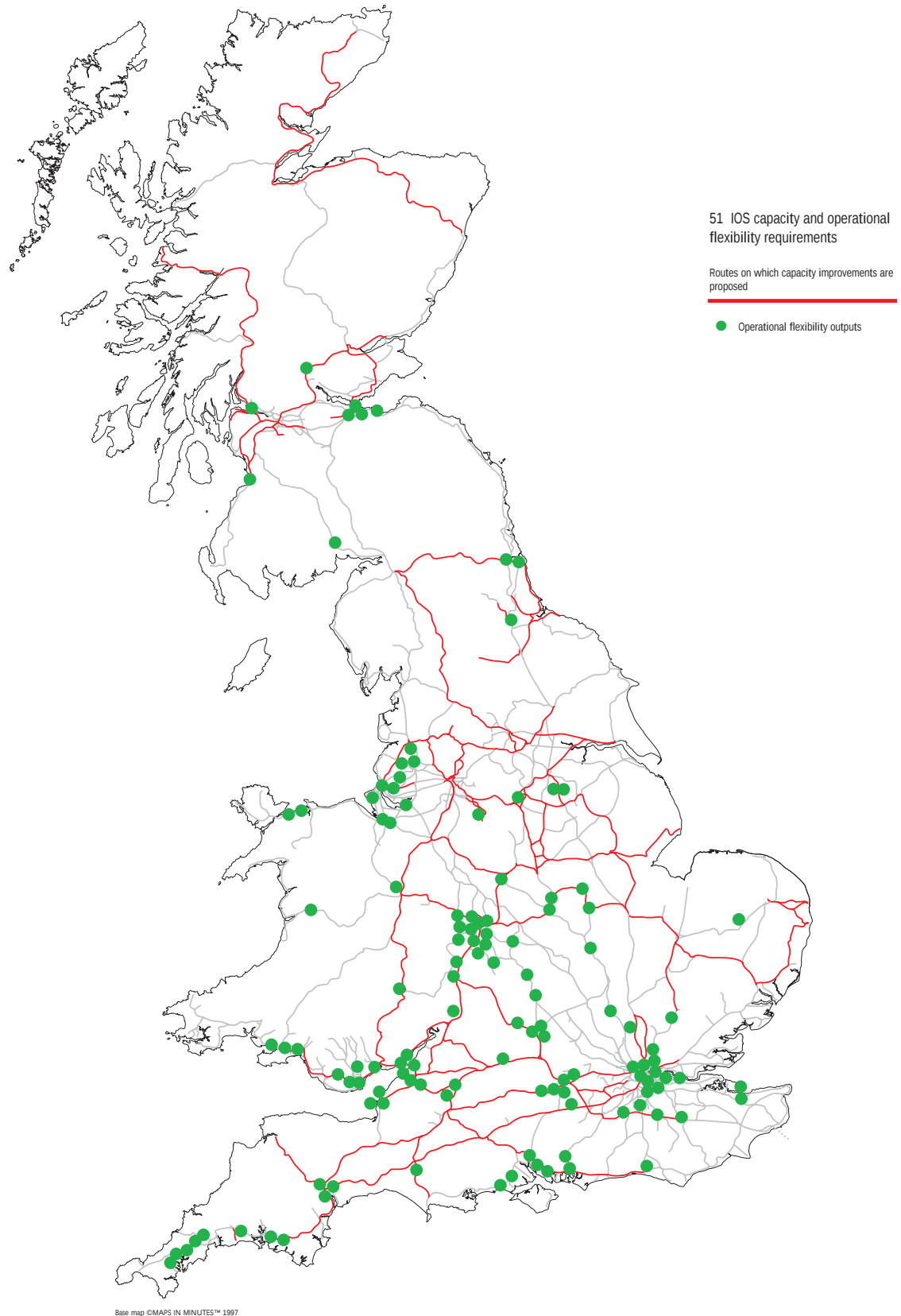
Railtrack has assessed the incremental capital costs of achieving the various outputs sought by the sSRA as follows:

		Cost £M
Early delivery tranche:	109 projects totalling	650
Later delivery tranche:	131 projects totalling	2000

In addition, some of the outputs may be provided through the wider alternative enhancement project proposals which offer additional outputs benefits. Many of these alternatives are described and priced in the Route Strategies, the total cost of these projects is around £3bn.

It should be noted these figures represent gross capital costs, and as such include some elements of accelerated renewal of the network. The costs include a provision for operator compensation, project management and make some assessment of contingency in accordance with our normal practice. In addition to the capital costs, there will also be an element of additional maintenance and operating costs where the enhancement involves additional assets, changes in maintenance costs for the renewal elements, and some performance costs associated with provision of the outputs, although these have not all been quantified so far.





Stations

CUSTOMER RESEARCH

As in 1999, our qualitative research examining the station experience among passengers has shown travellers want to:

- Be made to feel welcome and cared for
- Be reassured about the status of their train services
- Feel secure from any threat
- Feel proud of their station
- Feel help is available if needed (luggage, steep steps, etc)
- Be able to use their time at the station productively (newspapers, cashpoints, cafes).

Over the past year, MORI has continued on our behalf to carry out research among users of stations to identify whether they are satisfied with the standard of facilities, and whether they consider them to be improving. Results were similar to last year, in that a majority of respondents were satisfied and felt that standards are getting better (see Charts 52 to 55).

STATIONS AND INTEGRATED TRANSPORT

In 1998, the Government set out its plans and aspirations for developing integrated transport. We see the rail industry playing an important role in delivering this policy. Stations form natural hubs which can be developed as transport interchanges between modes. However, the rail industry cannot deliver integrated transport in isolation. The successful delivery of these policies requires all those responsible for transport planning and provision to work together to achieve this. We have therefore been working with a range of organisations to identify and deliver integrated transport facilities. This has included the Highways Agency, Scottish and Welsh Executives, local authorities, Passenger Transport Executives, the Commission for Integrated Transport and the sSRA.

We are jointly working on a wide range of schemes to improve integration and access to the rail network. These include the installation of escalators and lifts, the provision of cycle racks, improved parking, better passenger information (both before people travel and at stations), and improving connections to other modes of transport at stations. Other larger-scale projects include building stations to serve new developments such as those at Braintree Freeport and the Wavertree Technology Park.

While for many passengers, their journey will not involve a change of trains, or public transport mode, we recognise that high-quality interchange between services at strategic hubs will be a key contributory factor in achieving a transfer of passengers from car to rail.

WORKING WITH LOCAL AUTHORITIES

Over the past year, a number of enhancement schemes has started to improve facilities. These have focused particularly on improved car parking and feasibility and development work is now taking place across the network. We are exploring the planning issues, acknowledging that local authorities can sometimes have difficulties with car-parking schemes which may increase some local traffic but reduce the overall number of car journeys. The second focus for our work is looking at design and construction issues to provide a standard solution that can be applied in a range of situations. We are also exploring new approaches to the design, financing, building and operation of car-parking facilities, including private-public partnerships where non-user benefits can be captured.

AIRPORTS

Congestion around airports is a particular problem and we are working with airport operators to identify growth trends and to contribute to the surface access plans they are drawing up. These will build on the successful activity we have already put in place to improve and develop stations serving airports.

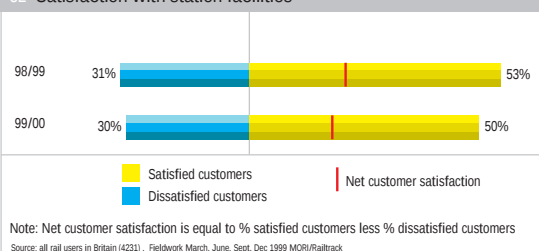
The station at Manchester Airport was created several years ago and has been a great success. We are now drawing up plans to expand the station to accommodate growth at the airport and to develop the station as a hub for all public transport serving the airport.

A new station at Luton Parkway was opened in November 1999. This helps to relieve the congested M1 corridor as well as providing a facility for airport users. In its first three months, it has already exceeded passenger usage forecasts. A further M1 parkway facility, which will also serve East Midlands Airport is being developed in partnership with Midland Mainline, and is planned to be completed by 2001/02.

CAR, BUS AND LIGHT RAIL LINKS

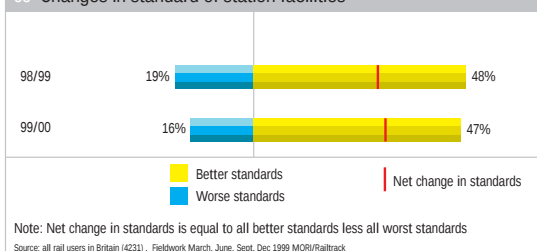
Other areas where we have improved links between modes include a project at Newcastle Station to provide an escalator connection to the Tyne and Wear Metro Station. At East Croydon, the station layout has been modified to facilitate reorganisation to provide a link to the new tram network and provide easier access to bus/taxi services. A new station is due to open in May 2000 at Clitheroe (Lancashire) which has been built next to the bus station in order to provide cross-modal integration. Smaller projects include the provision of a footpath at Pontypridd Station to allow direct access to the town centre car park, and a new footbridge at Conisborough to provide access from the station to the new Earth Centre attraction.

52 Satisfaction with station facilities



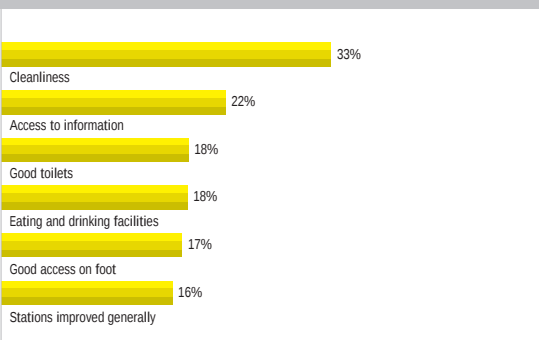
Customers were asked how satisfied or dissatisfied they were with the facilities provided at railway stations.

53 Changes in standard of station facilities



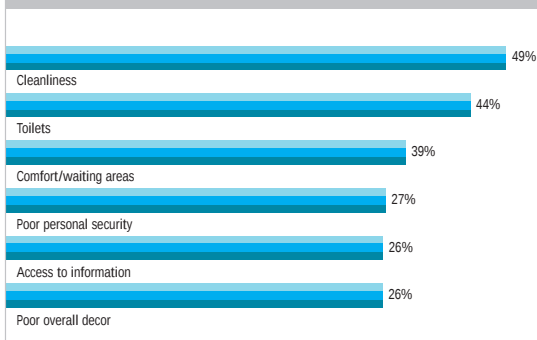
Customers were asked to consider whether they thought facilities at railway stations have got better, got worse, or stayed the same over the past two years.

54 Satisfaction with station facilities



The most important reasons given by those who were satisfied.

55 Dissatisfaction with station facilities



The most important reasons given by those who were dissatisfied.

With local authorities, we are providing support to the Local Transport Plan process to help to identify key transport hubs and gateways and the related infrastructure development required to promote usage.

In Scotland, five projects have already been completed at a cost of almost £250,000 resulting in better access, improved car parking and integration with buses. We have also worked in partnership with East Lothian and Falkirk Councils to install integrated timetable boards at both rail stations and bus stops, providing a first step to improving integration. Stonehaven in Aberdeenshire has benefited from the provision of disabled access and improvements to the station environment, such as improved car parking.

Where we can, we are helping with joint-funding and partnership schemes which do not just focus on rail but also in bringing bus and taxi interchanges.

In addition, we are working with the Regional Development Agencies to ensure that rail is properly incorporated into the regional transport strategies and that it is considered in multimodal studies.

INFORMATION

Research conducted by the Highways Agency and others has shown that the key to increasing use of all forms of public transport, including rail, is creating more easily accessible and useable information on transport services. The production of integrated transport information is therefore a key component of success. We will work with all organisations to achieve this for rail services, including further refinement of our website to improve accessibility and ease of use.

Another project supported by Railtrack is the PTI 2000 initiative being brought together by the Association of Transport Co-ordinating Officers. This is a Government initiative which should come into operation from July 2000 to provide multimodal journey information nationwide from one telephone number.

Station condition and facilities

STATION CONDITION

Following the success of the Station Regeneration Programme in improving the condition of stations through remedial backlog maintenance and renewal, we have set out how our activity will now sustain the current condition, and gradually improve it over the next control period (see Tables 22 and 23 in Section 2).

The sSRA has asked us to consider how improvements could be made and sustained in the areas of existing facility directly affecting passenger perception. The average condition rating of the stations portfolio at the date of our flotation was 2.7 on a scale of 1 to 5, with 1 being installed condition and 5 being a failed asset. The SRP has focused over the current control period on bringing all stations up to a safe and acceptable condition. In the 1999 NMS we stated that efficient management of maintenance and renewals would result in sustaining an equivalent to an average station condition score of between 2.2 and 2.3. This was assessed by profiling the condition rating throughout the anticipated life of all of our assets summarised by the frequency of renewal, *ie* we have plotted the degradation profile for assets with various anticipated lives.

A model has been used to assess the impact of varying levels of expenditure on the average condition rating of our stations. This indicates that an increased expenditure on maintenance and renewal of approximately 50% in the period 2001–06 would be required compared with the current control period. To achieve an average condition of 1.5 the increase in maintenance and renewal expenditure would be approximately 200% in the period 2001–06. Increased expenditure would also be required in subsequent years to sustain the increased average condition.

MODERN FACILITIES AT STATIONS

The concept of Modern Facilities at Stations was first set out in the 1999 Network Management Statement. After consultation with train operators, funders, other stakeholders and the Regulator, every station was allocated to one of six types according to its size and function. Five themes were set out i) accessibility, ii) comfort and convenience, iii) integrated transport, iv) information and communication and v) safety and security. All stations on the network were then surveyed and the current level of facility entered into a database along with the forecast of what will be required to meet the aspirations of the industry for those stations.

56 Facilities at stations (%)

	Category	Total industry 1999	Estimated actual 2000	Expected 2001	Expected 2006	Expected 2011
Accessibility						
	A	69	72	73	77	79
	B	54	56	57	60	65
	C	43	44	45	49	52
	D	38	40	41	45	48
	E	31	34	35	38	43
	F	39	40	42	46	51
Comfort and convenience						
	A	77	69	70	74	77
	B	80	78	79	81	83
	C	56	57	57	59	61
	D	49	60	60	63	65
	E	46	47	47	49	51
	F	71	71	72	74	77
Integrated transport						
	A	72	69	69	70	70
	B	67	73	73	74	76
	C	64	71	71	72	76
	D	58	59	60	62	74
	E	48	61	62	65	80
	F	33	52	53	57	61
Information and communications						
	A	71	89	89	90	90
	B	68	80	80	81	81
	C	61	69	69	70	70
	D	47	51	52	53	56
	E	44	51	51	52	54
	F	23	29	29	30	30
Safety and security						
	A	64	66	67	72	79
	B	60	61	62	66	69
	C	53	55	55	61	78
	D	52	55	55	61	78
	E	58	61	61	67	74
	F	51	53	54	60	67

The score predictions in this table are based upon the maintenance and renewals expenditure set out in this NMS. The total industry column scores reflect all the facilities provided at stations whereas all the other column scores relate to facilities for which Railtrack is responsible.

The provision of new facilities results from enhancement investment. A consequence of our maintenance and renewal programme will be some modest improvements in capability – such as resurfacing an unmarked car park with a marked car park (including marking for disabled passengers' cars) at no extra cost. Our projections for these gradual improvements, which have been grouped into the five themes, are shown in Table 56. The accelerated renewal options, described in the preceding paragraphs, would also deliver the forecast improvement in facilities earlier.

In order to meet the aspirations of customers for a step change in facilities at stations, a funding approach would need to be agreed as these enhancements would not be commercially justified. In the 1999 NMS, we described our initial assessment of the likely requirements. We have now developed a series of options that identify the requirements for achieving compliance with the specifications for each theme, and for each category of station. We are currently assessing the costs of each option, taking into account contracting strategies and the practical issues of project delivery (such as possessions). The cost of the complete programme of options is set out on page 99. The results of these assessments will be discussed with the sSRA and other funding partners.

The specifications, and consequential funding requirements, do not take sufficient account of any increase in the capacity of facilities that would be required to meet changes in demand. While early improvements could be made in some types of facility, the complete programmes will require phasing over a five-to-ten-year period. We recognise that depending on which, if any, combinations of package outputs the sSRA determines it wishes to procure, and over what time frame, it will also be necessary to agree the consequential financial effects of changes to maintenance and renewal expenditure.

STATION ACCESSIBILITY

Accessibility is a key measure in the developing Modern Facilities at Stations framework. As a result, Railtrack has a strategy to make all stations fully accessible to the disabled within 20 years to ensure that we meet our obligations under the Disability Discrimination Act.

After discussions with customers, local disabled people's organisations and local authorities, we will prioritise projects according to the following criteria:

- The size of the station (how many passengers use it).
- The journey time to the nearest accessible station.
- Planned work at the station, or a station nearby.
- Third-party funding for access.

- The level of ease with which disabled passengers can use a station.
- Significant demand in a given area eg the presence of a college for deaf students.
- The advice of our customer.
- The advice of local disabled people's organisations and local authorities.

Full accessibility means that a disabled person would be able to use the railway without assistance, although pre-arranged assistance could also be made available. This includes access to the station, facility to buy a ticket as well as being able to board and leave the train where the person chooses, and will result from the provision of physical access by Railtrack, and co-operation with our customers.

The costs of this programme are currently estimated at (£M):

2001–05	2006–11	2011–15	2016–20	TOTAL
100	180	250	190	720

Making a station accessible includes a wide range of facilities including provision for disabled people to be dropped off by car, appropriate gradients on ramps, proper access to booking offices and waiting rooms, tactile marking on platforms, passenger-operated lifts, and appropriate public information systems.

STATION PLATFORMS

Since the 1999 NMS, we have consulted extensively with our industry partners on platform stepping distances and platform lengths in order to meet our aim of providing improved safe access for all passengers.

From these discussions we have developed options that meet industry requirements and satisfy HMRI aspirations for a consistent approach, while accommodating all existing and proposed rolling stock.

We have evaluated a number of options for future platform and train standards including accessibility and the interaction between horizontal and vertical stepping. We believe that bringing platforms to a consistent gauge will make a contribution to access improvement even though, in itself, it does not deliver step-free access.

A pilot study examining priorities, construction and possession options, a representative sample of 116 stations is now complete. From the results of this study, we are identifying priority locations for a first tranche programme.

The second tranche would involve a prioritised programme of improvement to platform stepping integrated with other station improvement works over a ten-year period.

Major stations

OVERVIEW

We own and manage 14 major stations. These are key locations and showcases for the railway network that are used by nearly 1.5 million passengers a day. We have prepared development options for each of those major stations and will continue to refine these as we improve our understanding of the aspirations and needs of the many stakeholders with an interest in these important transport interchanges.

In addition, we are exploring ways of developing the stations to improve retail facilities and make full use of the space in and around the stations which is not needed for the operation of the stations. The Regulator's Property Allowance Scheme provides a framework through which income from property development benefits rail users through lower access charges and provides potential to finance additional investment.

KEY SCHEMES

BIRMINGHAM NEW STREET Work under the SRP to improve the platform environment for passengers should be completed by mid 2000. Other projects due to be concluded during the course of the year include a new customer information system and extension of the CCTV arrangements.

An initial study has been undertaken in relation to the possible long-term development of the station and its relationship with the Palisades Shopping Centre and the adjacent proposed Bull Ring redevelopment. The results of this study will be analysed over the coming year and informed by the ssRA-sponsored study into rail infrastructure in the Birmingham area. This will determine the possible scope and timescales for future improvements to the station.

EDINBURGH WAVERLEY The predicted growth in demand for train-operating capacity at Waverley will require the wholesale remodelling of the platforms and track layouts at either side of the station. This platform remodelling cannot be achieved within the confines of the existing train shed so we propose to redevelop the station while preserving its historic character. A public inquiry into aspects of our redevelopment proposals has recently been completed and found in favour of the scheme. Meanwhile, a further phase of SRP work will commence during 2000/01.

GATWICK This station handles rail traffic to the UK's second busiest airport at which significant growth is expected over the next ten years. Work under the SRP has been completed, along with new

signage and customer information systems. We will continue to work with BAA to develop longer-term proposals aimed at radically improving the interchange, providing capacity for the forecast growth and increasing rail's share of the travel market to the airport.

GLASGOW CENTRAL Work under the SRP is scheduled for completion during summer 2000. In addition, a programme of improvements to the customer information and CCTV systems is scheduled to commence during 2000/01. A review of the needs of passengers, train operating company customers and retail tenants around the concourse area is also being carried out to determine future priorities.

LEEDS Work to regenerate Leeds Station has started, in conjunction with a major track and resignalling scheme. This is known as the Leeds 1st project and is due for completion during 2001/02. A key priority is to improve the accessibility of the platforms for all passengers. Platforms will be linked by a new overbridge and lifts. These platforms will be resurfaced, lighting renewed and new customer information systems and CCTV systems installed.

Feasibility work will start in 2000/01 on possible further station redevelopment, including additional parking, remodelling of the South Concourse and the provision of enhanced bus interchange facilities.

LONDON BRIDGE The development of London Bridge Station is integrally linked to the proposed works for the Thameslink 2000 project which, subject to receipt of the necessary planning consents, is due to start on site in 2002.

The station has been assessed for a comprehensive redevelopment incorporating a new concourse in the arches beneath the station linked via escalators to the platforms above and to the London Underground station via a new retail mall together with offices above. A planning and listed building application for this redevelopment has been submitted.

LONDON CHARING CROSS An initial study which examined ways of improving the concourse and the entry-and-exit points to cater for the forecast growth in passenger numbers has been completed. This looked at the provision of automatic ticket gates, a Connex ticket office and a new mezzanine-level catering facility and concourse-level retail improvements. This study will be developed further during 2000/01 and any resulting capital works would start on site the following year.

LONDON EUSTON During 2000/01 traffic into London Euston will be substantially affected by blockade possessions as part of the West Coast Route Modernisation works. An initial study has been completed into the enhancements needed to provide sufficient passenger flow capacity through the station and substantial redevelopment works are expected to be undertaken between 2000/01 and 2003/04. This will include an extension to the existing concourse and improvements to the London Underground station. Meanwhile, a further phase of SRP work is planned to start on site during 2000/01 combined with provision of new retail units and lounges.

LONDON KING'S CROSS This is a complex station with interchanges to London Underground, Thameslink services and St Pancras Station (owned by London and Continental Properties). This will be further complicated when the Channel Tunnel Rail Link is completed creating international and domestic services at St Pancras Station.

The key issues affecting the redevelopment at London King's Cross are the need to provide sufficient operational capacity to meet the expected growth in usage and for action to resolve the planning matters relating to the existing concourse on the front of the train shed, permission for which expires in August 2000.

Initial studies have been undertaken into ways of providing the required increase in train and passenger flow capacities. A new concourse constructed to the west of the station would satisfy these objectives but plans are still at an early stage and substantial further consultation and design work will have to take place in advance of a possible start on site in 2002/03. Meanwhile, SRP work will begin during 2000/01.

LONDON LIVERPOOL STREET As a relatively modern station, Liverpool Street does not require the major redevelopment planned at some of the other London stations. However, some SRP work will start on site in 2000/01 together with improvements to concourse retailing facilities and a study into a new customer information system.

LONDON PADDINGTON The first phase of redevelopment has been completed and substantial improvements made to the concourse area in front of platforms 9–12. An application for planning and listed building consent will be made which, if approved, would allow Phase II to be implemented. This comprises the demolition of the train shed roof over platforms 9–12,

remodelling of the platforms within the 'Span 4' shed and the construction of an elevated deck to provide vehicular access to the station. This would be taken forward with the construction of a new road bridge to replace Bishopsbridge Road in a collaborative project between Railtrack, Westminster City Council and BAA. During 2000/01, work will also start on site for a package of SRP work to areas of the station unaffected by the redevelopment proposals.

LONDON VICTORIA An initial study into the possible long-term future of the station has been concluded. This focused on ways of improving passenger flow capacity through the station to meet growth forecasts and to identify possible improvements to passenger interchange, primarily with London Underground. Further work is expected to be undertaken during 2000/01 to develop these initial findings.

Meanwhile a package of SRP work is scheduled to commence on site during the year. There will also be improvements to passenger facilities on the concourse and studies into the provision of a more extensive airline check-in facility (in conjunction with Heathrow Express and Gatwick Express) and a new customer information system.

LONDON WATERLOO Work has been undertaken to explore ways of providing sufficient passenger flow capacity through the station to meet growth forecasts, improvements to passenger interchange and South West Trains' proposals to run longer trains. This would require substantial movement of the barrier line into the existing concourse area. Clearly, there are significant implications for this station and further work will be undertaken during 2000/01 to identify the physical changes needed.

MANCHESTER PICCADILLY This is a key station on the West Coast Main Line and accordingly forecast to see significant growth in usage. Earlier passenger flow capacity studies have been completed and substantial redevelopment of the concourse area is now scheduled to start on site during 2000/01. It will include a new customer information system, extension of the limited CCTV arrangements, improved access for taxis, coaches and private car drop off/pick up, provision of a new multistorey car park. In parallel, we will develop initial studies into improved waiting and other passenger facilities for platforms 13 and 14 which are located outside the main train shed.

Options to improve stations							
NMS Route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
Network	Modern facilities at stations	To upgrade all stations to meet a common, industry-agreed standard for station facilities.	Improved facilities at stations.	Building and structures works to provide new facilities.	1500	Phased	1
Network	Platform stepping distances – Phase I	To provide a more uniform stepping distance between trains and platforms.	Greater harmonisation of platform heights.	Rebuilding and modifying platforms.	140	Phased	1
6	London Bridge redevelopment	Redevelopment of London Bridge Station coincident with committed Thameslink 2000 works.	Modern station, enhanced platform capacity, improved interchange between trains, buses and tubes.	Rebuilding of station.	250	6 years	3/4
1	Euston Station	To provide sufficient capacity for the increase in passengers resulting from the West Coast Route Modernisation.	Provision of adequate space and relief of congestion in the concourse area.	Substantial enlargement of the station concourse area including improvements to the access.	51	4 years	2
2	King's Cross Station	Existing concourse (which has temporary planning permission) will be replaced to provide capacity for increase in passenger growth from ECML upgrade.	Provision of adequate concourse space with escalator links to platforms and improved access links to other transport modes.	Major concourse on western side of the station with new access to platforms.	210	6 years	2/3
1, 8, 13	Manchester Piccadilly Station	To improve station concourse capacity to cope with current and forecast growth in passenger numbers. To improve access and interchange links with other transport modes.	Provision of sufficient concourse area to relieve passenger congestion and improvements in customer facilities and interchange access.	Major works including enlarged concourse, new car park and improved vehicular traffic arrangements.	35	3 years	4
3	Colnbrook Euroterminal	To provide infrastructure servicing a new freight terminal at Colnbrook via the existing Poyle branch line.	New intermodal and conventional rail freight terminal for European and domestic traffic.	New loop at West Drayton, western connection to Poyle branch line; additional signalling and S&C.	40	5 years	3
3	Paddington Station	To improve remaining concourse areas of the station and the vehicular access/interchange arrangements. Works will free up space for additional platforms.	Improved concourse area, customer facilities and intermodal access	Concourse and customer facilities for platforms 9–14 with deck over for vehicular access.	55	4 years	2

Options to improve stations							
NMS Route	Scheme name	Description	Change in outputs	Works required	Enhancement Cost (£M)	Time to delivery (in isolation)	Project progress rank (0–5)
19	Victoria Station	To improve intermodal transfer arrangements for Gatwick Airport passengers.	Improved intermodal interchange facilities.	Increased airline check-in facilities with improved baggage handling.	5	3 years	1
1	Stockport Station	Development of station.	Improved booking hall, platform 3/4 buildings, car-park extension, subway works, entrance to platforms 1/2.	Station works.	5	4 years	2
32	Allerton Interchange	Proposed new interchange station linking Merseyrail with long-distance services.	Car park and interchange improvement.	Relocation of platforms. Extensive additional car parking and interchange facilities.	10	1 year	2
2	Peterborough Station	Provision of enhanced facilities at Peterborough Station.	Increased car-parking capacity. Improved information and access.	Construction of new station buildings, multistorey car park and provision of passenger lifts.	50	2 years	1
2	York Station	Provision of additional car-parking capacity.	Increased car-parking capacity.	Acquisition of land and development of surface level or multistorey car parking.	10	1 year	1
5	East Midlands Parkway	Improve access to the network, and encourage drivers from the M1.	New stopping point for rail services (up to 10 trains per hour), facilitating the transfer of journeys from road to rail.	Construction of four platforms, a footbridge, and two-storey station building with adjacent car parking for approximately 1,000 vehicles, together with consequential track and signalling works.	15	1/2 years	2
TOTAL					2376		

Delivering the options

THE CHALLENGE

Our customers and funders are looking to us to deliver the investment in infrastructure that is needed to sustain the growth in the railway with continuous improvement in efficiency and with minimum disruption to the operation of the network.

Next year we will invest £2.5bn which will build on the work already under way on the West Coast Route Modernisation (WCRM), the Station Regeneration Programme (SRP), the Sunderland Metro and the Channel Tunnel Rail Link (CTRL). Our challenge is to learn the lessons from these major programmes and apply them to deliver the future investment programme.

We recognise that the success of this investment programme will be determined by the competence of Railtrack's management team and by the strength of our supply chain. In the last year, we have continued to develop our organisation by recruiting key people from other industries, by making the most of our existing expertise and by forming strategic alliances. At the same time, we have completed a thorough assessment of our supply chain and logistics operation and put in place a clear strategy for improvement.

LESSONS LEARNED

In the last year, we have carried out a fundamental review of the WCRM programme to prepare it for implementation and to understand more clearly the approach that we must take in delivering major investment programmes. The lessons learned have already been incorporated in the arrangements for delivering the West Coast, East Coast, Thameslink 2000 and CTRL programmes.

The first lesson that we have learned is the need for absolute clarity on the objectives and outputs of an investment programme and on the means of achieving them through improved operational management, new infrastructure and new rolling stock. On all of our investment programmes, we have separated the sponsorship of the investment from the team responsible for its delivery. We have also established under the Director of Network Development, a team of experienced senior managers supported by experts in railway operations and investment to take responsibility for the customer and regulatory aspects of these approved investment schemes.

The second lesson from the WCRM is the need to recognise the unique challenges of delivering investment programmes on an operational railway and put in place proper arrangements for managing them. The WCRM programme is probably the largest investment in railway infrastructure in the world and is certainly one of the most complex. Over the next five years, we will spend around £5bn on Europe's busiest mixed-use railway while it continues to operate more than 2,000 trains a day with a further 3,000 crossing the route. The works required to deliver the outputs range from a £400M investment in a new train control system to many thousands of individual track and structures renewal projects. The work will be carried out on some 3,000 possessions a year which are additional to the 9,000 required for maintenance. All of this work has to be completed while sustaining the improvement in train performance on the route.

In delivering this, it is essential that we focus on the management of the overall programme, providing the controlled spaces within which our suppliers and contractors can deliver their individual projects. In the last year, we have made great progress in putting in place teams to manage all of the investment programmes. Framework agreements have been awarded to three of the world's leading programme management companies who are working closely with us in integrated programme management teams. The three suppliers and our own staff are incentivised to deliver the programmes to achieve their objectives.

Finally, the WCRM has taught us the need for a modern approach to the management of the supply chain and logistics operation to deliver individual projects efficiently and predictably. For too long, the railway and construction industries have accepted standards of supply chain management and logistics that would be unacceptable in the retail and manufacturing sectors. Through our alliances with our major suppliers we are beginning to deliver sustainable improvements in efficiency and predictability, and through our contacts with the Royal Corps of Logistics and logistics companies we are beginning to understand how to deliver our materials and manage our possessions predictably.

These lessons highlight the need for effective control of the delivery of infrastructure changes on the network. Through our integrated programme management teams, we can ensure that all of the work is carried out safely, efficiently and with minimum disruption to services. By focusing on the overall management of the investment programmes, we can give the maximum opportunity to suppliers and contractors to deliver individual projects efficiently.

SUPPLY CHAIN MANAGEMENT

This year, we will spend about £2.7bn with suppliers. More than half is spent on investment projects with a further quarter being spent on maintenance. The effective management of our supply chain is the key to delivering the improvements in efficiency that are required by our customers and by the Regulator.

In 1999, we developed a strategy for improving the management of the supply chain. The initial phase of the work is complete and the first phase of implementation is well under way.

At the head of our supply chain will be fewer than 20 strategic alliances with companies whose technologies or services are critical to our future. These alliances will enable Railtrack and its key business partners to invest in new processes and technologies with the confidence that they will be needed on the network. The first of these alliances are beginning to be formed with key suppliers of signalling technologies and maintenance services.

The middle of our supply chain is dominated by the many hundreds of consultants, contractors, sub-contractors and manufacturers who deliver the renewal and enhancement projects on the network. Our forward strategy will be to do business with fewer, but better companies through long-term contracts based on targets for continuously improving performance and supported by alliance agreements. In the last two years, we have been in the forefront of contracting alliances and the experience gained on the CTRL and WCRM programmes will be invaluable as we develop the supply chain.

At the base of our supply chain are thousands of manufacturers and service providers who deliver the materials, components and basic services that we need to maintain and enhance the network and to run the business. In this area, the challenge is to use modern technology to open up the marketplace for commodity purchases and to reduce transaction costs. At the same time, we must endeavour to simplify the process of approving components and materials for use on the railway so that new suppliers can gain access to the market.

We recognise that, if we are to get the best from our suppliers, we must first address our attitudes towards them and our skills in procuring and managing contacts. In 1999, we carried out a survey of our suppliers' views of Railtrack as a customer. The results were frank and honest and left us in no doubt as to what we needed to do. We have taken the necessary steps, and the coming year will see significant changes in our approach.

The way forward

Over the past year, we have made considerable progress both in the delivery of individual investment schemes and in addressing potential weaknesses in commercial appraisal, project development and project delivery capabilities. We have in place a supply base capable of delivery, and are ready to proceed on a number of schemes to enhance the network. However, in order to achieve the rapid progress we seek, the issues related to financing and regulatory approval need urgently to be resolved.

RAILTRACK'S COMMITMENT TO INVESTMENT

Railtrack's commitment to developing the network is clear. Over the past year, we have invested, including CTRL, a total of £2bn, and have approved plans for a further £2.5bn over the next 12 months, within which the enhancement proportion is rising. Our committed enhancement expenditure is shown in Table 57. We have begun work on the ECML upgrade and Great Western Renaissance before full agreement on how the investment will be treated, recognising the strategic importance of these schemes. At the same time, we have spent £70M on detailed feasibility studies on the options set out in the tables on pages 78-85 and 99-100, which are capable of delivering improved journey times, improved capacity to accommodate growth and better services to passengers and freight shippers.

In order to ensure that our investment is effective, we have taken steps to improve our capabilities in three key areas:

- We have strengthened our appraisal capability and forecasting processes so that we have a better understanding of our customers' aspirations, of future demand, and of potential financial, social and environmental benefits.
- We have enhanced our project development skills to provide a robust process of cost estimation and risk assessment.
- We have taken steps to ensure robust project delivery processes by strengthening our programme management capability and improving the management of our supply chain.

This means that we are now in a position to move ahead rapidly with a significant investment programme. We propose a portfolio of schemes that we believe is deliverable in terms of the capability and capacity of the industry, meets the logistical constraints on access to the network and the level of financing required.

PROPOSALS TO ENHANCE CAPACITY

We have developed a programme comprising our committed schemes and proposed new capacity schemes to address some of the most urgent bottlenecks. It also leaves sufficient headroom in our funding capability, subject to an appropriate outcome to the current periodic review, for funders to include a selection of the further options that we have outlined.

We have selected the capacity proposals from the category A schemes set out in the Table on pages 78 and 79 to address the congested red lines shown on the Map on page 64. These are lines where over 90% of available capacity is currently being used.

We have examined the financial, social and environmental benefits of each category A enhancement scheme using the approach described earlier in this section. The analysis is necessarily broad brush, as we do not have access to all the data necessary to populate our model.

Nevertheless, some patterns emerge. The most attractive schemes in cost benefit terms are the upgrades for the major intercity routes such as ECML, and improved airport links. Upgrades of commuter routes are generally expensive and the benefits quantified in this analysis do not match the costs (although our model, in line with conventional cost-benefit methods, does not include benefits from the relief of overcrowding).

On this basis our recommended capacity enhancement programme comprises these schemes:

- East Coast Main Line Phase I (in progress)
- East Coast Main Line Phase II
- East Coast Main Line Phase III
- Great Western Main Line Phase I
- London–Stansted
- North Trans-Pennine
- Manchester Area Phase I (Crewe - Manchester)
- Manchester Area Phase II (Central Manchester)
- Coventry–Birmingham four tracking.

On all of these, we should like to proceed immediately, either with physical works or with detailed feasibility and design. In addition, we propose to continue our development of the Airtrack scheme to Heathrow.

The total investment required for this proposed programme is £2.4bn during the next control period. For this level of expenditure the railway would be able to meet the majority of the short-term growth described in our demand forecasts.

57 Committed enhancement expenditure (£M – 1999/2000 prices)													
	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	TOTAL
Track	61	131	163	184	209	166	78	9	3	4	3	0	1010
Structures	35	70	91	127	130	91	50	9	0	0	0	0	603
Signalling	28	127	126	133	130	137	69	16	0	0	0	0	766
Electrification	33	102	95	151	132	95	12	1	0	0	0	0	620
Plant & Machinery	14	34	0	0	1	4	1	0	0	0	0	0	54
Telecoms	7	12	20	21	19	15	12	2	0	0	0	0	108
Stations	184	181	106	159	147	108	41	13	6	6	7	0	958
Depots	10	18	4	0	0	0	0	0	0	0	0	0	32
Other	21	25	3	13	15	1	1	0	0	0	0	0	79
TOTAL	393	700	608	789	781	616	263	51	10	9	11	0	4231
The sum of the expenditures may not match totals due to rounding. These enhancement plans include third party funding.													

FURTHER ENHANCEMENT OPTIONS

Assuming a satisfactory outcome from the periodic review, we believe that the proposed level of investment would leave us sufficient financing capacity for additional schemes from the tables on pages 78-85 and 99-100. These would probably include a package of sSRA IOSs and other schemes related to franchise replacements. Other options include those for freight gauge enhancements, for improved journey times, and better station facilities.

We believe this is a challenging programme which represents a major improvement in the capability of Britain's rail network and will make a significant contribution to the Government's integrated transport policy.

APPROVING THE PROGRAMME

Given the current level of crowding and congestion on the network, the scale of the challenge involved in satisfying projected demand, and the long lead times between the approval of major investments and the delivery of outputs, it is imperative to agree priorities and approve individual schemes quickly and efficiently. The sSRA is less than a year old and has not yet had the chance fully to formulate its strategy or to respond to the proposals which we have put to them to prioritise certain schemes. They will wish to use the franchise replacement process to inform these decisions, but the development of the railway obviously cannot wait until that process is completed. We look forward to clear guidance from the Regulator and the sSRA as to the way forward.

freight





Introduction	108
Understanding the rail freight market	110
Freight routeing strategy	114
Gauge enhancement	118
Progress over the past year	121
Improving access to the network	124
Summary	125
Abbreviations and glossary	126–132

Introduction

We are committed to developing Britain's rail freight industry and helping it to play a greater role in meeting the nation's transport needs. We are actively preparing to accommodate growth by embarking on a major upgrade of the West Coast Main Line, the most important corridor, to accommodate double the current volume of freight traffic. We have also identified further expansion options for all the other main rail corridors.

The benefits to society of rail freight are great: almost £0.7bn annually in social and environmental benefits can be attributed to the current level of freight traffic on Britain's railways – traffic that might otherwise be on our already congested roads. Further increases in rail freight traffic will bring greater benefits still.

However, to achieve the goal of increasing rail freight traffic the industry must overcome a number of challenges. The slower overall increase in rail freight volumes over the past year underlines the importance of facing up to these challenges. In particular, the rail industry must attract freight from other modes, especially road, by providing a cost-effective alternative. This will require continued cost efficiencies from all industry participants and, in certain circumstances, greater public funding for rail freight.

Equally, while traditional bulk and container markets offer further growth potential, the rail industry must deliver significant improvements in service and performance levels if it is to compete in today's increasingly demanding logistics market.

Finally, the economic framework of the industry must provide the correct incentives for all parties to act cohesively, in particular:

- We should be encouraged to expand our freight business through appropriate access charges which reward us for growth.
- Freight operating companies should optimise their use of existing infrastructure through appropriate charging structures.
- New investment to achieve a shift from road to rail will need government support.

The network enhancement options that we have identified to accommodate freight growth, which were set out in the previous section on developing the network, would require significant investment. This will require a carefully constructed investment programme to ensure that priority is given to the schemes that offer the greatest benefit in relation to their cost and that capacity is added in advance of demand, but only when and where necessary. Greater discipline in optimising the use of existing capacity must also play its part.

We believe that a partnership for growth comprising Railtrack, the freight operating companies, Government and the ssRA will be crucial in order to deliver the full potential benefits of growth in rail freight.

ECONOMICS OF FREIGHT

The 1999 NMS explained our initial research findings that the variable costs of freight traffic using the network were higher than had previously been assumed. Since then we have developed this work on usage costs further in consultation with our customers and the Regulator. This shows that the marginal costs of additional traffic exceed the additional variable income that we earn under existing access agreements. This does not provide Railtrack with an appropriate financial incentive to increase freight on rail. It may also imply cross-subsidy of freight by passenger access charges.

We are, however, concerned at the likely adverse impact on freight growth of reflecting these higher costs in future access charges. We will be working with industry stakeholders to resolve this issue to ensure the charging regime covers usage costs but does not impede freight growth.

COST REDUCTIONS

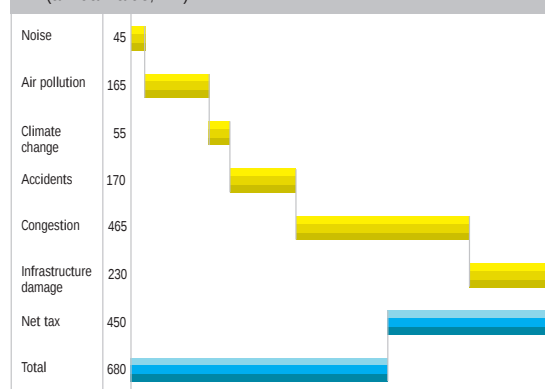
We have continued to reduce the unit price of track access to freight customers. As shown in Table 59 our income per thousand gross-tonne-kilometres (gtkm) fell by 13% in 1998/99 and by 13% in the first half of 1999/2000. Overall we have reduced our unit prices to freight customers by 35% in the first five years since privatisation. We will continue to improve our competitiveness through rigorous control of our costs.

ENVIRONMENTAL BENEFITS OF RAIL FREIGHT

The Government has stated its objective of reducing freight on Britain's already congested roads by encouraging the transfer of road traffic to other modes. The resulting benefit to society of achieving this objective could include significant reductions in road accidents, air pollution, greenhouse gases, damage to the road infrastructure and noise.

Our analysis shows that by 2010, increasing rail freight could result in up to 22,000 fewer lorries on the road, given a joint industry and Government effort. Such a shift to rail would result in an annual benefit to society of £2.1bn, compared with almost £0.7bn realised today (see Chart 58). We are working closely with the Government to confirm our quantification of the social and environmental benefits of rail freight versus road.

58 Environmental benefits of current rail freight volumes (annual value, £M)



We must also recognise the economics of providing extra capacity to support freight growth. It is clear that the economic case for investment in further capacity for freight is dependent on inclusion of the environmental benefits of growth. The costs cannot be borne by the industry alone.

Understanding the rail freight market

In the 1999 NMS, we outlined our customers' aspirations to double rail freight volumes over five years and triple them over ten years. As operators and developers of the network, we must also have our own understanding of the rail freight market and its growth prospects. We have been working with our customers and other industry stakeholders to develop that view.

OVERVIEW OF CURRENT MARKET

From 1996 to 1999, UK rail freight has grown by a yearly average of 15% and by a total of 41% from 32bn gtkm in 1995/96 to 43bn gtkm in 1998/99 (see Table 59). Rail's market share has increased from 6% to 8%. Over the last year, growth in rail freight traffic has slowed to 3%, although some signs of recovery have been seen in late 1999.

The majority of rail freight shipments are of traditional bulk commodities, with coal, construction, metals, and industrial minerals (contained in the 'other' commodity group) comprising over 50% of rail movements (Table 60).

Overall growth in the rail freight market has been fuelled by three key commodity groups – coal, intermodal, and other – and counterbalanced by a drop in international traffic.

COAL The growth in coal of 8% (gtkm) is due to an increase in coal transported south from Scotland, originating both from Scottish open-cast sites and Scottish ports. Increased use of imported coal, mostly landing at Hunterston for electricity production, has increased the average distance that coal travels to reach its destination. Additionally, the moratorium on gas-fired power stations and the change of ownership of coal-fired power stations has increased the demand for coal.

INTERMODAL The increase in intermodal traffic has largely been driven by a strong increase in deep-sea intermodal shipments to ports such as Felixstowe. Three factors have contributed to this growth: an increase in British trade flows, an increase in containerisation of freight traffic, and an increase in rail's share of deep-sea container movement.

OTHER The growth in 'other' traffic reflects continued growth in wagon-load traffic, and rail's success at capturing commodities traditionally shipped by road, such as foodstuffs.

INTERNATIONAL This traffic declined sharply to 1996/97 levels, reflecting a poor year for Channel Tunnel traffic. However, these figures have been overstated due to consolidation of international traffic into wagon-load services.

ORIGINS AND DESTINATIONS

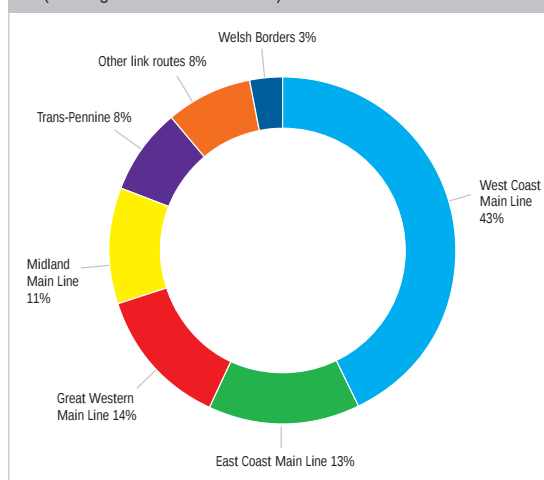
In addition to total rail freight volumes by commodity type, we need an understanding of the origin and destination of shipments, so that we can see where infrastructure bottlenecks are likely to occur. For practical purposes we have identified seven primary freight corridors which together ship the bulk of rail freight traffic, and are fed by a system of local 'feeder' routes (see Chart 61). Our analysis confirms that the West Coast Route is the major rail artery for the country, carrying 43% of total freight traffic, followed by the East Coast and Great Western routes.

59 Freight volume and income

Item	1994/95	1995/96	1996/97	1997/98	1998/99	1998/99 (half year)	1999/2000 (half year)	% change (half year)
Volume (Mgtkm)	31630	31717	32621	36556	43212	21620	21923	1%
Track access income (£M)	191	159	159	164	169	82	72	-12%
Unit income (£/kgtkm)	6.04	5.01	4.87	4.49	3.91	3.79	3.28	-13%

60 Trends in freight activity by commodity (millions of gross-tonne-kilometres)

Commodity	1994/95 Actual	1995/96 Actual	1996/97 Actual	1997/98 Actual	1998/99 Actual	1999/2000 Forecast	% growth 1998/99 to 1999/2000
Coal	6899	6840	6711	8117	9960	10779	8%
Metals	3625	3722	4193	4531	4416	4442	1%
Construction	3709	3467	3004	3389	3902	3686	-6%
Oil & Petroleum	3492	3331	3199	3265	3290	3179	-3%
International	1183	2037	2311	2829	2828	2311	-18%
Domestic Intermodal	5009	5974	6294	7144	9010	9783	8%
Other	7713	6346	6909	7281	9806	10456	7%
TOTAL	31630	31717	32621	36556	43212	44636	3%

**61 Breakdown of freight shipments by corridor
(billion gross tonne-kilometres)**

FUTURE GROWTH POTENTIAL

The volume of rail freight could increase as a result of two factors: growth in the overall freight market (ie increases in total tonnes moved and the average distance moved), and growth in rail's share of the freight market by diverting traffic from other modes, particularly road.

Our forecasts show that the UK freight industry (all modes) will grow by approximately 25–30% over the next ten years due to long-term sustainable economic growth rate in the UK of 2–3% per annum, and changing distribution patterns.

This growth would mean an extra 24,000 lorries on the roads with resulting increases in congestion, accidents and emissions.

We are eager to play our part in helping divert some of this traffic from road. Rail's share of the total freight market is determined by how attractive rail is in terms of price, service and accessibility when compared with alternatives. Relative improvements in any of these three factors increase the ability of rail to attract freight customers. Railtrack, the freight operators and Government all have essential roles to play in delivering these improvements. The impact of a selection of these growth drivers on the potential rail freight market in 2010 is set out in Table 62.

We have modelled the impact of increasing freight track access charges in order to cover the marginal cost of traffic growth and provide a small financial incentive to growth. If these increases were passed onto end customers our analysis shows that rail freight demand would be around 20% lower in 2010 than under current charges.

The analysis in Table 62 demonstrates the high degree of uncertainty in forecasting future rail freight demands because such demand is extremely sensitive to actions of the rail freight industry and the Government. Given this, we have developed a range of scenarios for future rail freight demand (Table 63). We shall actively monitor industry developments so that we can best anticipate total future demand, and plan our capacity accordingly.

This analysis clearly demonstrates that it will require all parties to work together to achieve the maximum transfer of traffic from road to rail.

62 Key drivers of road and rail freight shipment costs

	Drivers	Assumption	Impact on market share by 2010*
Road policy	Fuel taxes Maximum allowable lorry weight	4% pa increase 44 tonne vehicles	-6% to -17%
Rail access charge	Access charges to pay for capacity enhancement Cost reflective access charge plus small volume incentive	Additional £3 per kgtkm Total £4 per kgtkm	-43% -21%
Rail industry	Rail industry efficiency gains Improved service level	2% pa relative to road 15% improvement	+41% +27%
Road congestion	Increased journey time	20% journey-time increase	+32%

*Estimated

63 Future rail freight demand scenarios

	Base case	Industry action	Government investment	Action by all parties
Government policy	No major change in government policy	No major change in Government policy	Government subsidies for investment	Government subsidies for investment Taxation on road freight Variable subsidies to attract volume
Rail Industry	No changes in industry service Industry is constrained by current capacity Cost-reflective access charge and small economic incentive to support growth	Reduction in rail costs relative to road Service improvements Rail industry invests in capacity expansion when viable Cost-reflective access charge and small economic incentive to support growth	Reduction in rail costs relative to road Service improvements Investment when viable and when Government subsidises Cost-reflective access charge and small economic incentive to support growth	Reduction in rail costs relative to road Service improvements Investment when viable and when Government subsidises Cost-reflective access charge and small economic incentive to support growth
Size of market in 2010* (kgtkm)	56	78	101	140
Potential environmental value (£M)	830	1160	1490	2100

*Estimated

Freight routeing strategy

In the short term – five years – all of our routes can accommodate projected freight-train growth. In the longer term – beyond five years – we will need to increase capacity on specific routes to meet projected demand.

Our understanding of this potential growth in the rail market has led us to develop a number of strategies for accommodating future demand on these routes, which we set out in this section. Before making investment in infrastructure enhancement, which has a long lead time, it is important that all these options are fully explored. Significant spare capacity for freight occurs on most routes. Additional trains can use paths where trains are scheduled but frequently cancelled. More trains could also run in under-utilised off-peak time slots. Additional traffic could be accommodated by running longer and heavier trains.

The key part of assessing future growth potential comes from analysing the needs of freight customers. As a result we have reassessed the total demand forecasts in the individual route strategies. Where problems with long-term capacity have been identified, we have developed, as part of the Route Strategy analysis described in Section 3, further options for meeting these needs. The options for each of the key routes are set out below and on Map 64.

WEST COAST MAIN LINE (ROUTE 1)

The strategic capacity review for freight demand on the WCML has considered options for meeting the requirements expressed by customers for an additional 72 paths per day, after the commitments given in the PUG 2 undertakings are met. In the 1999 NMS, we set out an initial assessment including our proposal to examine the benefits of a third Anglo-Scottish route for freight.

Three strategic options have been considered:

- Further substantial upgrading on the whole of the WCML to accommodate all requirements.
- Provision of 30 equivalent additional paths south of Nuneaton to be accommodated by routeing the trains from Felixstowe to the Midlands, North West and Scotland via Leicester, with further upgrade works on the WCML for the balance.
- Provision of 30 equivalent additional paths south of Nuneaton to be accommodated by routeing the trains from Felixstowe to the Midlands, North West and Scotland via Leicester, with routeing of the balance via other routes between the London area and Scotland.

The first two options would entail significant infrastructure investment and mean substantial disruption to the operation of the WCML following the implementation of PUG 2.

The last option, the Third Anglo-Scottish Freight Route, is described below.

THE THIRD ANGLO-SCOTTISH FREIGHT ROUTE (ROUTES 1, 2, 5, 8, 9, 13, 30, 35)

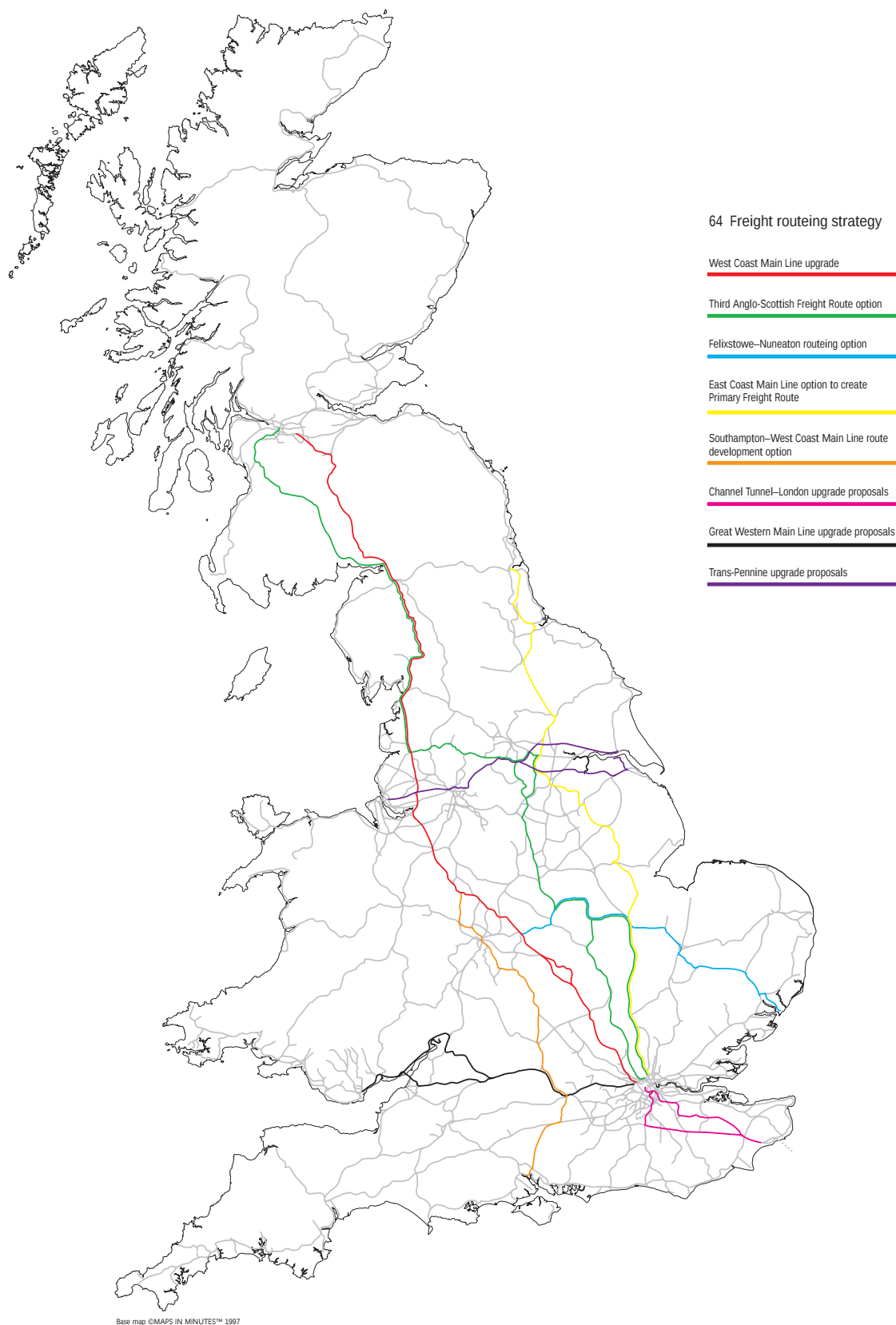
Detailed work has concentrated on analysing the potential alternative routes between London and Scotland, together with the implications for capacity and gauge constraints on those routes. A preferred core set of route sections has been identified for more detailed study, which would result in the WCML handling all of the additional demand between Preston and Carlisle.

The Third Anglo-Scottish Freight Route report was published in February 2000. It showed that 55 route sections had been examined, providing over 750 different ways of travelling from London to Glasgow. Journey times on these routes ranged from 11 to 18 hours, and costs ranged from £550M to £1.6bn. Only gauge clearance and capacity issues have been assessed in this first analysis of potential routes, as these are the main cost drivers. The next step will be to examine selected routes in much greater detail to look at other issues, including journey-time improvements, train lengths, trailing loads and timetable.

The routes that offer the best combination of cost and journey time are:

- Glasgow to Carlisle via Kilmarnock
- Carlisle to Preston via WCML
- Preston to Chesterfield via Swinton (option 1a)
- Preston to Chesterfield via Barnsley (option 1b)
- Chesterfield to Manton Junction
- Manton Junction to London via Midland Main Line (option 2a)
- Manton Junction to London via East Coast Main Line (option 2b) (Map 64).

The further development of the Third Anglo-Scottish Freight Route will continue in consultation with industry partners.



EAST COAST MAIN LINE (ROUTE 2)

The proposals for routeing freight on the East Coast Main Line corridor have been significantly developed since the 1999 NMS, incorporating wide consultation with customers. These proposals are an integral part of the ECML upgrade and include the development of existing routes parallel to the ECML. The proposal would increase the ECML to a four-track railway for much of the route. This will involve upgrading the diversionary routes to accommodate the significant growth envisaged by freight customers.

The sections of freight routes are as follows:

- London to Peterborough via the Hertford Loop
- Peterborough to Doncaster – the GN/GE joint lines
- Doncaster to York – upgrading of alternative routes
- Darlington to Newcastle – reinstatement of the Leamside Branch and upgrading of the Skillington Branch.

At a number of locations, grade-separated junctions would be created to minimise conflicts between train movements. Full details are set out in Route 2 in Volume 2. Options have been developed for this route to accommodate enhanced gauge to W10w and electrification, although the diversionary routes are currently not electrified.

Work has commenced on the additional freight routes with track relaying programmed on the GN/GE joint lines. We are already actively working with EWS to explore early development opportunities on the Leamside Branch.

GREAT WESTERN MAIN LINE (ROUTE 3)

The Great Western Main Line is an important freight route with significant growth potential. The Great Western Renaissance Project has developed proposals including:

- Six tracking between Paddington and Airport Junction
- Major remodelling and resignalling at Acton
- Reading – grade separating the north-south traffic from the east-west
- Didcot East – grade-separated junction
- Four tracking between Didcot and Swindon
- Remodelling at Swindon, Bristol Parkway and Filton
- Swindon to Gloucester and South Wales – redouble Swindon-Kemble and upgrade the route for additional capacity and diversion capability.

There are also proposals for gauge enhancement to W10w and to accommodate 775m-long trains.

TRANS-PENNINE ROUTES (ROUTES 8, 12, 13, 33, 36)

The proposals for accommodating freight growth on the Trans-Pennine routes have developed further since the 1999 NMS. The strategy to accommodate cross-Pennine flows within the corridor is to prioritise routeing of intermodal 'gauge-sensitive' traffic and flows to central Manchester via Huddersfield as part of the North Trans-Pennine upgrade. Options are being evaluated to enhance the gauge to W10w or W11. The route would offer significant rail freight opportunities given the current levels of heavy goods vehicle traffic on the parallel M62 motorway. We are exploring the options for UK Government funding as well as the availability of EU grants as the route forms part of the TENS network.

Heavier, non-gauge-dependent traffic will be routed via the Calder Valley and Hebden Bridge for Preston, North Manchester and Merseyside or the Hope Valley to serve Peak Forest and Earles Sidings.

The most significant works to achieve this strategy would be the enhanced capacity between Healey Mills and Manchester provided as an integral part of North Trans-Pennine upgrade. This includes the reopening of the disused Standedge Tunnel bores and provision of additional tracks east of Huddersfield. Further works to remodel junctions for flexibility are also required. There will then be capacity for two medium-weight freight train paths per hour throughout the day. Full feasibility work on these proposals will be complete by May 2000.

The current provision of one train path per hour for freight on the Hope Valley Route and the Calder Valley Route is considered sufficient to meet customer aspirations. The examination of additional works to achieve improved axle weight and train length is being taken forward and we will report on progress in the next NMS. An examination of axle weights between Leeds and Bradford Interchange has already been undertaken and outline costs identified.

In addition, to provide sufficient capacity for this forecast freight growth on the South Trans-Pennine Route northeast of Sheffield, infrastructure improvement estimated at £100M would also be required. Further capacity works would also be required between Doncaster and Immingham to accommodate forecast freight growth from the new Humberside International Terminal at Immingham and from traffic growth resulting from any gauge enhancement. This section of route is currently the subject of a detailed evaluation which will be completed this year.

SOUTHAMPTON TO WEST COAST MAIN LINE (ROUTES 21 AND 7)

The route from Southampton to the West Coast Main Line is a major freight route with very high levels of forecast freight growth. We are progressing proposals for gauge enhancement of the route to accommodate W10 (9' 6" containers) to safeguard the existing port traffic. In addition, route strategy development work has identified the requirement for major capacity enhancements along the whole route to accommodate customers' growth forecasts. In particular, the route between Didcot and Birmingham via Oxford would require significant works to accommodate high forecast levels of freight and passenger growth. We are currently developing a range of proposals that include:

- Resignalling to improve headways
- Increasing the number and length of loops to accommodate 775m-long trains
- Potential four tracking from Tyseley to Lapworth.

CHANNEL TUNNEL TO LONDON (ROUTE 6)

The application for a funding proposal to the DETR to clear two routes between the Channel Tunnel and London to W10 gauge by 2004 has been reviewed. Following consultation with the freight industry, we have decided to revise the submission for a larger gauge W10w to accommodate 2.6m-wide refrigerated swap-bodies and review the routes to be considered. A revised proposal has been submitted to DETR.

An early decision on funding is required to deliver this project in conjunction with the CTRL work. This could include a programme of work with Union Railways to clear sections of the route between Ashford and the Channel Tunnel to W11 gauge in parallel with the development of the CTRL.

FELIXSTOWE PORT TRAFFIC (ROUTES 9, 15, 16)

The proposal to transfer port traffic to a route via Peterborough and Nuneaton has been further developed. Detailed analysis of customers' need for capacity and journey-time improvements has identified a significant increase in the scope of works required. Our current proposal would upgrade the route into a major freight artery capable of meeting the long-term needs of freight operators.

These proposals, which are currently at feasibility stage, include the following works:

- Gauge enhancements to accommodate W10
- Resignalling between Peterborough and Nuneaton

- Remodelling at Leicester
- Provision of passing loops at Bury St Edmunds, Ely, March, Peterborough East, Melton Mowbray and Wigston
- Track relaying to accommodate the additional traffic
- Accommodation for 775m-long trains.

This upgrade would reduce freight traffic on the Great Eastern and North London lines enabling up to 30 trains per day to avoid London and has the additional potential to transfer a significant amount of lorry traffic from the port to rail.

Constructive discussions are being held with the sSRA and customers to identify opportunities for funding the works.

FREIGHT AROUND LONDON (ROUTES 19 AND 26)

We have provided additional signalling on the Tottenham and Hampstead Line to accommodate freight growth and passenger traffic. We have carried out an operational planning exercise which has improved the availability of train paths for freight traffic on the Great Eastern Main Line and are carrying out a similar exercise on the North London Line.

Many of the schemes on the routes radiating from London have a number of interactions and consequently, there is a need to review the competing demands upon the London network. Significant options for development of the main routes into and around London are included in the relevant Route Strategies. There is a need to ensure that these strategies and major projects complement each other. We have organised a joint-industry review with freight customers and other stakeholders to discuss the current status of the major developments, identify any opportunities arising from synergy between them and assess the implications for our current plans. The sSRA has commissioned a study which will complement this review.

Gauge enhancement

CURRENT PROGRAMME

During the past year, we have funded increased gauge on 1,120 route kilometres.

The WCML has been cleared to W10 between Willesden/Wembley and Garston (near Liverpool) and Coatbridge (near Glasgow) as well as at Coventry and Aston and on the Heysham Branch.

The following lines have been cleared to W9 gauge: ECML, Monktonhall Junction–Sleaford Junction via Edinburgh Waverley, Coatbridge–Grangemouth Docks, Wigan–Rainford, Acton Yard–Acton Wells Junction, Sandbach–Hartford LNW Junction.

The following lines have been cleared to W8: Farington Junction–Blackburn Yard, Mossend–Corpach (Fort William), Fawley–Marchwood.

We have rebuilt 15 overbridges to W11 gauge as part of our structures renewal programme in accordance with our undertaking in the 1999 NMS and will continue to monitor all reconstruction against this specification. We have commenced a three-year programme to survey the network and update our current knowledge of clearances to structures as part of creating our asset management database. This will enable a speedier response to opportunities for new traffic and improve evaluation of gauge enhancement proposals.

A market study has been commissioned to identify the additional traffic to South Wales and Bristol that would be achieved by enhancing the loading gauge to W10w. This will be shared with our customers and the sSRA to pursue funding to carry out the work.

We have also made significant progress, in partnership with industry and the sSRA, to understand the current and future needs for gauge enhancement for the freight market, and to define the options for further gauge enhancement over the network.

UNDERSTANDING FUTURE NEEDS

There is a continuing trend in the intermodal market towards use of 'high-cube' 2.9m-high containers and swap-bodies, and growing use of 3.2m-high 'mega' swap-bodies. For piggyback trailers, a combined trailer/wagon height of 4.13m would be desirable, although such units cannot be carried in Italy or Spain, and only to a limited degree in France.

The joint industry research has also highlighted the need for a 9'6" high load capability with a wider loading gauge, to carry 2.55m wide pallet-wide containers, swap-bodies and piggyback trailers, and also to carry 2.6m-wide refrigerated ('reefer') swap-bodies previously referred to as W10w. This will enable rail freight operators to tap into new markets, such as fresh produce, in 'reefer' swap-bodies from Southern Europe into Great Britain. The options being developed are W12 and W14. Nominal dimensions are indicated in Table 65.

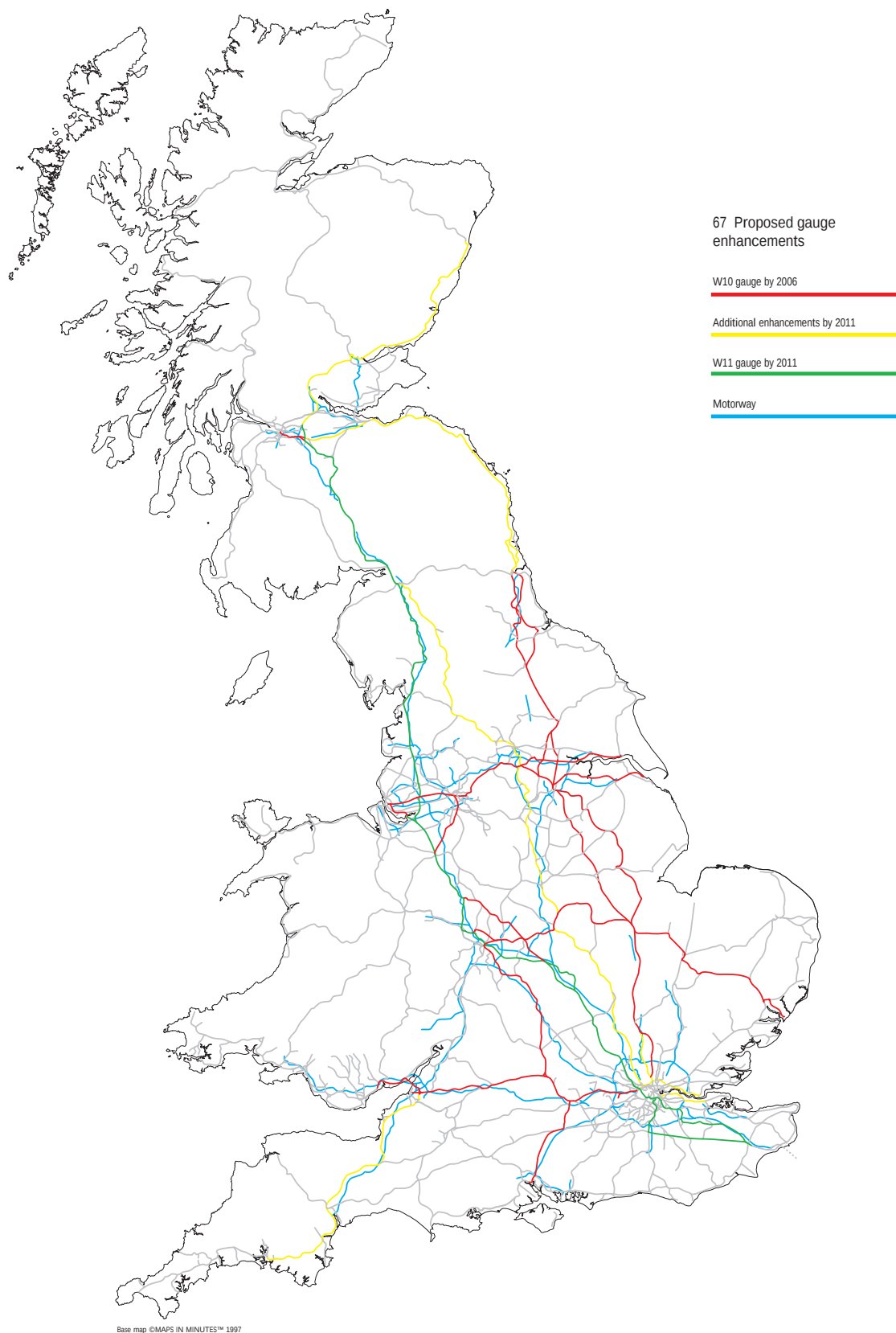
Loading gauge enhancement, combined with the latest developments in wagon technology, offers significant potential to develop the intermodal business by rail. We are therefore liaising closely with industry and the sSRA to assess the relative costs and benefits of each option and to agree funding for the gauge-enhancement programme.

The initial routes for proposed gauge enhancement remain:

- The WCML London to Glasgow including connections to Birmingham, Manchester and Liverpool
- Two routes from the Channel Tunnel to London
- Routes from the major container ports of Southampton and Felixstowe to join the WCML in the Midlands
- The GWML from South Wales and Bristol to London making a connection to the Channel Tunnel
- A Trans-Pennine route
- The ECML corridor from London to Glasgow.

These plans are set out in more detail on the Map on page 120 and Table 66.

The immediate objective is now to provide a taller, wider-loading gauge, which aligns better with current domestic market requirements and with continental intermodal gauges in the key markets of France, Italy and Spain.



Progress over the past year

SERVICE IMPROVEMENTS

Although there are many issues to be resolved about the future rail freight market, in the past year we have made considerable progress in improving our service and the facilities we provide to customers.

In the 1999 NMS, we reported an encouraging annual increase of 12% in gross-tonne-kilometres on Britain's rail network in 1997/98 with the expectation that similar growth would be experienced in 1998/99. In fact, that growth exceeded our projections by reaching 18%. We also, however, expressed concerns over the slow progress that rail was making in penetrating new sectors outside its core bulk materials markets. Indeed this concern has been vindicated over the last year, when we have seen a more modest 3–4% increase in gross-tonne-kilometres. Within this, the number of trains has reduced by around 2% and the number of train kilometres has remained almost static.

Over the past year, there has been a further reduction in delays to freight trains. The average Railtrack-attributed delay per train throughout the year was 4.1min with total delay reduced by 14%. We are now working very closely with our freight customers developing action plans, based on regular reviews of jointly agreed generic key performance indicators.

They have achieved encouraging reductions in delays due to locomotive failure as new units are introduced. Freight delays to passenger services have decreased by 8%.

Since the 1999 NMS, we have increased the availability of the 75mph intermodal network, providing an average of 45 additional paths per day in total on our key routes. A new milestone was met in May 1999 when the first 110mph Royal Mail service commenced operation between London and Scotland.

We have significantly improved the timetable planning process for freight services to provide greater certainty for freight operators as well as bringing performance benefits from a fully integrated timetable.

NEW TERMINALS OPENED

Work with customers and end users has been undertaken to provide new and reinstated connections to the network for freight. Our property team has also been active in securing new sites for rail use and making them available to rail freight use. Tables 70 and 71 show examples of these. Table 68 shows the full portfolio of freight terminals.

FREIGHT ENHANCEMENTS COMPLETED

- The resignalling of the Ipswich–Felixstowe route has been completed and this has doubled the freight capacity on this line.
- The electrification of the City Goods Lines at Willesden was completed to provide a second electrified connection for freight between the North London Line and the West Coast Main Line.
- The line to Fifoots Point power station, in Gwent (formerly known as Uskmouth power station) was refurbished and reopened in 1999. We are now finalising plans with EWS for a new signalling system.
- Track remodelling was completed at Fiddlers Ferry power station.
- We have completed an £18M track renewal project on the Settle to Carlisle line as the first part of a project to safeguard the route for freight traffic.

CUSTOMER REQUIREMENTS

We have been working to provide indicative cost estimates for the programme of network enhancements which have emerged through the Customer Reasonable Requirements process. These, together with some proposed enhancements of our own, are summarised in Table 69. While these estimates are, at this stage, subject to further refinement, they serve to indicate the scale of the programme that our customers would like to see developed. There is a clear need to prioritise this list and focus on those enhancement schemes which offer the greatest value. We will be working over the coming months with customers and the sSRA to agree which schemes merit full feasibility studies and to identify funding options.

FREIGHT ENHANCEMENTS IN PROGRESS

- The Cardiff International Rail Freight terminal at Wentloog is being constructed by a consortium of the Welsh Development Agency, Cardiff County Council, Freightliner and Railtrack. The terminal is due to be opened in autumn 2000.
- The new Royal Mail terminal at Bristol Parkway is under construction with completion scheduled for April 2000.
- The reinstatement of multiple-train working at Corby BSC branch and also the reopening of the Down Goods Line between Toton Yard and Stanton Gate, together with the remodelling of Stanton Gate Junction to increase flexibility for freight traffic are under way.
- Work is nearing completion on the Dove Holes Quarry private-siding remodelling.

ENHANCEMENTS UNDER DEVELOPMENT

- We have committed £1.5M towards the reopening of the Stirling–Dunfermline Route for freight traffic. Funding partners are currently being sought and a Freight Facilities Grant (FFG) application to contribute to the cost of £10M will be submitted in March. The Stirling–Dunfermline Line would provide an alternative route into Fife for coal and container traffic to avoid the Forth Bridge.
- We have continued our work with the Bristol Port Company on the planned refurbishment of the line from Bristol to Portbury and rail facilities within the port. The Port Company has submitted an FFG application to the DETR. Reopening is likely by 2001.
- In 1999 we completed a feasibility study with Argent, the developers of the London International Freight Exchange at Colnbrook, in respect of the rail works required to connect the terminal to the network. This has enabled Argent to submit a Transport and Works Act application for powers to carry out the works. The inquiry is due to start in April 2000.
- Land Rover has submitted a Transport and Works Act application to construct a 4km branch line from its Solihull works to the Coventry–Birmingham Route. It is anticipated that this scheme will be completed early in 2002 and save 102,000 lorry movements each year.
- We have been working with EWS to develop the proposal to reopen the Stoke to Caldon freight line. An FFG application has been submitted and it is hoped that the line will reopen in 2000/01.

- We have continued to work closely with Associated British Ports, Southampton in developing the rail options for connecting their proposed container port development at Dibden Bay on the west side of Southampton Water.
- We are also working with ABP at Immingham in developing a major port enhancement.
- We are carrying out feasibility work with Wirral Borough Council, Mersey Docks and Harbour Company, and EWS to examine the costs involved in reopening the freight lines on to Birkenhead Docks from Rock Ferry and Bidston.
- In conjunction with Eurotunnel, we are evaluating the costs and feasibility of developing the network between Dollands Moor, Folkestone, and Sevington near Ashford for some European-size wagons.

68 Changes in numbers of Railtrack freight terminals

	Number Dec 1998	Number Dec 1999	Number	Change %
By type				
Handlers	261	272	11	4.2
Manufacturers	1027	1039	12	1.2
TOTAL	1288	1311	23	1.8
By commodity				
Construction	202	207	5	2.4
Coal	196	190	-6	-3.2
Steel	84	87	3	3.4
Petrochemicals	198	197	-1	-0.5
Intermodal	59	59	0	0.0
Other	549	571	22	3.9
TOTAL	1288	1311	23	1.8
By status				
Operational	586	608	22	3.6
Not in current use	323	305	-18	-5.9
Facility closed – connection/signals remain	241	260	19	7.3
Facility closed – connections removed	138	138	0	0.0
TOTAL	1288	1311	23	1.8
By zone				
East Anglia	119	123	4	3.3
Great Western	189	189	0	0.0
Midlands	235	238	3	1.3
London North East	274	278	4	1.4
North West	188	191	3	1.6
Scotland	159	165	6	3.6
Southern	124	127	3	2.4
TOTAL	1288	1311	23	1.8

69 Review of current customer requirements

Requirement	Agreed	Being developed
Completed	86	0
Process improvements	123	21
Performance	10	5
Track quality	7	0
Track access	6	0
Renewals	1	0
Enhancement feasibility	33	0
Enhancement implementation	15	0
TOTAL	281	26

Improving access to the network

We are active in promoting sites from our own land portfolio for freight use, providing and managing connections to the network from third party terminals and acquiring new land for freight use including the development of a strategic intermodal terminal network.

POTENTIAL NEW FREIGHT CONNECTIONS

- During the year, we have continued to work with developers and local authorities, planning new rail freight terminals at, for example, Exeter Airport, a site in mid-Cornwall, Bridgend, Coventry Colliery and a number of other locations throughout Britain.
- A number of new freight connections are also proposed at: Iwer (aggregates), Swindon Hawksworth (aggregates), Burngullow (china clay), Flax Bourton (aggregates), Oxford Banbury Road (aggregates), Watsonhead (coal), Grangemouth (polymers), New Cumnock (coal), Auchinleck (coal), Lockerbie (timber), Caldon Low (cement) and Melton Ross (industrial minerals).

POTENTIAL ROUTES FOR REOPENING

A number of former lines remain candidates for reopening.

RAILTRACK OWNED: Grimethorpe, Stirling–Cambus–Alloa–Kincardine, Caldon Low, Leamside, Claydon LNE Junction–Bletchley, Rugby– Rugby cement works, Seaham Harbour, Pensnett, Rock Ferry–Canning St, Bootle–Aintree, Walsall to Stourbridge.

NOT RAILTRACK OWNED: Nuneaton avoiding line, Rugby cement works–Long Itchington, Dumfries–Maxwelltown, Greenock Princes Pier branch, Cambus–Menstrie, Lichfield–Walsall, Stratford–Honeybourne–Cheltenham.

DEVELOPMENT OF INTERMODAL TERMINALS

A sustainable growth in rail freight depends on improved access to the network and the provision of better facilities, including terminals in strategic locations. We have undertaken a study to identify strategic locations where there is a need for additional intermodal facilities to provide a national network. Railtrack has no aspirations to become a terminal operator. However, as custodian of the rail network, we are well placed to determine where the network can support these strategic intermodal facilities. The focus

will initially be on the key, longer-distance routes. The co-operation of other industry partners and the sSRA is essential to ensure that funding is available to promote regional economic competitiveness and that strategic locations are safeguarded.

Over the last year, we have been negotiating with a number of developers to form joint ventures to support the development of rail freight. Ideal sites are in short supply and we are keen to ensure that suitable locations are preserved for rail freight use.

In particular, since we purchased the former Parkside Colliery in the North West in late 1998, we have formulated proposals for an intermodal rail freight terminal and approximately 200,000m² of distribution warehousing. We are working closely with the Highways Agency and the Regional Development Agency who identified Parkside as a potential international rail freight terminal. A planning application is scheduled to be submitted later this year.

We have continued to work directly with EWS, Freightliner and major freight customers in developing rail freight opportunities over the past 12 months from our existing property portfolio. Sites with genuine freight prospects are safeguarded and developed with customers for freight use on market terms for sites new to freight use. Table 70 shows examples of facilities brought into use over the past year.

We hold a number of sites for freight development on the strategic freight list, those listed in Table 71 have been developed for rail freight use in the past year.

We are also attempting to safeguard further sites for freight use from the British Rail portfolio and, to date, have recorded interest in 46 sites which could be used for future freight transport use.

70 Freight facilities brought into use in 1999/2000

Cricklewood	80,000ft sq shed – mixed traffic	VICTA Rail for EWS
Leeds Balm Road	Former aggregate terminal – container storage	Freightliner
Morris Cowley	300,000ft sq warehouse and new rail terminal for cars	Rover
Crewe	Former Steventon Warehouse – heavy haul	Freightliner
Grangemouth	Lease completed – for future rail connection	J Mitchell
Bury St Edmunds	Aggregate terminal	Tarmac
Carlisle	Option for lease for woodburning power station	Border Bio Fuels
Beattock, Taynuilt, Arrochar	Timber traffic	EWS

71 Freight facilities developed on Railtrack land 1999/2000

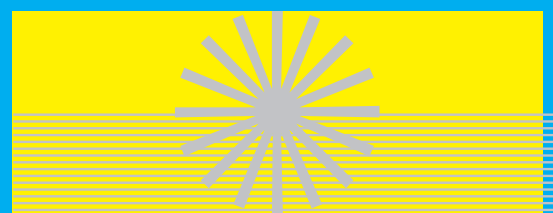
Lugton	Fertiliser	EWS
Shrewsbury Crewe Bank Yard	Coal	EWS
Warrington Dallam	Containers	EWS
Laurencekirk	Pipe traffic	EWS
Walsall Midland Yard	Steel	EWS
Manchester Ashburys	Aggregates	EWS
Inverness	Supermarket traffic	EWS

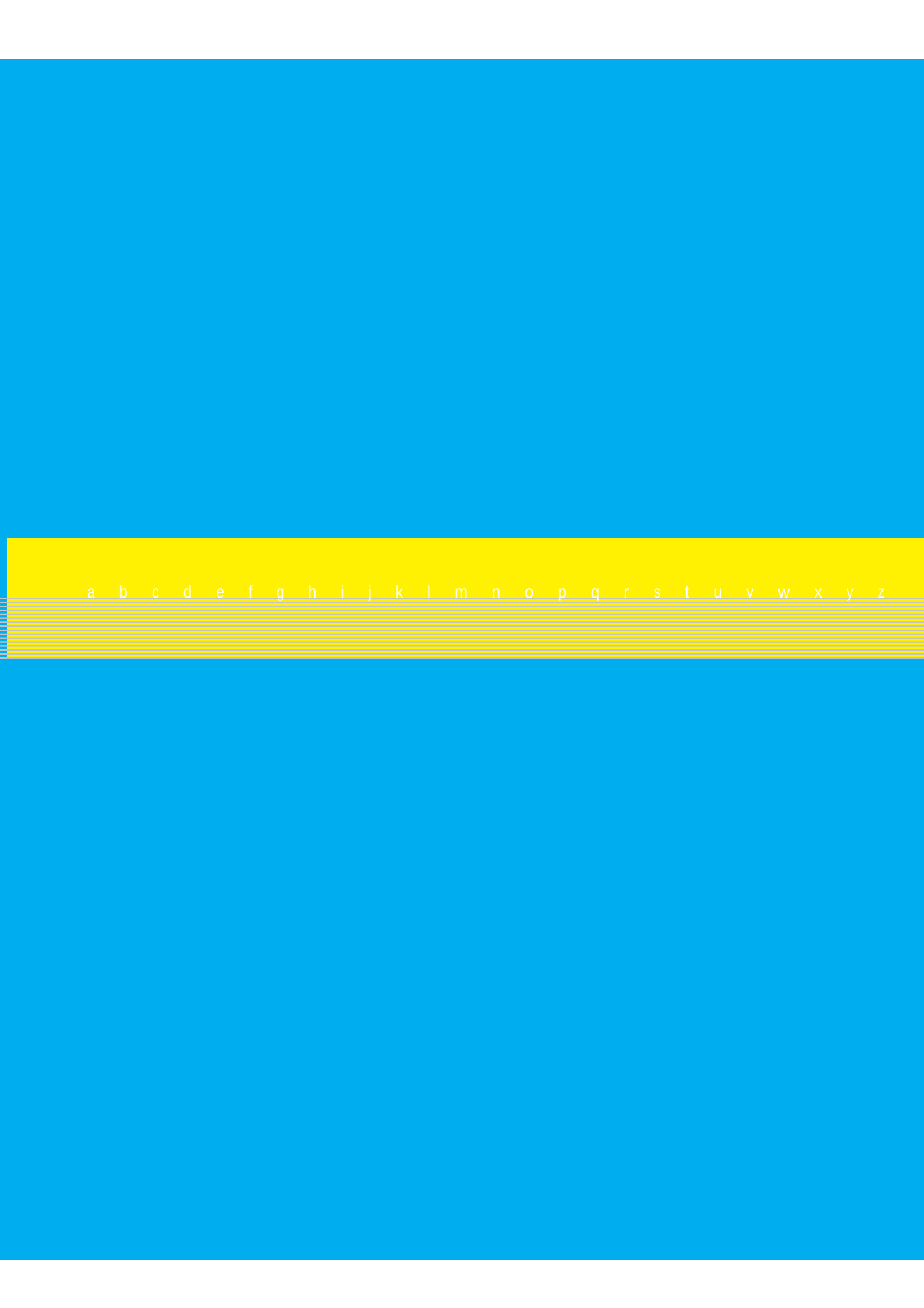
Summary

Rail's environmental advantages, increased congestion on the roads and Government's policy objectives all point to the potential for a significant increase in rail freight.

Railtrack, as outlined in this section, will play its part in maximising that increase. We will continue to improve our service to customers. We also aim to develop the capacity and capability of the network for freight, and have set out options for that in Section 3. However, we cannot do it alone. It will require Government, sSRA and the industry as a whole to work together to provide a firm sustainable economic framework to develop rail freight. In that way, we will see a substantial transfer of freight onto rail to the environmental and economic benefit of the nation.

abbreviations and glossary





a b c d e f g h i j k l m n o p q r s t u v w x y z

Abbreviations and glossary

A	AC	Alternating current
	Accommodation level crossings	Points at which private roads, farm trucks, public footpaths and bridle paths cross a railway line. There is usually no automatic warning of the approach of a train
	ADGs	Area Delivery Groups
	AHB	Level crossing protected by automatic half-barrier
	air rights development	The right to develop buildings above existing building height on land owned by Railtrack
	AMP	Asset Maintenance Plan
	ARL	Above rail level
	ATCO	Association of Transport Co-ordination Officers
	ATOC	Association of Train Operating Companies
	ATP	Automatic Train Protection
	AWG	Adhesion Working Group
	AWS	Automatic Warning System
	axle-counters	Part of signalling system which detects the position of a train on a railway line
B	BAA	British Airports Authority. Owner and operator of a number of airports in Great Britain and elsewhere
	balise	Trackside train control system transmitter
	bay line	A short, dead-end platform
	BML	Brighton Main Line
	Bn ntkm	billion net tonne kilometres
	BNFL	British Nuclear Fuels Limited
	bottleneck	A location on the network where the number of train movements is close to, or projected to exceed, the capacity of that location (same as pinchpoint)
	BRB	British Railways Board
C	CCTV	Closed-circuit television
	CD/RA indicators	A special signal to a train driver that a train is ready to depart from a station
	Centro PTE	West Midlands Passenger Transport Executive
	CERT	City of Edinburgh Rapid Transport
	CET	Controlled emission toilets on a train. The train's toilet empties into a tank which is emptied at a servicing depot
	chord line	Short section of line connecting two other lines, forming a triangle
	CIRAS	Confidential Incident Reporting System and Analysis
	CIS	customer information systems
	Class 158, Class 170, etc	Types of trains
	clockface timetable	A timetable where trains run at regular intervals (eg every ten minutes)
	Control Period	The Period (normally five years) for which the Rail Regulator fixes our access income from franchised passenger train operators
	CRR	Customer Reasonable Requirement
	CSC	Connex South Central
	CSE	Connex South Eastern
D	CSR	Cab secure radio
	CTR1	Channel Tunnel Route 1 (via Tonbridge)
	CTR2	Channel Tunnel Route 2 (via Maidstone)
	CTR3	Channel Tunnel Route 3 (via Redhill)
	CTRL	Channel Tunnel Rail Link
	customers	Those who use Railtrack infrastructure and equipment
	DART	Digital Advanced Radio for Trains
	DC	Direct current
	DDA	Disability Discrimination Act
	DETR	Department of Environment, Transport and the Regions
	disaggregation	Splitting Railtrack's plans and expenditure into seven Zonal and 45 Strategic Route plans

D	DLR	Docklands Light Railway
	DMU	Diesel multiple-unit
	DOO	Driver-only operation
	DRA	Driver's Reminder Appliance
	DRS	Direct Rail Services
E	ECML	East Coast Main Line
	ELL	East London Line
	EMS	Environment Management System
	ERDF	European Regional Development Fund
	ERTMS	European Rail Traffic Management System
	ETSC	European Transport Safety Council
	EU	European Union
	euro	European currency unit
	EWS	English Welsh & Scottish Railway
F	FFG	Freight facilities grant
	FGW	First Great Western
	footfall	The number of people passing through a station
	FSC	Forest Stewardship Council
	FTA	Freight Transport Association
	FUG	Freight upgrade
G	GAUGES	
	'big-box'	See W10
	SB1c	Gauge to carry swap-body vehicles
	UIC A	European gauges
	UIC B	European gauges
	W6A	Loading gauge for standard freight vehicles
	W7	Previously called WGB 8' container gauge
	W8	Previously 8'6" container gauge
	W9	Previously SB1c gauge
	W10	Previously 9'6" container gauge
	W10w	Previously 9'6" refrigerated container gauge
	W11	The gauge capable of handling 4m-high lorry trailers on rail wagons
	GB	Great Britain
	GE	Great Eastern
	GEML	Great Eastern Main Line
	Georgemas Plunger	A device permitting the train driver to operate the points at Georgemas Junction
	GER	Great Eastern Railway
	GLA	Greater London Authority
	GMPTE	Greater Manchester Passenger Transport Executive
	GNER	Great North Eastern Railway
	GNRTS	Greater Nottingham Rapid Transit System
	golden assets	Railway infrastructure which has the greatest potential impact on train performance
	grade-separated junction	A junction where one track passes over or under another on a bridge to avoid conflicting train movements
	G&SW	Glasgow and South Western Route
	GTE	Proposed Rapid Transit System for Oxford
	gtm	Gross tonne-miles
	GWML	Great Western Main Line
H	HML	Highland Main Line
	HMRI	Her Majesty's Railway Inspectorate
	HSE	Health and Safety Executive

H	HST	High-speed train
I	ICC	International Convention Centre (Birmingham)
	IECC	Integrated Electronic Control Centre
	IMC	Infrastructure maintenance company/contractor
	IMC2	Second generation maintenance contract
	IMC2000	Third generation maintenance contract
	immunisation works	These protect the signalling system from high-voltage electric currents in the overhead line train power supply system
	INLORS	Inner London Orbital Route Strategy
	IOS	Incremental Output Statement
J	JLE	Jubilee Line Extension
K	kiss and ride	Where a passenger is dropped off or collected by car at a station
	kV	Kilovolt (= 1,000 volts)
L	LB	London Borough
	LIFE	London International Freight Exchange
	LMD	Light maintenance depot
	Loco	Locomotive
	LRT	Light Rail Transport
	LTA	London Transport Authority
	LTPs	Local Transport Plans
	LTS Rail	London, Tilbury and Southend train operator
	LUL	London Underground Limited
M	M	Million
	megafret	An intermodal wagon with a platform height of 835mm to carry Swap-bodies or container
	MEL	Merseyrail Electrics Limited
	MML	Midland Mainline
	MOD	Ministry of Defence
	MPTE	Merseyside Passenger Transport Executive
	MPV	Multi-Purpose Vehicle
	MTL Group	Holding company for Merseyrail and Northern Spirit
	multifret	An intermodal wagon with a platform height of 945mm to carry Swap-bodies or containers
	MVAIR	Manchester Victoria area signalling renewal scheme
N	NEG	National Express Group plc
	NEXUS	Tyne and Wear Passenger Transport Executive
	NLL	North London Line
	NMC	Network Management Centre
	NMS	Network Management Statement
	NRN	National Radio Network
	NTP	North Trans-Pennine
O	Objective 1 areas	Area of Europe eligible for maximum grant support from EU institutions
	OLE	Overhead-line equipment
	OPRAF	Office of Passenger Rail Franchising
	output-based contract	A contract where the outputs and the price are defined, but not the means to achieve the end result
P	pantograph	On train equipment for collecting electricity from overhead power cable
	parkway station	A railway station with a large car park and easy road access
	PFI	Private Finance Initiative
	PfPI	Process for Performance Improvement
	piggyback	Conveying lorry trailers by train
	pinchpoint	A location on the network where the number of train movements is close to, or projected to exceed, the capacity of that location (same as bottleneck)

P	PIXC	Passengers in excess of capacity. The Franchising Director's measure of overcrowding on train services
	PPP	Private–public partnership
	PRISM Rail	Holding company for Cardiff Railway Company
	Project Elephant	Project to assess feasibility and costs of increasing freight vehicle loads and axle weights
	PSB	Power signal box
	PTA	Passenger Transport Authority
	PTE	Passenger Transport Executive
	PTI 2000	Public Transport Information 2000
	PUG	Passenger Upgrade
	PUG 1	Passenger Upgrade No 1 – agreement with the Franchising Director and WCML
	PUG 2	Passenger Upgrade No 2 – agreement with Virgin Trains for the capacity and capability of WCML and revenue-sharing arrangements
Q	Q-Train	Special train run to catch trespassers on railway lines
R	RA	Route availability – RA1–6 up to 20.3 tonnes; RA7–9 up to 23.4.1t; RA10 up to 25.4t
	RAB	Regulatory Asset Base
	RAC	Royal Automobile Club
	radio-electronic token-block	A radio based signalling system used on some rural, single track railways
	RAR	Railtrack Asset Register
	reactionary delay	A late train delays other trains
	RGS	Railway Group Standards
	RHA	Road Haulage Association
	ROSCO	Rolling Stock Leasing Company
	ROSS	Renewal of Scottish signalling
	RPI-X formula	This is the formula often used by regulators to determine how the charges of a company will vary over time. It is the Retail Price Index less a percentage eg $RPI=3\%$ less X of 1% means that the maximum price rise that the company can levy in any one year is 2%
	RPL	Rail Property Ltd
	RPP	Rail Passenger Partnership
	RSAB	Rolling Stock Acceptance Board
	RTCS	Railtrack Train Control System
	RTIA contracts	Contract between Railtrack and its maintenance contractors (compare IMC2/IMC2000)
	RTS	Rapid transit system
	RUCC	Rail Users' Consultative Committee
	Rules of Route	Agreement between Railtrack and train operators as to when lines can be temporarily closed for maintenance and renewal work
S	Safety Case	The documentation and systems by which all parts of the railway industry set out how they will manage the safety of their activities
	SB	Signal box
	SBI gauge	Loading gauge which permits operation of road–rail Swap-body vehicles
	SCADA	Supervisory control and data acquisition
	S&CL	Settle and Carlisle Line
	Section 54 agreement	Agreement with the Franchising Director over form/content of a future franchise
	Section 54 support	Enables the Franchising Director to give an undertaking on how he will exercise his franchising function in the future
	SELTRANS	South East London Transport Strategy
	shoulder peak services	Train service timetable immediately before and immediately after the 'peak' period of maximum train services
	SHRT	South Hampshire Rapid Transit
	skip-stopping	Not stopping at all intermediate stations between two main stations
	SLUs	Standard Length Units are used to describe the length of freight trains

S	SMA	Strathclyde Manning Agreement
	SMS	Safety Management System
	SPAD	Signal passed at danger
	SPT	Strathclyde Passenger Transport
	SRP	Station Regeneration Programme
	S&SD	Railtrack's Safety and Standards Directorate
	sSRA	Shadow Strategic Rail Authority
	Sustrans	Sustainable transport – an organisation primarily involved in creating a national network of cycle paths
	Swap-body	System for conveying road freight vehicle bodies on rail vehicles
	SWELTRAC	South-West London Transport Advisory Committee
	SWELTRANS	South-West London Transport Strategy Committee
	SWIFT	South Wales Integrated Fast Transit
	SWML	South Wales Main Line
	SWT	South West Trains
T	SYLTE	South Yorkshire Passenger Transport Executive
	TCS	Train Control System
	TCS-M	Train Control System based on a moving block
	Train Describer	track-based equipment identifying the location and identity of a train
	TENs	Trans-European Networks
	TERFF	Trans-European Freight Freeway
	tph	trains per hour
	TPWS	Train Protection Warning System
	TSR	Temporary speed restriction
	T&WA	Transport & Works Act
	TUG	Train Operator User Group
U	UIC	International Union of Railways (Union Internationale Chemins de Fer)
	UK	United Kingdom
	UPS	Uninterruptible Power Supply
	US	United States (of America)
V	VDC	Volts direct current
	VoG	Vale of Glamorgan
W	WA	West Anglia
	WAGN	West Anglia & Great Northern Railway
	WAML	West Anglia Main Line
	WARM	West Anglia Route modernisation
	WCML	West Coast Main Line
	WCRC	West Coast Railway Company
	WCRM	West Coast Route modernisation
	WELL	West London Leadership
	WLL	West London Line
	WYPTE	West Yorkshire Passenger Transport Executive
	Y2K	Year 2000

Other Railtrack publications:

- Investment criteria
- Railtrack Line Safety and Environment Plan
- Connections Guide/Freight Directory (CD-ROM)/Code of Practice
- 1998/99 Annual Report
- 1999/2000 Interim Report
- 1998/99 Corporate Responsibility Report

Copies of these publications together with those listed below can be obtained by calling the Railtrack Helpline on 0845 711 41 41 (calls will be charged at the local call rate).

Information available on Railtrack's website includes:

- 1998,1999 and 2000 Network Management Statements
- Detailed data tables and network capability maps
- Developing rail services in:
 - London and South East England
 - South West England
 - The Midlands
 - Northern England
 - Scotland
 - Wales
- Current timetable for passenger services on the rail network.

Railtrack PLC
Railtrack House
Euston Square
London NW1 2EE

Tel: 020 7557 8000
Fax: 020 7557 9000

Website <http://www.railtrack.co.uk>

Registered Office:
Railtrack House
Euston Square
London NW1 2EE
Registered in England and Wales No. 2904587

Produced by Flag (01223) 233882
Printed by Pillans & Wilson Greenaway Ltd

Images courtesy of:
Ralph Hodgson, Peter Ashley and Colin Baxter
All base maps ©MAPS IN MINUTES™ 1997
© Railtrack PLC 2000

The paper in this document has been chosen for its excellent environmental credentials. It is totally chlorine free and accredited to Nordic Swan Environmental Label.