



Initial Industry Plan

Scotland

Proposals for Control Period 5 and beyond

September 2011




RFOA
Rail Freight Operators' Association

Railway Industry Association

Train Operators Working Together ATOC

NetworkRail

Contents

Foreword

This Initial Industry Plan (IIP) for Scotland sets out how the industry can deliver a more efficient and better value railway and play a key role in driving sustainable economic growth.

The IIP examines the key choices and options facing Scottish Ministers in specifying the future outputs of the railway and the level of funding required. These choices will inform the development of the Minister's High Level Output Specification (HLOS) and Statement of Funds Available (SoFA) to be published next summer as part of the Periodic Review 2013 process as well as the reletting of the ScotRail franchise.

The development of both this IIP and the IIP for England and Wales has been overseen by Planning Oversight Group (POG) which involves representatives of Network Rail, passenger and freight train operators and suppliers. This work has built on the successful cross-industry work on Route Utilisation Strategies (RUSs) and has sought input from cross-industry groups responsible for co-ordinating industry plans in relation to safety, performance, sustainability, capacity, access strategies, asset management, technology and innovation.

The recently established Rail Delivery Group (RDG), made up of the Chief Executives of the passenger and freight train operating owning groups and Network Rail, has been established to provide leadership on cross-industry issues enabling a higher performing, more cost-effective and sustainable rail network across Great Britain. This plan has been produced under the aegis of the RDG and summarises the key priorities which RDG has identified for itself focussing on areas where only such a group can effectively improve the value for money of the industry.

The document is structured to explain the role rail can play in meeting the needs of Ministers and users, the opportunities to improve the value for money and affordability of today's railway and the choices facing Ministers as to how rail can contribute further to the achievement of sustainable economic growth. The document sets out the opportunities and choices affecting services operating within Scotland and Anglo Scottish passenger and freight services. Finally, the document summarises the implications for the development of the HLOS and SoFA for publication in 2012 and the development of Network Rail's Strategic Business Plan in January 2013.

The industry is determined to take up the challenge to improve efficiency posed by the Rail Value for Money study, led by Sir Roy McNulty and published in 2011. The IIP identifies the impact of such cost savings on industry affordability and the role that funders and the Office for Rail Regulation (ORR) can play to facilitate this. The industry is already developing proposals to tackle costs and develop greater partnerships between train operators, Network Rail and their supply chains. Change and collaboration is required by all parties involved in the specification and delivery of the rail system. The RDG will take ownership of key cross-industry initiatives that cannot be delivered without collective action across the industry.

Rail services in Scotland make an important contribution to the economy and to local communities. The wider benefits that the railway provides will continue to require Government support. The industry recognises that it must deliver challenging efficiency gains to secure value for money.

The importance of continued investment in infrastructure to achieve sustainable economic development is now widely recognised. Investment is also key to driving

long term passenger and freight growth. Innovative ways of financing these investments can be pursued.

There are important decisions ahead for Ministers if the industry is to deliver a more affordable railway that drives a prosperous low carbon economy. The key decision areas include:

- specifying outcomes, including through the franchise, that allow the Scottish rail industry to deliver in the most efficient way possible;
- fares policy, including the level of fares and the potential for increasing the use of fares as a demand management tool;
- reform of the regulatory and frachising frameworks to provide aligned incentives between Network Rail and train operators, and the ability to deliver and share in success through partnership and collaboration;
- how they set the outputs and funding for the industry both through the periodic review and through the new ScotRail franchise; and
- how to provide a stable framework to contribute to sustainable economic development and provide industry with the confidence to develop longer term supplier relationships.

The IIP provides a starting point for discussions with Ministers and the ORR on the priorities for Control Period 5 (CP5), the reletting of the ScotRail franchise and the necessary reform to the overall framework within which the industry operates to deliver a high performing and value for money railway.

Executive Summary

In this Initial Industry Plan (IIP), the rail industry in Scotland sets out a plan that addresses the twin goals of a more affordable railway and one that drives sustainable economic growth.

The industry is determined to meet the challenge of improving the value for money of the railway. The IIP sets out how the industry intends to reduce its costs and, combined with the industry's continued success in attracting increasing numbers of passengers, improve significantly the affordability of the railway.

A more affordable railway provides government with the opportunity to consider the choices – and the appropriate balance – between fares, investment and subsidy in specifying the outputs and funding for the railway. It is due to publish the High Level Output Specification (HLOS) for Control Period 5 (CP5, 2014 – 2019) in summer 2012.

The IIP seeks to help inform these choices. The industry recognises that there is a limit on the funding available and that there are competing priorities for these funds. The industry can make a compelling case for investment in rail and how it can contribute further to the achievement of sustainable economic growth.

The IIP offers a railway that:

- is more efficient and therefore more affordable to the taxpayer – the annual cost of the industry to the taxpayer could reduce by £72 m (10 per cent) by the end of CP5 compared to the end of Control Period 4 (CP4)
- supports and stimulates economic growth through the efficient movement of people and goods into and between major economic centres
- maintains high levels of reliability and focuses on improving areas of poor performance which have significant impact on users
- better meets the needs of passengers in key areas such as journey information, comfort, and accessibility so that industry can make steps towards meeting its ambition to achieve 90 per cent customer satisfaction in the longer term
- maintains high levels of passenger, public and workforce safety while continuing to improve safety culture throughout the industry and reduce safety risk at level crossings by 50 per cent
- contributes towards a lower carbon economy, reducing industry's CO_2 emissions by 28 per cent by the end of CP5

Efficiency and affordability

The Rail Value for Money (RVfM) study challenged the industry to reduce costs without reducing the outputs delivered by the order of 20-30 per cent by the end of CP5 compared to 2008/9. The industry is determined to take up this challenge. The Rail Delivery Group (RDG) has been established to provide leadership on cross-industry issues. This plan summarises the key priorities where RDG can effectively improve the value for money of the industry.

The IIP identifies opportunities to reduce costs that give the industry the confidence it can at least deliver efficiencies consistent with the Department for Transport (DfT) / Office of Rail Regulation (ORR) RVfM “should cost” low levels of efficiency. Delivering these savings will require positive action from the industry, but also from government and regulators to facilitate fundamental change to the franchising and regulatory frameworks.

Network Rail forecasts it can largely through its own initiative deliver a 16 per cent reduction in its costs by the end of CP5 compared to its expenditure in CP4. This is consistent with the indicative CP5 savings assumed by ORR in the last periodic review. The IIP describes the key initiatives Network Rail is currently developing, and in some cases already implementing, that will reduce its costs to achieve this level of efficiency gain. Delivering greater efficiencies would require a step change in the degree of cross industry collaboration. Network Rail will reflect progress on developing further its efficiency initiatives for CP5 in its Strategic Business Plan (SBP), to be published in January 2013.

The industry’s subsidy requirement is driven to a significant extent by the need to pay back the cost of previous investments which are reflected in Network Rail’s Regulatory Asset Base and associated debt. This debt reflects recent investment to expand the railway to support economic growth but also historic costs inherited when Network Rail took over ownership of the infrastructure and in the cost of addressing the backlog of previous underinvestment in the infrastructure. Network Rail will continue to explore with ORR and government options for financing the regulatory asset base.

Funders drive value for money from passenger train operators primarily through franchising - a highly competitive process which has attracted the involvement of companies with strong track records in cost efficiency. Train operator unit costs per passenger kilometre (excluding access charges) have fallen since privatisation, and have declined in real terms since 2005/6. In addition, train utilisation (average loading calculated as passenger kilometre / train kilometre) has risen by 24 per cent. Changing how Ministers procure future rail services can enable operators to address key issues such as labour productivity, resource allocation, rolling stock procurement, and ticketing and retail arrangements that will allow them to deliver further cost savings whilst meeting the needs of customers.

Train operators and Network Rail are exploring the benefits of greater collaboration or partnership and a key enabler for this is the current process of devolution within Network Rail of decision making to a local level, providing greater focus and responsiveness to the needs of the train operators. Network Rail is also developing plans which will engage suppliers much earlier in the delivery of projects providing greater scope for innovation and competition. These initiatives are key enablers of improved efficiency.

The industry is committed to developing plans which make progress towards the “high” end of the cost savings identified in the RVfM study. The study identified a number of barriers to achieving higher savings and the RDG will develop more detailed proposals for what would need to change to deliver these savings.

A key challenge to the industry from the RVfM review concerns the average number of passengers per train. Train utilisation on the railway in Great Britain is very different to that in other European countries. In Scotland rolling stock utilisation is particularly influenced by the specified mix of services ranging from high frequency

suburban routes with large peak/off-peak variations to remote rural routes where seasonal differentiation can be very marked. The industry has commissioned further work into this issue to examine the measurement of utilisation, and to assess whether there are opportunities to improve in this area. This work will also assist in the further development of the industry's rolling stock proposals.

A long term vision

The drive to improve efficiency needs to be set within an overall long term vision and strategy for the railway in Scotland.

Scottish Ministers set out in *Scotland's Railways* [1](published in 2006) the importance of how rail contributes towards a safe, integrated, effective and efficient transport system for Scotland. The rail network supports growth in and around the major cities in Scotland and provides efficient links between them and with ports serving the Scottish Islands. Investment in projects such as the Edinburgh to Glasgow Improvement Programme (EGIP) which includes electrification and new rolling stock, and the Scottish Ministers' proposal to open the Borders Railway in 2014, will contribute to the delivery of a prosperous low carbon economy.

The success of the railway in Scotland cannot be achieved independently from developments on the wider Great Britain rail network. The East and West Coast Main Lines are key links between Scotland and major centres of economic activity in England. The recent strong growth of passenger and freight traffic on these corridors provides a significant contribution to the economies of both Scotland and England, as well as encouraging modal shift from competing air and road. This reinforces the necessity for Scottish Ministers and the Secretary of State for Transport to work together to define the optimal outcomes to support both the Scottish and the wider economy of Great Britain.

It is unlikely that the railway in Scotland will ever be subsidy free. There are significant steps that can be taken to reduce the subsidy per passenger kilometre as well as improving the efficiency of train service provision. All parties must develop aligned and suitably incentivised relationships that optimise the provision and management of infrastructure and train service delivery. By the end of CP5 it is anticipated that direct cost recovery from the ScotRail franchise will be 42 per cent (compared to 47 per cent for regional services in England and Wales). The analysis carried out for this IIP demonstrates that affordability in Scotland is dominated by industry cost more than revenue. There is scope, however, to improve affordability for Scottish Ministers through targeted adjustments to fares policy that can deliver more equitable outcomes.

Meeting the needs of customers

Improving rail's ability to serve its key markets is central to the industry's approach to reducing costs and enhancing rail's contribution to sustainable economic growth. The provision of rail services for Scotland has to address the needs of diverse markets which require different strategic approaches:

- In the Glasgow and Edinburgh conurbations, rail plays a significant and growing role in providing commuter and leisure travel. There has been substantial investment in these areas over the last few years which is expected to continue in

[1] http://www.scotland.gov.uk/Publications/2006/12/04104648/0

CP5 with the completion of EGIP and the Borders Railway and growing use of the Airdrie/Bathgate line. On some corridors peak crowding is becoming a significant issue. Adjustments to peak fares policy may be possible to spread this traffic better but significant increases may drive passengers to other less sustainable modes of travel. The provision of additional peak capacity would require more rolling stock, or further investment in infrastructure to improve the utilisation of existing rolling stock

- Suburban services are much less significant for the other cities in Scotland but both Aberdeen and Inverness have seen strong growth in recent years to the extent that the current policy to provide commuter services using marginal interurban resources may not be sustainable in the long term

- Demand for Scottish interurban travel is expected to continue to grow in the medium term as rail becomes a relatively more attractive option than other modes. Optimising provision of capacity may require greater differentiation of services to ensure resources are deployed most efficiently

- Much of the rural network demonstrates strong seasonality in demand patterns. Resources are already optimised as far as possible within existing specifications. The challenge going forward is to sustain and, where possible, develop these routes within an appropriate framework that delivers value for money while securing compliance with appropriate standards

- Demand for Anglo Scottish travel to London and other major cities in the north and midlands of England has seen significant growth over recent years driven by improved and accelerated services. This is expected to continue in both the leisure and business sectors. There are a number of proposals for improvements to these services (included in the relevant Route Utilisation Strategies (RUS)) but it is believed that in the short term additional capacity can be made available to deliver the required outcomes through optimising timetables and through other smaller scale interventions including train lengthening

- Freight demand has continued to grow in CP4, particularly on the Anglo Scottish routes. It is forecast that this growth will continue and that rail will attract a greater market share, particularly in the domestic and international intermodal markets. The IIP includes plans to facilitate further development of these routes to accommodate new traffic, and continue modal shift with its associated economic and environmental benefits. Improvements in the ability to run longer, heavier and bigger trains to key destinations north of the central belt is likely to be necessary to meet demand in the medium to long term. The industry needs to work together to ensure this is delivered in the most cost effective way.

Scotland's railway is and will remain a mixed traffic network. Therefore the different passenger and freight markets cannot be considered in isolation. The IIP identifies the need for the industry to jointly manage the optimal utilisation of the existing network and promote future enhancements where they are the most cost effective way of meeting demand or delivering sustainable growth.

Delivering sustainable economic growth

The IIP sets out the key outcomes that will support the rail industry's contribution to sustainable economic development.

The IIP includes a significant scale of investment already committed through the last periodic review and funding commitments made since then including EGIP.

Additional rolling stock and supporting facilities beyond that already committed may be required to support growth and make use of the significant infrastructure capacity delivered in CP4 and the committed CP5 schemes. It is anticipated that the investment in 120 new vehicles associated with EGIP followed by further investment associated with central belt infill electrification will allow a cascade of diesel vehicles.

While EGIP is expected to provide sufficient capacity for key central belt flows in the short and medium term, in the longer term additional terminal capacity is likely to be required in Glasgow and Edinburgh to accommodate passenger growth. During CP5 the industry will continue to work together to identify possible solutions.

The industry recognises Ministers' aspirations to improve journey times and will continue to pursue opportunities that demonstrate value for money either through generating increased traffic or improving resource utilisation. A number of minor opportunities have been identified which may be undertaken concurrent with renewals. In addition the major schemes to upgrade the Highland Main Line and the Aberdeen to Inverness line would also deliver reduced journey times.

Freight capacity and capability improvements provide the potential to increase rail's market share through allowing the movement of bigger, heavier and longer trains. Possible projects impacting on Scotland include improvements to the northern end of the West Coast Main Line (WCML) such as longer loops and bi-directional working in key locations. In the medium term provision of sufficient gauge capability would be key to attracting additional intermodal traffic to destinations north of the central belt as well as providing paths at times to meet the requirement of the logistics industry. and these proposals are included in the request for a CP5 freight fund
Using electric rather than diesel traction improves the efficiency of rail services by reducing rolling stock and infrastructure cost, reduces the environmental impact, and provides a more reliable service. The plan intends to further electrify the Glasgow Suburban network in CP5. Beyond CP5 the Strategic Transport Projects Review (STPR) includes proposals for further electrification north of the central belt. To deliver this most effectively, the industry needs to commence planning a rolling programme to maximise cost effectiveness, co-ordinated with a strategic approach to rolling stock provision.

The IIP includes funding proposals to reduce safety risk at level crossings in CP5 by 50 per cent by reducing the number of level crossings and the risk at those that remain.

The IIP includes provision for funding of small scale interventions managed by the industry to improve both stations and the wider network. This will include improved provision of passenger information, station accessibility and key areas of service quality.

Investment choices

The IIP sets out a range of options for investment in the railway in Scotland. The investment choices set out in the IIP, informed by the programme of RUSs, have been selected based on their contribution to government policy as illustrated by the STPR and an assessment of the business case for each investment. The table below summarises the key investments underpinning the current plan and indicates how these contribute to the outcomes which are important for Ministers and the industry's stakeholders.

The plan includes funding of £396 million to complete significant investment already underway for EGIP.

The IIP includes proposals for up to an additional £699 million investment beyond that already committed. The incremental annual subsidy to the industry required to fund this investment is £35 million by 2019.

Although the industry has developed this as a single preferred plan, there are options within this plan where choices can be made. The industry will continue to explore opportunities which are not included in this plan to provide value for money improvements to the railway and the plan will continue to evolve. The table below summarises the key investments in the IIP and how these contribute to the outcomes which are important to the industry's stakeholders.

Table 1: Investment Choices

Outcome	Example investments	Contribution to outcome
Reduced costs and a more efficient railway	Electrification schemes (EGIP, Glasgow suburban) Operations Strategy Other operational efficiency schemes	Long term reduction in whole industry operating costs
Improved journey time and connectivity between economic centres	EGIP, Aberdeen/Inverness, Highland Main Line Junction Improvements (Carstairs, Portobello)	Reduced journey times and increased frequency on key interurban flows
Improving the quality of the service to customers	Access for All, Passenger information enhancements, Station enhancements	Improved passenger information Improved accessibility
A more efficient, greener and safer transport system	Intercity Express Programme Electrification schemes (see above) Scottish Freight Network	Stimulate modal shift from road to rail Replacement of life-expired rolling stock Fuel efficiency and alternative sources
A safer railway for workers, users and the general public	Level crossings risk reduction	Reduction in safety risk at level crossings

Trade offs and choices

It is for Scottish Ministers to decide how far they wish to fund the programme of proposed investments. Even where there is a strong economic case, there will be issues of affordability, particularly in the current economic climate. The industry is committed to working with Ministers to help inform their choices in advance of the High Level Output Specification. Potential trade offs include:

- existing projects and commitments versus new commitments - the plan includes very substantial investment in projects which have already started;
- sustainable subsidy reduction - investments which are self-funding and to minimise whole life costs should be considered separately from other investments which require ongoing public subsidy;
- output trade offs - there is scope for alternative trade offs between different outputs such as service frequency, journey times or opening hours versus punctuality; and there are also tradeoffs between the level of these outputs and cost or subsidy requirement;
- prioritising outcomes - the options highlighted in this plan are categorised based on their primary impact on key outcomes and different public policy choices between these outcomes would therefore drive different decisions about which options to prioritise; and
- charging and financing options - the government is conducting a review of fares policy and we have also identified the potential for alternative ways of financing past and future investments.

Next steps

The IIP addresses issues of industry affordability and defines the challenge to Ministers and the rail industry moving forward.

It will inform engagement with Ministers on the outputs they require to be delivered and the relative priorities for investment to support the development of the High Level Output Specification (HLOS) and Statement of Funds Available (SoFA) to be published in summer 2012.

Following the publication of the HLOS, Network Rail, in collaboration with the wider industry, will develop its Strategic Business Plan, to be published in January 2013. This will set out how Network Rail believes it can deliver the specified outputs for which it is responsible in the most cost effective and sustainable way in CP5 and beyond.

1. Introduction

1.1. Purpose

This Initial Industry Plan (IIP) sets out the rail industry's view of how the railway could develop during Control Period 5 (CP5) (2014-2019) and beyond to deliver a better value for money and affordable railway that can support sustainable economic development. The IIP has been produced to inform the development of the governments' High Level Output Specifications (HLOSs) and Statements of Funds Available (SoFAs) to be published in summer 2012, the periodic review process more generally and to inform broader government decision making in relation to industry reform and franchise reletting.

1.2. Scope

The plan provides a forecast of subsidy, and underlying revenues and costs for CP5. The level of subsidy is influenced by exogenous factors which influence demand growth, and factors directly affecting the cost of rail travel to users, such as fares, the cost of running the railway, the level of outputs to be delivered, the volume of work required, the size of the workforce, wage levels and the cost of materials. All these factors have been considered in developing the forecasts in this plan.

The IIP provides revenue and cost forecasts for the operation of franchised train services and funding requirement to operate, maintain, renew and enhance the infrastructure at a market level (ScotRail, Anglo Scottish and Freight). The impact of the freight sector is reflected in the forecast of outputs and the cost of maintaining and enhancing the infrastructure.

The key outputs for which forecasts are provided relate to safety, performance, capacity, and carbon emissions.

Recognising the devolved funding responsibilities, two separate IIPs have been prepared by the industry this one for Scotland to inform the development of the HLOS and SoFA by Scottish Ministers and one covering England and Wales to support the HLOS and SoFA being prepared by the Department for Transport (DfT).

1.3. Further development of Control Period 5 plans

The forecasts in this document and the underpinning assumptions will be improved as the elements of the plan are developed further. In particular Network Rail's development work towards production of its Strategic Business Plan (SBP) in January 2013 will reflect further development of its asset policies, progression of projects through their development stages and further progress of its initiatives to deliver efficiencies.

The industry will continue to develop its improvement plans in key areas such as safety, service quality, operational performance and sustainability. The Rail Delivery Group (RDG) will develop its plans to tackle key cross industry initiatives to reduce costs and progress on these will inform the periodic review and franchising processes. The outputs and funding requirements of individual franchises will be firmed up as each franchise is re-let. The franchising process is a commercially competitive process and is an opportunity for bidders and funders to explore alternative proposals that may not have been identified though the development of the IIP. It is important however that the outputs expected from Network Rail, set through the periodic review process, and from the franchises remain aligned as new franchise terms are agreed.

1.4. Structure

The document is structured as follows:

Chapter 1:	Introduction: describes the purpose and structure of the document
Chapter 2:	Context: describes the key issues to be addressed and key assumptions made in developing the IIP
Chapter 3:	Improving value for money: examines the potential for reducing cost and providing greater value to funders and users
Chapters 4-6:	Market level (ScotRail, Anglo Scottish and Freight) analysis of the issues and opportunities
Chapter 7:	Network Strategies: addresses key issues and opportunities which affect the rail network as a whole
Chapter 8:	Assessment of the IIP: sets out the strategic, financial and economic case for the IIP and the business case analysis to inform the decisions to be made
Chapter 9:	Next steps: sets out the implications for the development of the HLOS's and SoFAs and the development of Network Rail's SBP.

2. Context

This chapter explains the context within which the Initial Industry Plan (IIP) has been developed. It is organised as follows:

- **Government policy** plans for the railway need to be developed to meet the needs of funders and in the context of broader public policy
- **user satisfaction** against the background of today's railway, planning the future of the railway must start with an understanding of passenger and freight user satisfaction
- **sustainable development** the nation's infrastructure, including the railway also plays a critical role in supporting the economy. We outline the approach we have adopted in developing plans which aim to promote sustainable economic development
- **long term planning** the railway comprises long life assets which need to be planned as a system based on an understanding of how each market can be expected to develop. The plans for Control Period 5 (CP5) are developed in the context of a longer term planning framework for the industry which builds on the Route Utilisation Strategies (RUSs) which have been developed over the last few years
- **today's railway** in many ways the railway today is a success. We start by briefly summarising the railway's usage and performance, the revenue it generates and its costs.

Against this background, and the challenge for the industry to improve the value for money which it provides to rail users and the taxpayer, the following chapters explain how we have developed our plans for the future of the railway.

2.1 Government policy

Responsibility for funding and specifying industry outputs in Scotland was transferred to Scottish Ministers in April 2006. Since then Ministers have been responsible for both the management of the ScotRail franchise and specifying and funding the rail network in Scotland. The Scottish Government published its first High Level Output Statement (HLOS) in July 2007 which enabled Network Rail's outputs to be set for Control Period 4 (CP4)(2009-14). The ScotRail franchise ends in October 2014, providing an opportunity to align outputs across the Scottish rail industry.

The role of rail and this plan must be seen in a broader context of public policy. Alongside economic and demographic trends, there are a number of key policy areas which will influence rail's future role.

It is important to be clear as to the assumptions that have been made as they potentially have an impact on the industry's nearer term plans for CP5. By definition, any material changes to these policies are likely to have an impact on the proposed plan and therefore the output and cost forecasts included within it.

2.1.1 Transport policy and land use policy

Transport policy is relevant to the extent that it affects the quality of service provided by different modes, through policy statements for these, infrastructure investment in other modes and the links between modes, or regulatory interventions such as road speed limits and lorry weights. The relative price paid by users of different modes, through policies on taxation of road fuel/vehicles and air travel, or on charging for road use (locally or nationally) amongst other things.

In Scotland the National Transport Strategy (NTS) has three key strategic outcomes, which are to:

- improve journey times and connections between Scotland's cities and towns and our global markets to tackle congestion and provide access to key markets
- reduce emissions to tackle climate change
- improve quality, accessibility and affordability of transport, to give people the choice of public transport and real alternatives to the car.

Since its publication in 2006 the NTS has remained the guiding principle for Government policy and has provided direction and input to subsequent workstreams such as the Strategic Transport Projects Review (STPR).

National road pricing could have a long term positive impact for rail but is highly unlikely to be a feature in CP5, having been ruled out in both the Westminster and Scottish parliaments.

Land use and planning policy will also shape the rail industry at a "macro"-level by:

- supporting sustainable economic growth of competitive cities or promoting links between communities
- through individual planning decisions (e.g. on applications to build freight terminals) or major regeneration projects.

Land use policies could have some effect by the end of CP5 but with around two per cent of all land use changing annually, that effect, while potentially significant over the cumulative period of 30 years, will be more limited in CP5. Consumer trends, however, would be expected to be much more dynamic over the next seven years with potential implications for rail.

2.1.2 Sustainability and Energy and climate change policy

Both the UK and Scottish Governments continue to confirm their commitment to seeking sustainable development in the UK[2]. The industry recognises the need to further develop its approach to sustainable development. The industry expects to show much more robust and verifiable progress as it is increasingly held to account in this area and comparisons with other transport modes become more rigorous.

The Climate Change (Scotland) Act 2009 introduced ambitious legislation to reduce emissions by at least 80 per cent by 2050, and will drive new thinking, new solutions and new technologies putting Scotland at the forefront of building a sustainable low carbon economy.

The Scottish Government published its energy policy in 2008[3] although certain elements of energy policy remain reserved UK matters. Overall the industry's plans are built around the Department for Energy and Climate Change's (DECC) most recently published forecast for energy sources covering both costs and carbon intensity. While the focus of the Scottish energy policy is slightly different, the industry does not believe this invalidates these assumptions although there remains a great deal of uncertainty in this area. This will have a material impact on cost and carbon trajectories present in this document.

[2] Embedding sustainable development. Defra. 2011. Available at http://sd.defra.gov.uk/documents/mainstreaming-sustainable-development.pdf
[3] Energy Policy: An Overview Available at http://www.scotland.gov.uk/Publications/2008/09/08110631/0

2.1.3 High speed rail

The UK Government has consulted on proposals for a 'Y-shaped' high speed rail network that would reduce journey times from London to Birmingham to 49 minutes, and from London to Manchester and Leeds to around 80 minutes. This proposal is essential to providing additional capacity on the key corridors between the major economic centres of London, Birmingham, Manchester, and Leeds. In developing a strategy for the network the IIP has assumed that the first part of High Speed 2 from London to the West Midlands will start construction during CP5 with the line open for operation in 2026. Anglo Scottish services are expected to use the high speed line before continuing on the existing network for the remainder of their journey.

Given the early stage of development of these proposals we have not sought to reflect the financial and economic impact of the high speed line proposals into our forecasts of future outputs, revenues and costs for the current network.

The Scottish Government has established a Scottish Partnership Group involving key stakeholders to help develop a business case for extending High Speed Rail to Scotland.

2.1.4 Fares

The Scottish Government has maintained a policy of fare increases of one per cent above Retail Price Index (RPI) over recent years and the industry has assumed for the purposes of this plan that this policy will continue. The industry has also assumed there is no material change to the structure of fares regulation although there are some anomalies in the current fares structure that could be remedied. (See Chapter 4, section 4.5.3).

2.1.5 Regulatory and franchising frameworks

If the rail industry is to maximise the level of costs savings which is believed to be achievable significant reform is required of the framework within which the rail industry operates. The IIP includes analysis of the potential efficiencies that could be delivered by reform to the industry framework and identifies the key areas and reform required to facilitate these cost savings. These options include alliancing between Network Rail and train operators (specifically the ScotRail franchisee), alliancing between Network Rail and suppliers and the introduction of concessions for the operation of the Network (see Chapter 3).

2.1.6 European legislation

The railway in Scotland increasingly operates within an EU-wide legislative and regulatory framework. Current proposals, including the reform of the First Railway Package and the extension of the Eurovignette are assumed to be implemented in this plan. Specific initiatives, such as extension of the Technical Standards for Interoperability are addressed later.

2.2 Understanding and improving user satisfaction

A key ambition of this plan is to improve end user satisfaction in a value for money and affordable way. Improving existing user satisfaction will potentially maintain and enhance revenue, improve market share and attract new users, delivering modal shift from road and air.

This plan seeks to demonstrate a clear understanding of the key drivers of satisfaction and the priorities of end users and develop clear initiatives to address those drivers that are within the control or influence of the industry.

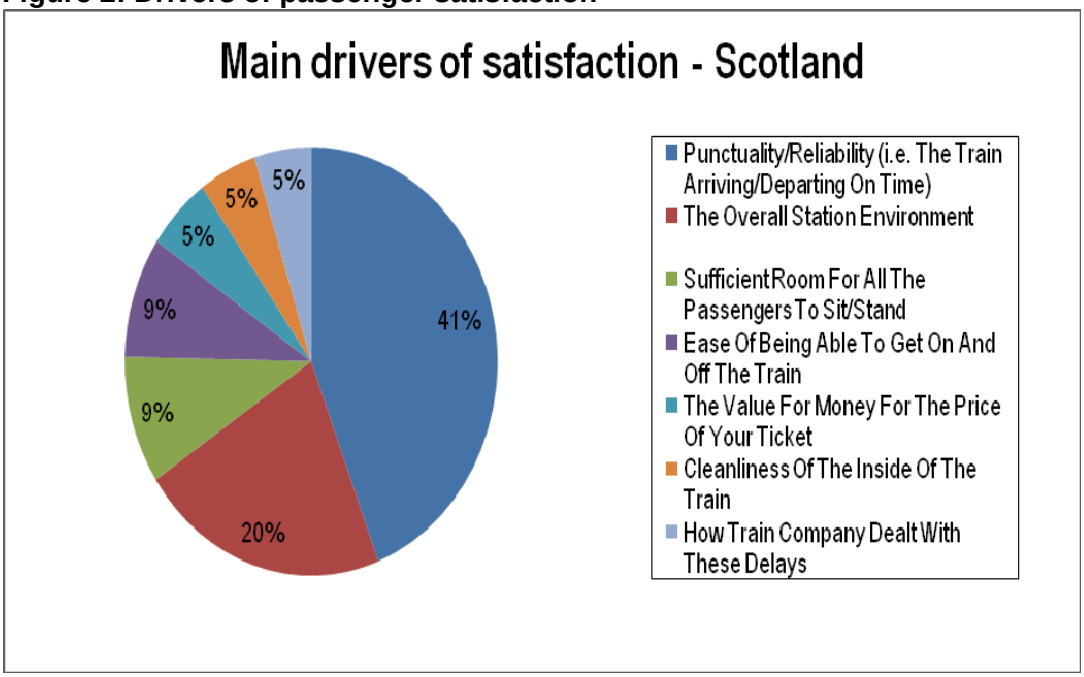
In developing this plan the industry has sought insight to the drivers of user satisfaction from Passenger Focus and the Rail Freight Group and the industry is grateful for their input to the development of this plan.

2.2.1 Passenger satisfaction

Improving customer satisfaction is key to the success of the railways. Customer satisfaction is essential to reduce barriers to usage of the railway, thereby enabling rail usage to grow and hence support economic growth, facilitate a reduction in unit costs and reduce environmental impacts through modal shift.

Figure 2 below shows the major drivers of customer satisfaction in Scotland, estimated by Passenger Focus through comparison of overall satisfaction scores with the scores for satisfaction with individual criteria (using stepwise regression on the combined results for the Spring and August 2010 surveys).

Figure 2: Drivers of passenger satisfaction

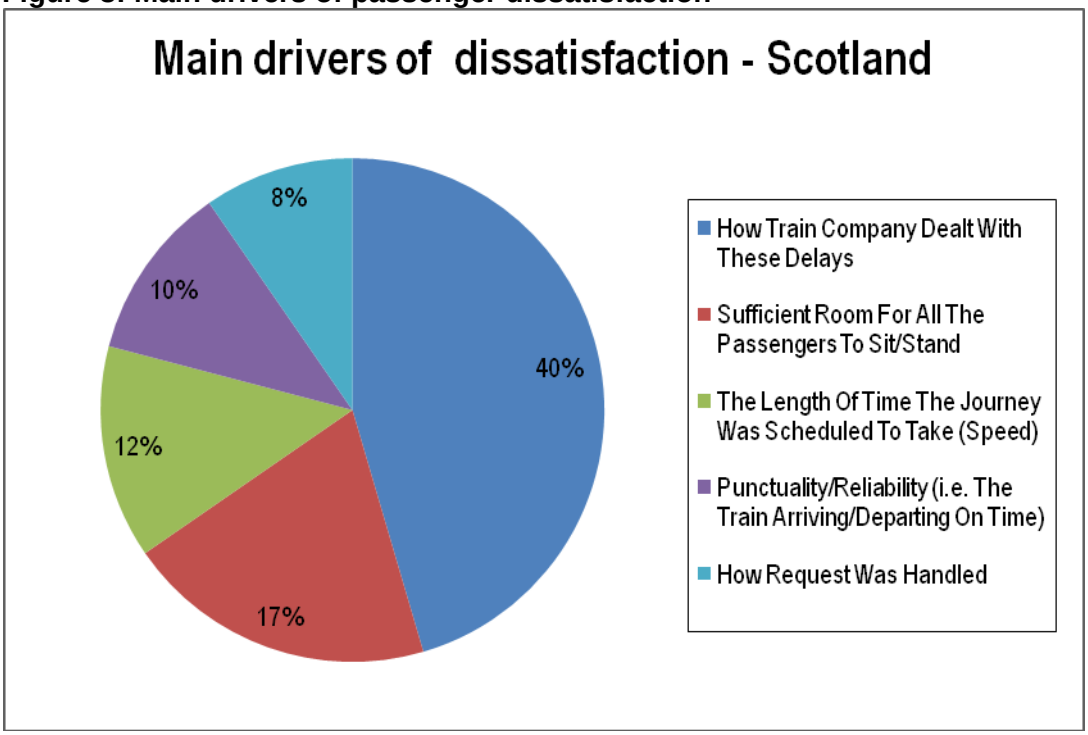


Source: Passenger Focus, based on combination of Spring and Autumn 2010 surveys

NB: Chart excludes individual criteria below 5%

It is also helpful to understand the key drivers of dissatisfaction which are shown in Figure 3 below.

Figure 3: Main drivers of passenger dissatisfaction



Source: Passenger Focus, based on combination of Spring and Autumn 2010 surveys

NB: Chart excludes individual criteria below 5%

Looking forward, research published by Passenger Focus[4] identifies the top five passenger priority areas for improvement as value for money, punctuality, frequency of service, availability of a seat and information during delay. Although not highlighted in surveys by customers as a major priority for improvement, journey time is in practice often the key determinant of rail's market share of trips taken, a fact underlying all demand forecasting for the industry and supported by a wide body of research[5], and is therefore of fundamental importance to the industry's ability to deliver cost effective growth.

Passenger satisfaction is driven by a combination of factors, including the quality of service received and the price that they pay for it. The industry conducts significant market research which complements the work carried out by Passenger Focus, indicating that optimising quality and value will drive up satisfaction. Different passenger groups have specific requirements, for example commuters require high frequency, punctual services with a good on-board environment if customer satisfaction is to continue to improve.

2.2.2 Trains

The most important drivers of customer satisfaction are the core elements of the train service itself in terms of performance (punctuality and reliability), the time taken for a given journey, providing sufficient frequency of service and availability of a seat.

[4] Passengers' priorities for improvements in rail services, August 2010
[5] The industry's "Passenger Demand Forecasting Handbook" lists over 30 studies

Going beyond these factors, other important drivers of satisfaction on the train include:

- train cleanliness
- the ease of getting on and off trains
- seating comfort
- information provision.

The ease of getting on and off trains and, to some extent, seating comfort, are determined by the level of capacity provided in relation to demand and hence crowding, for which changes to rolling stock and timetables are likely to be the most effective solutions (although also noting potential demand management solutions through, for example, shoulder-peak pricing, described in Chapter 4 and 5).

Train cleanliness is an important quality factor which is generally managed by train operators as part of their franchise obligations. Information provision is acknowledged to be vital, and is covered in the next section.

Customers' expectations of on train service can and do vary between different markets. For commuters, the key requirement is a seat on a punctual and clean train, but there is little expectation of personal attention from staff. Some commuters welcome the presence of a guard while others find Driver Only Operation (DOO) just as acceptable (and it is generally, of course, deliverable at lower cost). For customers using longer-distance services, however, services such as catering and wi-fi are an important element of the rail offer, in comparison with alternatives such as driving. The situation for rural passengers varies by route and length of journey. This is borne out by an analysis of causes of customer dissatisfaction (based on Passenger Focus's analysis of the detailed responses of customers expressing overall dissatisfaction with their rail service), as shown in Figure 3.

2.2.3 Stations

Key issues for customer satisfaction at stations have been considered based on Passenger Focus's survey in Spring 2011.

The survey results highlight that satisfaction with stations is below customers' overall satisfaction, with particular dissatisfaction with station and car parking facilities. On the suburban routes the availability of staff caused significant levels of dissatisfaction which was also reflected in concerns about personal security. The focus of station improvement programmes should therefore be:

- improvements to the general ambiance of stations, including the station buildings, facilities such as toilets and signage, as well as continuing to improve levels of lighting
- improvements to parking facilities (highlighted as an issue in the Scotland Route Utilisation Strategy (RUS) 2007), which on many routes are a key determinant of the attractiveness of rail services.

In addition, the provision of accurate real-time information on train services (described below), is critical as part of broader efforts to improve customer satisfaction.

Looking more widely than the responses of existing rail customers, effective intermodal interchange, cycle parking (and, where appropriate, car parking) are important to facilitate the sustainable growth of rail demand.

In order to deliver these customer benefits, the industry supports the continuation of a scheme for station improvement with a budget of £25 million in 2011/12 prices.

2.2.4 Freight user satisfaction

In most markets rail operators are competing directly with road operators to move goods around Great Britain. In order to compete, rail must offer a logistics package that can satisfy the individual needs of customers – but at a level of price and service quality at least equal to the road offering.

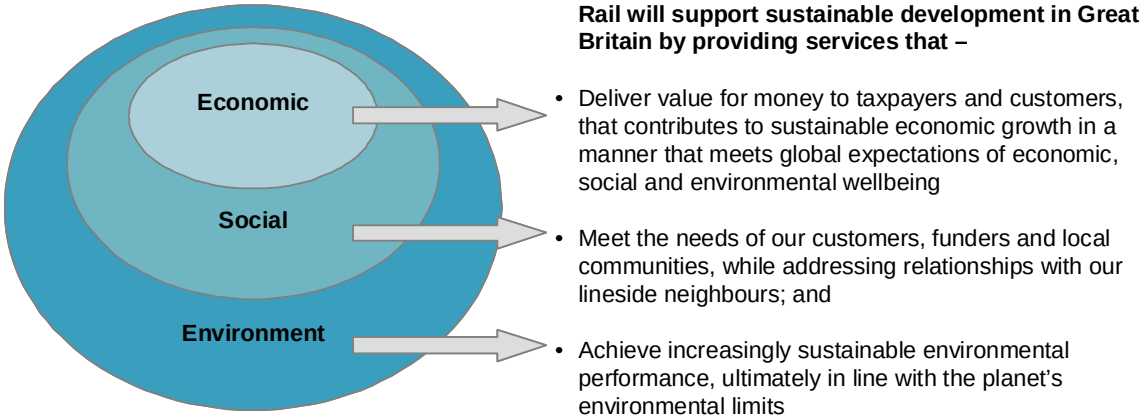
The users of rail freight range from industrial users such as power station and mine owners, through steel manufacturers, to shipping lines and (increasingly) logistics companies and retailers. The requirements for each customer are different, but all customers want a competitive price together with a reliable and consistent service. Increasingly, as society changes, customers are seeking train services which run across 6 or 7 days a week. The road network is available 24 hours a day, 7 days a week, and lorries can access it at all times. To be able to compete fully, rail must be able to offer an equivalent service.

In order for rail freight to continue to grow, therefore, the rail freight offering must continue to evolve. Road's inherent flexibility, coupled with assets that have a shorter life (which in turn enables new technologies to be adopted more easily and quickly) means rail has to become ever more efficient in order to compete effectively.

2.3 Sustainable development

The IIP is formed in the context of the recognition for sustainable development. The concept recognises the need for economic development to be underpinned by stable social and environmental performance.

Figure 4:



This IIP sets out the key outcomes the industry is seeking to deliver that will support its contribution to sustainable development. These proposals are a critical element of, but not a full plan towards, delivering a sustainable rail industry. Through the revenue the industry generates, its employees, the resources it uses, and the land it owns, the industry itself has a substantial impact on sustainable development across Great Britain. The industry must therefore work to address issues such as accessibility, climate change adaptation, waste impacts, managing the natural environment and ensuring fairness in the inclusion and diversity of employees.

The industry will only make a difference through implementing it and ensuring sustainability is about “how we do business”. This will be achieved by implementing the rail industry’s sustainable development principles:

Table 5:

Customer-driven: Embed a culture where dialogue with customers puts them at the very heart of the railway, and where they are able to make optimal travel and logistics choices
Putting rail in reach of people: Position rail as an inclusive, affordable and accessible transport system through the provision of information and accessible facilities
Providing an end to end journey: Work together with all transport modes to provide an integrated, accessible transport system.
Being an employer of choice: Respect, encourage and develop a diverse workforce, support its wellbeing and actively consider and address the challenges of the future global labour market
Reducing the industry’s environmental impact: Operate and improve the business in a way that minimises the negative impacts and maximises the benefits of the railway to the environment
Carbon smart: Pursue initiatives to achieve long term reductions in carbon emissions through improved energy efficiency, new technology and lower carbon power sources and facilitate modal shift, helping others make more carbon efficient journeys
Energy wise: Maximise rail’s energy efficiency for traction and non-traction use
Supporting the economy: Boost the productivity and competitiveness of Scotland, at a national and regional level, through the provision of efficient passenger and freight services and by facilitating agglomeration and catalysing economic regeneration
Optimising the railway: Maximise the rail system’s capability and build on its strengths to deliver a transport system that is efficient and offers good value for money
Being transparent: Promote a culture of open and accountable decision making and measure, monitor and report publicly on our progress toward sustainability.

2.4 Long term planning

It is important that the plan is resilient to potential changes in the natural, regulatory, financial and operational environments within which the railway operates. Long term planning is vital for the industry and its funders. The development of a clear long term vision enables efficient planning, facilitates efficient short to medium term investment decisions as well as ensuring an efficient and sustainable railway for future generations. Planning Oversight Group (POG) published in the Long Term Planning Framework a longer term vision that by 2035 rail will deliver:

- passenger satisfaction levels of at least 90 per cent

- capacity to accommodate approximately twice as many passengers as today, with reduced journey times, as well as better connectivity between services and between modes
- improvements in the product offer for freight customers resulting in higher user satisfaction and a significant increase in rail modal share
- levels of reliability and safety that are among the best in Europe
- a financially sustainable railway through improved efficiency and revenue generation
- a reduction in carbon dioxide emissions in support of national targets.

The industry has sought to develop the IIP with some understanding of the future uncertainties that the industry, and society more generally, faces. The industry has developed through the Network Route Utilisation Strategy (RUS) process a number of scenarios to help test the robustness of decisions and policies in the face of such uncertainties. These scenarios help the industry to understand what is within its control and what isn't. As such they can help in assessing the robustness of plans.

The Network RUS identified four scenarios on the basis of two factors viewed to be critical to rail demand (both passenger and freight) and sufficiently uncertain to justify scenario analysis. These were the degree to which sustainability will be pursued and the degree to which the UK participates further in global trade (or whether the economy becomes more decentralised). The scenarios were defined by cross-tabulation of these factors:

- "Global responsibility" (the UK as a global player with a sustainable agenda)
- "Continued profligacy" (UK as a global player with unabated consumption)
- "Local awareness" (a more decentralised economy with a sustainable agenda)
- "Insularity" (a more decentralised economy with unabated consumption).

The key factors that vary between these scenarios include the level of economic development, the degree to which the UK trades with other countries, social trends, energy prices and the degree to which each mode recovers its external costs (and consequently its competitiveness). Long term forecasts of long distance passenger and freight demand were developed for each of the scenarios. The level of demand varies considerably between the scenarios, and the pattern of demand shaped by the influence of the two key demand drivers of economic growth and sustainability.

Growth in passenger numbers is forecast on all long distance rail corridors in all four scenarios but particularly strong in the scenarios that reflected higher economic growth.

A sustainability agenda is beneficial to long distance rail, particularly in markets in which rail currently has low market share such as interurban routes towards the north of Scotland. In all scenarios passenger growth rates are higher on routes which have a higher proportion of business trips.

The thirty year growth rates for freight also vary considerably between the scenarios. The globalisation / decentralisation dichotomy has a great effect on the market for imported goods – which dominates the intermodal and Channel Tunnel market. Similarly, assumptions on the use of coal in the sustainability agenda have a direct impact on the amount of coal carried from ports to power stations.

The IIP has been developed primarily on the basis of a sustainable growth.

2.5 The railway today

This section sets out the railway as it is today, the demand and revenue it generates, how much it costs and the outputs it delivers.

The rail industry is a success in many respects. In 2010-11 the number of timetabled train km operated by ScotRail was about 42 million. And 90.1 per cent of ScotRail train services ran on time[6], an increase of more than 11 per cent since 2002-3.

In this context it is important to remember that the railway in Scotland is not solely the preserve of ScotRail, with around 25 per cent of train kms on the network driven by Anglo Scottish train operators and freight traffic. The funding transferred in 2005 as part of the devolution settlement means that Scottish Ministers fund the East Coast Main Line (ECML) and West Coast Main Line (WCML) in Scotland, key components in both connectivity for passengers and the logistics supply chain. Ministers have the ability to issue non-binding advice to Westminster Government on the outputs of cross-border passenger franchises, all of which will be renewed or remapped in CP5. This creates some potential challenges and opportunities in Scotland to optimise infrastructure funding and specification (a Scottish Government responsibility) and the train service specification/funding (a UK Government responsibility).

The freight market has also enjoyed strong growth. Across Great Britain there has been a 26 per cent increase in freight moved to 19 billion tonne kilometres per year since privatisation. Scotland has seen a similar level of growth, much on Anglo Scottish services.

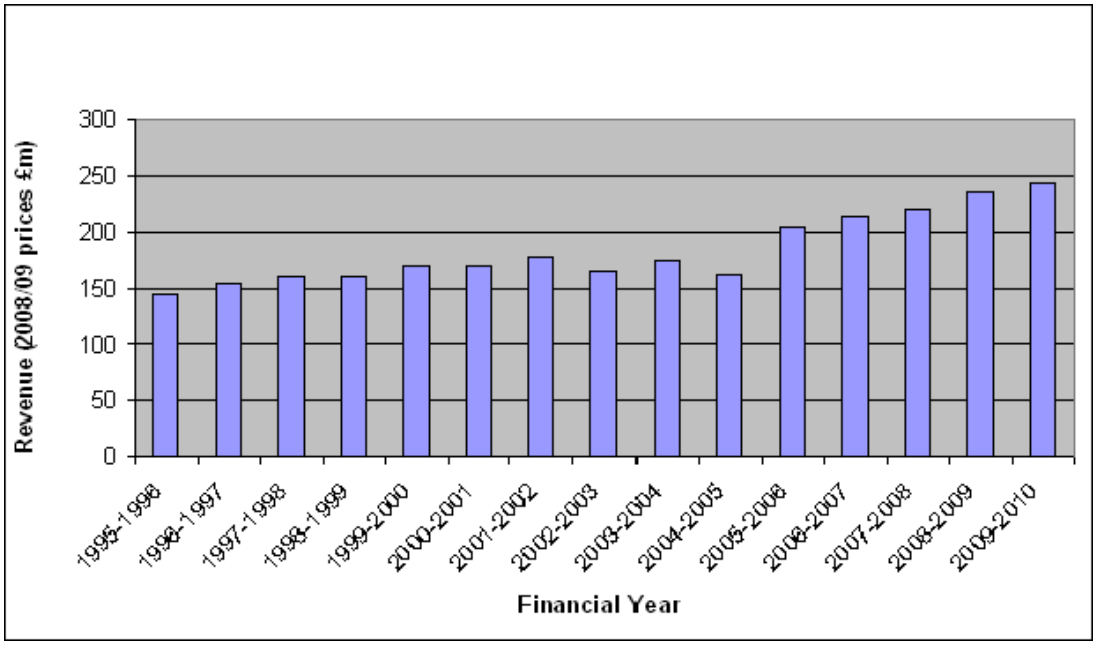
At the same time rail safety is at an all time high, significantly better than road and comparable with air transport. Train reliability has improved significantly since the Hatfield accident in 2000 and customer satisfaction has improved, with 86 per cent of ScotRail passengers[7] satisfied with their journey in spring 2011 slightly down on the all time high of 90 per cent largely as a result of worse performance during the particularly poor weather in 2010. Significant improvements have occurred in security at stations (where Closed Circuit Television (CCTV) has been installed in many cases) and train quality factors such as cleanliness and seating.

2.5.1 Demand and revenue

Strong economic growth and increasing road congestion has led to significant increases in patronage and revenue since privatisation. Since 1996/97 passenger rail revenue for the ScotRail franchise has increased by approximately 68 per cent[8] in real terms, driven by a significant increase in patronage and, in recent years, an increase in average yields following the move to RPI+1 per cent fares regulation.

[6] ORR National Rail Trends
[7] Passenger Focus National Passenger Survey Spring 2011
[8] Source: ScotRail Franchise accounts, adjusted for financial year

Graph 6: Adjusted ScotRail passenger revenue



Rail already has a strong share in certain markets, especially commuting in central major cities and, increasingly, other major cities, high speed and long distance travel and the movement of bulk freight and container traffic. Rail's share of journey to work within the Strathclyde area is one of the highest outside of London, reflecting the density of the rail network. In other markets, such as shorter distance freight and rural passenger, rail has a much weaker position than road (although, for example in rural areas, it does play a part in promoting social inclusion). This is seen in the travel to work data and general use of the railways which declines in the less urban parts of Scotland.

Table 7: Rail market by Scottish region

	Percentage of Employed adults who normally travel to work by rail	Percentage of adults that have used a train in the last month
Highlands & Islands	0.7	11.7
North-East	0.3	11
South-East	3.4	21.1
South-West	0.5	13.2
Strathclyde	6.5	32.8
Tayside & Central	1.9	17.3

Some of the growth experienced on Scotland's railways has been stimulated by investing in rail capacity, connectivity, and journey times, and some is simply a reflection of longer term strength of the economy and increased population in Scotland and the rest of Great Britain.

However, passenger growth has also been supported by underlying structural changes in the economy, employment and travel markets favouring rail. The strength of these underlying trends was most recently evident during the recession

when passenger kilometres in Great Britain continued to grow, albeit at a reduced rate, despite national economic output falling by greater than five per cent[9].

These underlying structural changes are set to continue, and coupled with a return to longer term trend rates of economic growth will drive continued growth in passenger demand. In the freight market, further growth in imports coupled with an increasing trend to containerised goods will drive longer term growth, particularly for longer distance flows.

Rail is best placed to respond to this growth, as the longer term trends in the market play to rail's core strength of moving large volumes of goods and passengers over long distances, between and into city centres, in a sustainable and efficient manner.

Indeed, the growth in demand for peak passenger rail services forecast in the IIP is a natural consequence of national and regional planning decisions already taken. For example, the need for additional capacity on the Edinburgh to Glasgow route was effectively embedded by the decision to develop areas and towns between the two cities[10].

In the freight market, the globalisation of trade is driving up the volume of goods entering via the UK's deep ports. The real choice is therefore not about whether to provide or not, but how best to provide. Sustainable options include rail and coastal shipping, with road haulage bringing various external disadvantages.

However, it is recognised that emerging technology could enable the rail industry to manage demand in new ways, for example through the use of smart ticketing, and these new solutions will naturally be considered in the planning process.

2.5.2 The cost of the railway

Infrastructure costs

Table 8 overleaf is a summary of Network Rail's expenditure in Scotland for the financial year ended 31 March 2010 (rebased to 2011/12 prices). The figures exclude income, corporation tax and all internal industry transfer payments, such as track access income and incentive regime payments.

[9] Scotland GVA figures
[10] Scotland Route Utilisation Strategy (Generation Two)

Table 8: Network Rail expenditure in Scotland 2009-10 (2011/12 prices)

Category	£million	%	Commentary
Operating Expenditure (less traction power for train operators)	136	17	The single largest element is staff costs. Other significant costs include office accommodation and insurance. Some costs are considered "non-controllable" including, business rates, British Transport Police costs and Office of Rail Regulation (ORR) fees. These represented one third of total operating expenditure.
Maintenance expenditure	99	13	The maintenance function employs nearly half of the total Network Rail headcount in four maintenance delivery units in Scotland (out of 40 across Great Britain) and a central unit. The single largest elements of headcount and expenditure are in track (40 per cent) and signalling (16 per cent).
Renewal expenditure	243	31	£62 million (26 per cent) was spent on track, £20 million (8 per cent) on signalling and £71 million (29 per cent) on structures including bridges and tunnels.
Enhancement expenditure	186	24	Most of this was spent on the new Airdrie to Bathgate route with completion works on the upgrade of the Glasgow to Kilmarnock line making up the bulk of the remainder.
Interest costs	119	15	Finance costs on existing loans, the government guarantee and the increase in value of index linked debt.
Total	**783**	**100**	

Half way through the five year Control Period 4 (CP4) Network Rail continues to reduce running costs and remains on target to achieve the challenging efficiency savings that it set out as part of the CP4 Delivery Plan in 2009.

Comparing Network Rail's efficiency

For Period Review 2008 (PR08), a key element of ORR's assessment of Network Rail's efficiency potential was based upon an econometric analysis commissioned from the Institute of Transport Studies (ITS) at University of Leeds. The ORR's econometric analysis uses the UIC's "Lasting Infrastructure Cost Benchmarking" (LICB) for 14 European rail infrastructure managers since 1996. The countries covered are the UK, Netherlands, Norway, Portugal, Finland, Sweden, Ireland, Belgium, Germany, Austria, Italy, Denmark and Switzerland.

Network Rail has been developing a better understanding of the benchmarking and econometric analysis. This has identified significant issues in establishing the actual efficiency gap between Network Rail and its comparators.

Comparing data is not straightforward. Network Rail has concerns about the completeness and consistency of the historical data in LICB. Major data inconsistencies remain around renewal and enhancement costs with the key leading countries, as well as in relation to maintenance versus renewal costs. Further work is required to address these definitional differences. Network Rail is actively engaged in the LICB project to promote further quality assurance of input data, clarification of cost definition and cost allocations, break down of expenditure by assets and

activities and then analysis by volume and unit costs, and detailed review of the major drivers for activity volumes and unit costs. This work has confirmed Network Rail's view that the scale of the gap identified by ORR has been overstated. At the same time however it has helped Network Rail to identify areas where it can improve efficiency as well as areas where it represents best practice. Network Rail is also clear that if the size of the gap is less than previously thought to be the case this does not necessarily reduce the scope for improvements in efficiency since the benchmarks provided by other railways should not represent the limits of the company's ambition and it believes there is significant scope for improvement.

Network Rail is working with its partners from the European Rail Infrastructure Managers (EIM) to exchange best practice in asset management and to explore opportunities to improve econometric analysis across the European rail network.

Network Rail has identified issues concerning econometric modelling including data comparability, purchasing power parity, steady state adjustment, elasticity of the structural factors considered, the time dimension in the model and some of the omitted variables. Network Rail will continue to work with ORR/ITS on the development of the econometric models used.

Network Rail believes that benchmarking provides a helpful approach to assist it in developing its efficiency plans and in supporting effective regulation. Network Rail remains committed to learning from other railways and similar businesses and is currently engaged in an extensive benchmarking project.

Train operating costs

Table 9 shows approximate train operating costs in Scotland in 2009-10. These include all train operating costs relating to the ScotRail franchise funded by Transport Scotland, and exclude the costs of the Anglo Scottish operators. The figures in table 9 exclude all internal transfer payments, such as track access charges and receipts through the performance and possessions regimes, and profit.

Table 9: ScotRail Franchise operating costs 2009-10 (2011/12 prices) [11]

Category	£million	%	Commentary
Rolling stock	137	33%	Rolling stock costs cover train leasing and maintenance expenditure. These costs reflect a number of factors, principally the level of output specified in the timetable.
Staff	157	38%	Staff costs include both operational and management / administrative staff. Operational staff include train drivers, other on-train staff, station staff (including those required to resource the ticket office network), plus other train production and maintenance staff. Operational staff costs account for around 90% of all train operator staff costs, and reflect a number of factors including the level of output specified by funders.
Traction fuel	44	11%	In the short-term the cost of traction fuel is determined by the timetable and input prices. Longer term costs will reflect other factors including improvements in vehicle fuel efficiency, the relative mix of electric and diesel services, and the unit cost of diesel and electric current for traction (EC4T)
Other	72	18%	Other costs relate to a range of activities including the head office function, and include costs such as back office networks, utilities, information technology (IT), and marketing. Some of these costs are fixed in relation to the train service specification.
Total	**410**	**100%**	

Freight

Freight traffic makes up a small but important part of the railway. Freight traffic accounts for about seven per cent of traffic on the Scottish network measured in train kilometres. It operates commercially and only receives limited grant support from government to encourage modal shift from road to rail. Apart from some small exceptions, it pays only variable track access charges and does not contribute to the fixed cost of the railway, except on freight-only lines. Open access passenger operators such as the regular Jacobite steam hauled service on the West Highland Line, under European Union (EU) Directives, also pay only variable track access charges.

2.5.3 Train utilisation

The recent Department for Transport (DfT)/ORR sponsored Rail Value for Money (RVfM) Study compared “train utilisation” (i.e. average train passenger loadings) between Great Britain and other European railways. This analysis provides a valid challenge to the industry, and the industry is currently undertaking further work in this area to better understand:

- whether or not the comparative measure suggested by the RVfM study is appropriate to achieving best value, or if some other measure would be more useful
- if there are market or structural issues causing this outcome
- the degree to which franchise specification contributes to the outcome

[11] Other passenger and freight operators’ costs are excluded from this table

- if it is actually open to influence, and if so over what timescale.

Industry's initial analysis in this area is summarised below.

Utilisation metrics

There are a number of metrics that can be used to measure resource utilisation, each focusing on different aspects of efficiency and hence on different elements of the industry's costs. Some of the key metrics are:

- average vehicle loadings (i.e. Passenger kilometres per vehicle kilometre), which focuses on the efficient use of vehicle capacity, and hence on vehicle-related operating costs such as fuel and variable maintenance costs (both train and network)
- average train loadings (i.e. Passenger kilometres per train kilometre), the measure used in the RVfM study. This focuses on the efficient use of train capacity, and hence on train related operating costs such as traincrew. At times and places where the network is capacity constrained, it is also a measure of the efficient use of network capacity
- fleet utilisation (i.e. Average kilometres run per year by each vehicle in the fleet). This focuses on the use of the rolling stock fleet, and on what return the industry gets from the large fixed cost that this represents.

It is helpful to consider these metrics together, as many decisions are in effect trade offs between them.

External influences on utilisation

As the RVfM study noted, the resource utilisation of different rail networks is influenced by factors external to the rail industry, and in particular by aspects of economic geography such as:

- the extent to which population, and employment, are concentrated in the main cities
- whether there is one dominant city
- distances between the main cities
- the role of suburbs relative to city centres, including typical commuting distances.

Such differences can be seen within Scotland. For example, on longer distance services, average loadings tend to be higher on services with substantial end-to-end demand (e.g. Edinburgh – Glasgow) than on services with a more intermediate demand profile profile (e.g. Glasgow – Aberdeen via Stirling, Perth and Dundee). Some rural routes have very low levels of passenger demand. For example the average loading between Girvan and Stranraer is only 11 passengers per train (2009/10 figures) and this is likely to reduce further with the closure of the Stranraer Ferry Terminal towards the end of 2011.

Additionally in Scotland, many rail services are specified mainly for social inclusion reasons (e.g. to connect remote communities and to provide access to employment), and this also affects train utilisation.

The industry is commissioning work to deepen its understanding of the differences in resource utilisation between European countries, including differences in economic geography and their implications.

Industry decisions & improving value for money

Although it can be helpful to understand external influences on utilisation, and to make comparisons with other networks, the key question is: how can we improve the value for money of Scotland's railway but still provide the services that are important to Scottish Ministers. In considering this, it is helpful to divide services into four broad categories: the commuter peak; the off-peak; longer distance (mainly) yield-managed services; and the "social railway".

The commuter peak

Most of the railway in Scotland is peak driven; its resource base (trains and infrastructure) is determined by the need to accommodate peak demand. This is the case not just for the central belt and regional urban services, but to some extent for many interurban services that help to serve the peak.

There are currently numerous examples where train utilisation is already optimised in Scotland, e.g. the structure of the West Highland timetable allows for the rolling stock to be available to support the peak periods into / out of Glasgow Queen Street on other routes, either before or after working services on the West Highland routes.

Improving value for money in the peak is about maximising resource utilisation, thus minimising the resource base. The key issues here are:

- maximising vehicle loadings by matching capacity to demand as closely as possible. The issue here is not so much loadings on the approaches to terminal stations (which are generally high), but the gradual build up of demand along many routes, which means that vehicles are less than fully loaded for much of their journey. On such routes, the main way to improve utilisation is to start services at a number of intermediate locations along the route, which generally requires infrastructure such as turnback sidings and crossovers. The industry is investing in such infrastructure in CP4 where it is justified by the savings in rolling stock (e.g. at Irvine) and further such investment is proposed for CP5 (e.g. at Milngavie and Newton)

- running trains at the optimum length for the service that is provided. Where demand increases, seek to vary the calling patterns to match the demand with the provided capacity, rather than extending the length of the train

- providing some of the peak rolling stock capacity with more cost effective rolling stock, e.g. older stock that is used for 'peak busting' only

- enhancing the depot facilities, and provision of facilities at out-stabling locations to enable minor repairs to be carried out (which would reduce the requirement to run trains to the depot for repair), which in turn, will release additional rolling stock from the fleet to be available for traffic purposes.

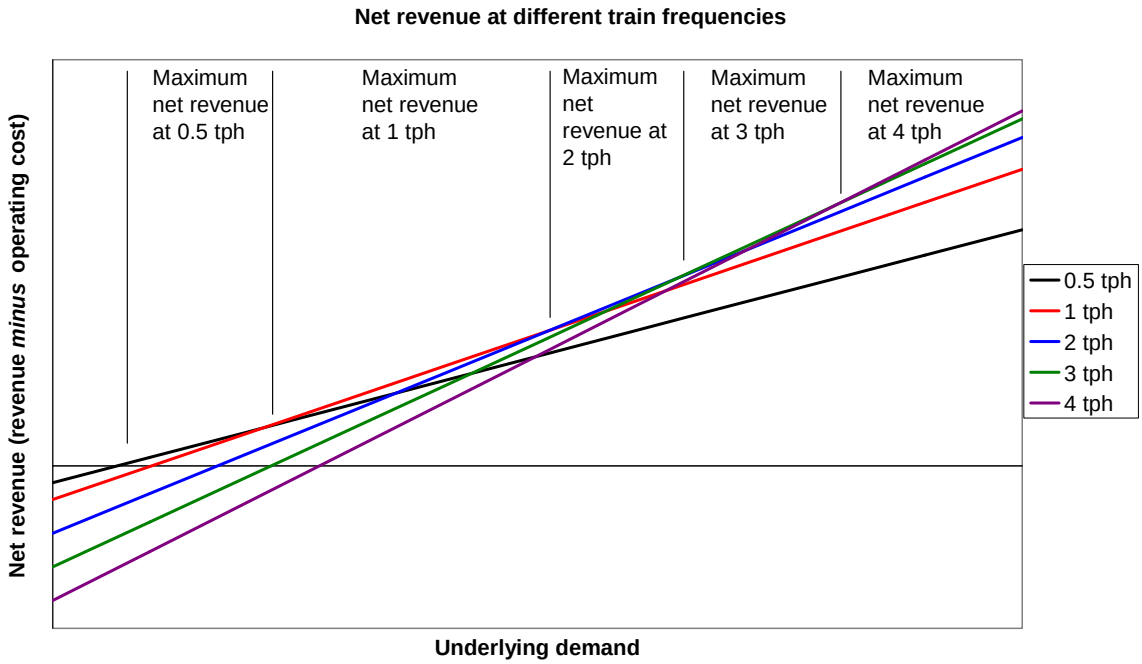
The off-peak railway

In the off-peak, the cost of leasing the train fleet is a sunk cost. The frequency of off-peak services is thus a trade off between the extra revenue generated by more frequent services, and the marginal costs of using rolling stock (principally fuel,

maintenance and traincrew – although at least some traincrew time is effectively paid for by the need to resource peak services)[12].

This trade off is illustrated in the chart below, which shows how net revenue (i.e. Revenue minus operating cost) varies with train frequency and the level of underlying demand. The key point is that, in some circumstances, higher frequency off-peak services generate net revenue for the industry, even if average loadings are reduced as a result.

Chart 10: Net revenue at different train frequencies



The details of this trade off will vary significantly between routes in Scotland, depending on the market, rolling stock and other factors. However, illustrative modelling of London & South East off-peak services[13] suggests that:

- On outer suburban services, a 2 trains per hour (tph) service generates net revenue (compared to a 1 tph service) if it attracts average loadings of the order of 80-100 passengers per train
- On inner suburban services, where passenger journeys are shorter and hence frequency is more important in generating demand, a 4 tph service generates net revenue (compared to a 3 tph service) if it attracts loadings of the order of 50-60 passengers per train
- Even if train loadings are significantly below break-even point, higher service frequencies can still represent high value for money in terms of the benefits to users and reduced road congestion.

[12] The trade off can also be put in terms of resource utilisation. Running more frequent off-peak services may reduce average loadings (thus getting a lower return on vehicle operating cost), but will improve fleet utilisation (thus improving the return on vehicle leasing costs).
[13] Assuming 4-car Electric Multiple Units, Driver Only Operation (DOO) operation, and using typical RUS appraisal assumptions

It is of course important that off-peak train lengths should be matched to demand as far as practicable; higher train loadings are needed to justify longer trains.

Many off-peak services in Scotland are formed of 2 or 3-car units and so break even, or represent good value for money, on lower loadings than those quoted above.

The yield-managed railway
Many long distance services (particularly, but not exclusively, those operating Anglo Scottish services), while helping to serve commuter peaks, are primarily yield-managed. Operators aim to maximise revenue by using yield management techniques such as pricing, advance purchase discounts and ticket restrictions; the main constraints on this are requirements such as regulated fares, prescribed first and last services, etc. For these services, although increasing average loadings is clearly desirable, revenue per vehicle-mile (or revenue per vehicle in the fleet) is perhaps a better measure of overall efficiency.

The social railway
Many rail services in Scotland are provided mainly for socio-economic reasons; to connect communities, and give those without access to a car access to employment and other activities. Such services are consciously subsidised. The key factors in improving resource utilisation are:

- improved construction of the timetable to allow some of these services or resources to be used to meet demand or overcrowding
- matching train length to demand – in practice often meaning the use of 2-car trains
- efficient diagramming of rolling stock: the timetables of many services are dictated as much by this as by market requirements.

2.5.4 Stations.
There are currently about 340 stations in Scotland ranging from major city centre terminals to rural wayside halts. Similarly annual passenger usage of these stations ranges from over 26 million at Glasgow Central to less than 100 at Breich. Most stations in Scotland are operated by ScotRail, with the exception of Glasgow Central and Edinburgh Waverley which are operated directly by Network Rail and Dunbar which is operated by East Coast Trains.

Analysis of the latest passenger usage statistics, indicate that 22 stations were used by less than 1000 passengers in 2009/10[14]. Train services at these stations range from 2 per day to 8 per day which means that the average number of passengers per train at these stations ranges from 0.08 to 1.3. Table 11 gives an indication of this usage.

[14] Figure based on ticket sales in some circumstance the stations could be used by passengers purchasing tickets for travel from other destinations.

Table 11: Scottish Low Footfall Stations

Station	Footfall 2009/10	Station calls per day	Station calls (Sunday)	Station calls per annum	Passengers per station call
Barry Links	90	2	0	620	0.15
Breich	116	2	0	620	0.19
Altnabreac	156	6	2	1970	0.08
Scotscalder	184	6	2	1970	0.09
Golf Street	190	2	0	620	0.31
Achanalt	202	8	3 (average)	2636	0.08
Falls of Cruachan	204	6 (Summer only)	7 (average) (Summer only)	1082	0.19
Kildonan	204	8	2	2584	0.08
Locheilside	268	8	6	2792	0.09
Beasdale	272	8	6	2792	0.10
Invershin	282	8	2	2584	0.11
Lochluichart	392	8	3 (average)	2636	0.15
Duncraig	394	8	3 (average)	2636	0.15
Kinbrace	410	7	2	2274	0.18
Attadale	478	8	3 (average)	2636	0.18
Dunrobin Castle	488	5 (Summer only)	1 (Summer only)	776	0.63
Loch Eil Outward Bound	548	8	6	2792	0.20
Duirinish	620	8	3 (average)	2636	0.23
Achnashellach	778	8	3 (average)	2636	0.30
Balmossie	804	2	0	620	1.30
Springfield	860	5	0	1550	0.55
Stromeferry	1064	8	3 (average)	2636	0.40

The cost of each station includes the following elements:

- The cost of stopping trains – this includes fuel and maintenance
- The cost of cleaning, lighting and day-to-day maintenance
- The lost revenue from extending journey times for trains calling
- The cost of renewing the stations.

In these low footfall stations the passenger revenue at these stations is often insufficient to cover even the cost of stopping trains.

2.5.5 The outputs of today's railway

Safety

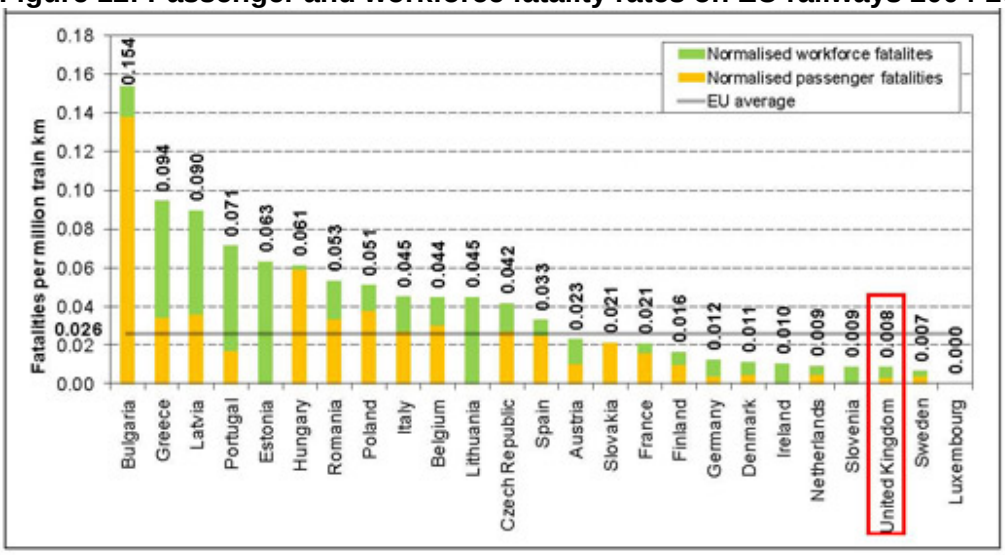
Rail Safety is a reserved matter with policy and guidance being provided at a Great Britain network level. The information in this section, therefore, relates to the whole of Great Britain

Rail continues to be one of the safest forms of transport. Serious train accidents are rare. There were no passenger or workforce fatalities in train accidents in 2010/11. This is the fourth year in succession of no such fatalities. There were also no fatalities to members of the public in train accidents.

Sadly eight passengers died in separate incidents last year, all at stations, four of which were as a consequence of falling from a platform. There was one workforce fatality when an infrastructure worker died after falling from a height. There were 31 fatalities to members of the public, 27 of which were trespassers and four were pedestrians at level crossings.

Safety on the UK's railways compares favourably with other EU countries. Passenger and workforce fatality rates in the UK were well below the EU average over the six-year period 2004-2009. The countries with similar rates to the UK include Germany, the Netherlands and Scandinavian countries.

Figure 12: Passenger and workforce fatality rates on EU railways 2004-2009



Source: ORR Health and Safety Report 2011

Clearly any fatality is a tragedy and the industry strives continuously to minimise such incidents. A key focus for the industry is to improve its safety culture and the way safety is managed in the workplace, developing the attitudes, beliefs, perceptions and values that employees share in relation to safety when doing their job. A strong safety culture is key to moving the industry and the organisations within it beyond a compliance-driven approach. Network Rail has embarked on a major leadership and culture change programme in recognition of this. As part of this initiative Network Rail has adopted the Rail Management Maturity Model to help identify and evaluate the effectiveness of its approach to safety management.

The IIP includes specific proposals to reduce risk at level crossings during CP5, continuing the implementation of a 10 year plan that started in CP4. The objective is to reduce level crossing risk by a minimum of 50 per cent by the end of CP5.

The Passenger Safety Indicator is currently well ahead of target and Network Rail is on course to meet its CP4 target. The Fatalities and Weighted Injuries measure, which measures workforce safety, is currently behind target, although it is now improving. Issues relating to RIDDOR[15] reporting highlighted last year acted as a reminder of the importance of a constant focus on safety and the importance of the safety culture of an organisation. Since last year, Network Rail has been working with

[15] The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995

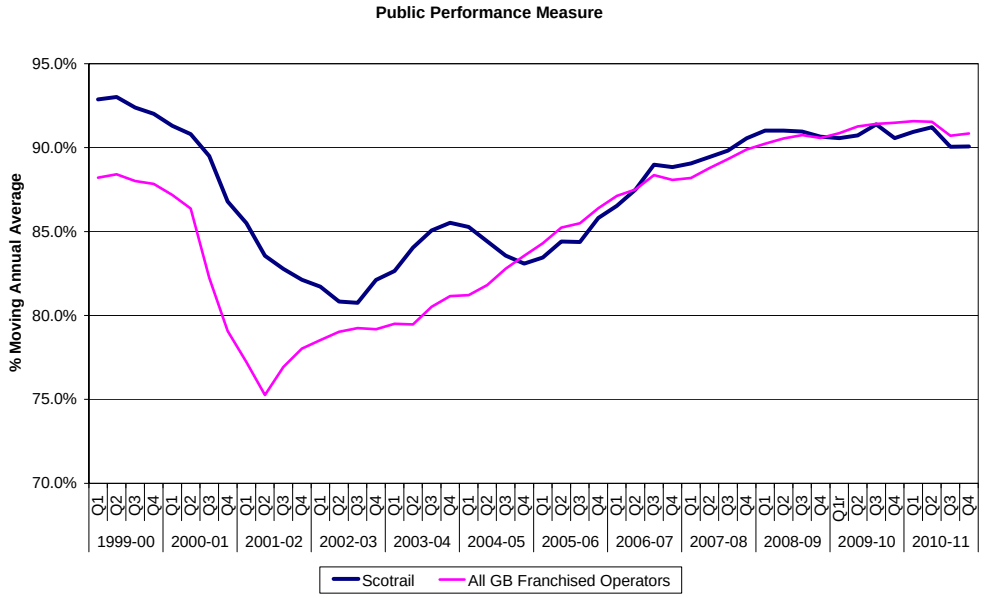
ORR to develop a joint understanding of the improvements needed to achieve excellence in safety management. Network Rail are developing a safety leadership and culture change programme, which will be led by a cross-industry team. The aim is to develop an environment of zero harm, developing a safety culture through focusing on the psychological, behavioural and situational aspects of safety.

In Scotland Network Rail has closed 25 level crossings since 2009 and have agreements in place to close 16 more. Network Rail is proposing options in CP5 to reduce risks at levels crossings even further.

Performance

The graph below illustrates the significant improvement in train reliability since the Hatfield accident in 2000.

Figure 13: Public Performance Measure (National) 1999-2011



In 2009 Network Rail participated in the “Perform” project. The objective was to benchmark train punctuality of European railways including France, Italy, Switzerland, Germany, the Netherlands, Belgium, Finland and Sweden.

Of the 11 countries participating in the study British train performance was better than seven, more or less the same as two and worse than two.

Recent train performance has been challenging, with exceptionally severe winter conditions having a major impact on performance. Low temperatures over an extended period and much higher levels of snowfall than seasonal norms resulted in significant disruption on the network and a number of days when it was not possible to deliver the timetable. The industry has identified and is implementing proposals to improve infrastructure and systems reliability through infrastructure / component design and also improving how the industry prepares for and responds to periods of extreme weather in order to minimise the impact on the operation of the railway.

Achieving the regulatory obligations for the rest of CP4 remains a key challenge for Network Rail and it has provided further detail to ORR on its plans to improve the underlying performance of the infrastructure. The regulatory target for freight services (delay per 100 train kilometres) has been missed in the last two years. Network Rail

and its freight customers are reviewing the appropriateness of this measure and will be making a proposal to ORR shortly.

The industry also recognises the importance of good quality and timely information for passengers particularly during disruption to service. The rail industry is examining ways to use the significant changes in communications technology to continue to improve information delivery to its customers. The industry recognises the current level of dissatisfaction with passenger information during disruption must be addressed as a priority.

Network Availability

For CP4, Network Rail is delivering outputs for measures that are linked to possession disruption. The possession disruption index for passenger (PDI-P) measures the level of disruption to passenger services weighted by passenger volumes and values of time based on when possessions take place. The possessions disruption index for freight (PDI-F) is a similar measure, weighted by the number of freight movements. In CP4, these are only formally measured at Great Britain level.

The end of CP4 outputs for network availability are a 37 per cent improvement in the Possession Disruption Index for passenger services against the 2007/8 base, with PDI-P reducing from 1.02 to 0.63. The index for freight services (PDI-F) must not increase above 1.0.

The table below highlights the output levels that must be achieved at the end of each year.

Table 14: Passenger Disruption Index Output trajectories

Passenger Disruption Index Output trajectories					
Possessions disruption index	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**
Passenger	1.02	0.91	0.83	0.68	0.63
Freight	1.00	1.00	1.00	1.00	1.00

In addition to the PDI indicators, Network Rail has developed a number of supporting network availability measures to help manage delivery of the PDI outputs. A Possession Indicator Report is produced and circulated to the industry every period.

In addition to the regulated outputs, industry discussions at the start of CP4 led to the development of the Route Categorisation principles. A number of key passenger and freight flows have been prioritised for extra focus. For these passenger flows, unless exceptional circumstances make it impractical, the following applies between the originating and terminating stations and between ‘primary intermediate stations’ on a route:

- passengers will not be transferred onto buses
- diversions away from a train’s normal route will not increase passengers’ planned journeys times by more than 25 per cent.

Within Scotland the Edinburgh to Glasgow flow has been identified as a key flow together with the Anglo Scottish flows from Edinburgh and Glasgow to London.

For identified freight flows a fit for purpose alternative route is to be available, unless there is no practical alternative (correct gauge, suitable route availability (RA) and journey times extensions.)

Joint Network Availability Plans

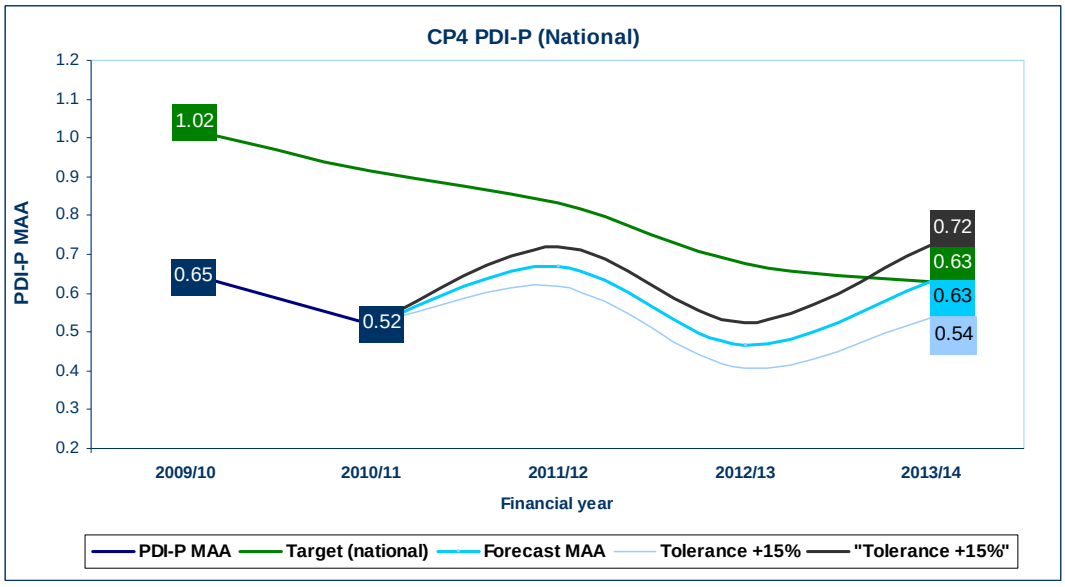
ScotRail and Network Rail have worked closely to improve network availability and a Joint Network Availability Plan (JNAP) has been developed to support local delivery. Similar JNAPs have been developed with other passenger operators. The purpose of JNAPs is to inform the development of future access plans. They identify specific plans for improving network availability for customers. Importantly, they enable Network Rail to check that it has a current view of the needs and aspirations of customers.

A single Great Britain wide freight JNAP has been produced, with the support of freight operators, and focused on the strategic freight flows that were identified through Route Categorisation.

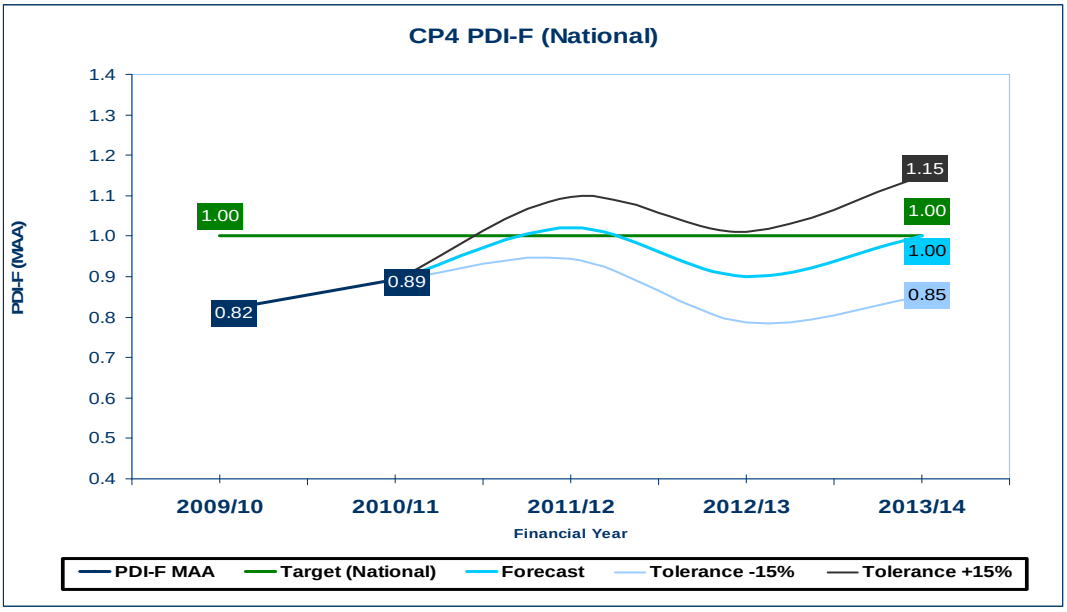
Delivery to date in Control Period 4

Network Rail has been outperforming the regulated Great Britain targets for PDI-P and PDI-F (there are currently no specific Scottish PDI targets). As at the end of July 2011, the PDI-P stood at 0.45 against the CP4 end target of 0.63, and the PDI-F stood at 0.89, against a target of 1.0.

Graph 15: Control Period 4 Possessions Disruption Index – Passenger (National)



Graph 16: Control Period 4 Possessions Disruption Index – Freight (National)



The results for the PDIs to date reflect both a reduction in the amount of disruptive access and the effects of reprofiling renewals and enhancement activity to the later years of CP4. This reprofiling of works is forecast to exert upward pressure on the PDIs in the final year of the control period, although Network Rail still expects to meet the regulated outputs at the end of CP4.

Plans for Control Period 5

The industry is developing an access strategy for CP5 based on the following principles:

- aligning customer demand and access strategies: Where demand for rail services can be demonstrated to be suppressed or latent as a result of the patterns of access used to maintain or renew the infrastructure the industry shall seek to efficiently and effectively improve delivery methods and patterns

- investing in technology: Where sufficiently strong business cases are shown to exist then these will support the continued development of, and investment in, technological solutions to underpin the moves towards less disruption to train operators

- delivering major enhancements: Where major enhancements are undertaken the development of access strategies will be determined through balancing the continued provision of services to customers during construction, the timeliness of implementation and the cost of delivery.

Route Network Availability Strategies

In line with the devolution of Network Rail, a Route Network Availability Strategy (RNAS) will be developed jointly with customers covering the whole of Scotland. The RNAS will:

- identify key traffic flows for train operators: These key flows will build on the route categorisation approach adopted in CP4 and be tailored to meet the business needs of the routes' customers. The planning of availability on the key flows will be specified so as to specify disruption to best meet the market need on that flow. This may include, but should not be limited to the rules adopted by Route Categorisation:
    - unless no reasonable alternative exists flows will be kept on rail, on their primary route
    - where necessary reasonable diversionary options will be identified.
- define further availability improvements: Where a business case exists further commitments to reduce the duration of standard maintenance and renewals activities during CP5 will be made. This will enable customers to unlock further market opportunities where the benefits of doing so are not outweighed by any costs necessary to facilitate the improvement
- define significant exceptions: The strategy will show those programmes of major work that will require significant disruptive access durations in CP5. Examples of works that may require such access are network enhancements, bridge reconstructions and complex switch and crossing renewals.

Other non-standard locations will also be identified where the balance between industry costs and customer requirements is such that an alternative approach to availability is appropriate – e.g. an annual, week long blockade of a branch line to facilitate all works requiring disruptive access.

A Great Britain availability strategy would also be developed to provide assurance that inter route flows were protected - e.g. freight flows, Anglo Scottish traffic.

Proposals for joint working between routes and operators

The RNAS will be developed through workshops with train operators. The strategies will be aligned with the Route Asset Management Plans and work delivery methods. It is anticipated that any additional costs for work delivery arising from the RNAS will be included in Network Rail's Strategic Business Plan (SBP).

JNAPs will then be agreed with each train operators on an annual basis to support the detailed implementation of the RNAS. The use of JNAPs will have matured by the end of CP4, in line with the devolution agenda and closer joint working with train operators. JNAPs should be a central feature of how the industry plans access and delivers improvements in network availability for train operators in CP5.

Capacity

Passengers experience crowding on Scottish services primarily in the peaks. The franchise agreement requires ScotRail to take appropriate action to mitigate crowding where standing is in excess of 10 minutes. Nevertheless in some cases this is not possible and in response to growth, a significant amount of investment has taken place during CP4 with further investment committed into CP5 to relieve current

crowding and provide capacity for future growth across all sectors. In CP4 improvements have been delivered on the following routes:

- Glasgow/Kilmarnock (capacity and more frequent and longer trains)
- Airdrie/Bathgate (new route with enhanced capacity between Bathgate and Edinburgh
- Ayrshire/Inverclyde platform extensions to permit Class 380 operation in seven car formations
- rolling stock cascade following the introduction of Class 380s to provide additional peak capacity on routes such as the Argyle Line.

Demand is forecast to continue to grow and will mean that some more standing will be experienced across the network.

Carbon

As can be seen from the table below, rail is already a low carbon transport mode[16].

Table 17: Carbon Efficiency Table

Passenger mode	gCO_2 per passenger km
National rail	53.4
Underground	73.1
Light rail / tram	71
Cars	127
Bus	147.5
Coach	30
Domestic aviation	163.1

Freight mode	gCO_2 per tonne km
Rail	28.5
Heavy Goods Vehicles	127.2
Light Van	537
Domestic Aviation	1,737.7

The Scottish Government has set a target to reduce its greenhouse gas emissions from 1990 levels by at least 80 per cent by 2050, with an interim reduction target of 42 per cent by 2020 (UK target is 34 per cent by 2020) as transport is a major, and growing, contributor to UK's carbon footprint. The rail industry needs to deliver significant carbon savings if it is to play its full part in the transformation to a low carbon economy and maintain its modal comparative advantage.

In addition, expected increases in energy prices over CP5 and beyond mean that this focus will become increasingly important from a financial as well as environmental perspective. Currently energy accounts for approximately four per cent of overall industry costs. Using DECC's central price scenario and assuming no further progress on energy efficiency, meeting demand for rail services based on today's railway is predicted to result in an increase to nearly £16 million per annum (up 36 per cent) on traction energy alone, from a 2009/10 baseline, by the end of CP5. Industry consumption of energy for non-traction purposes, though less well understood as a whole, would account for a significant additional cost.

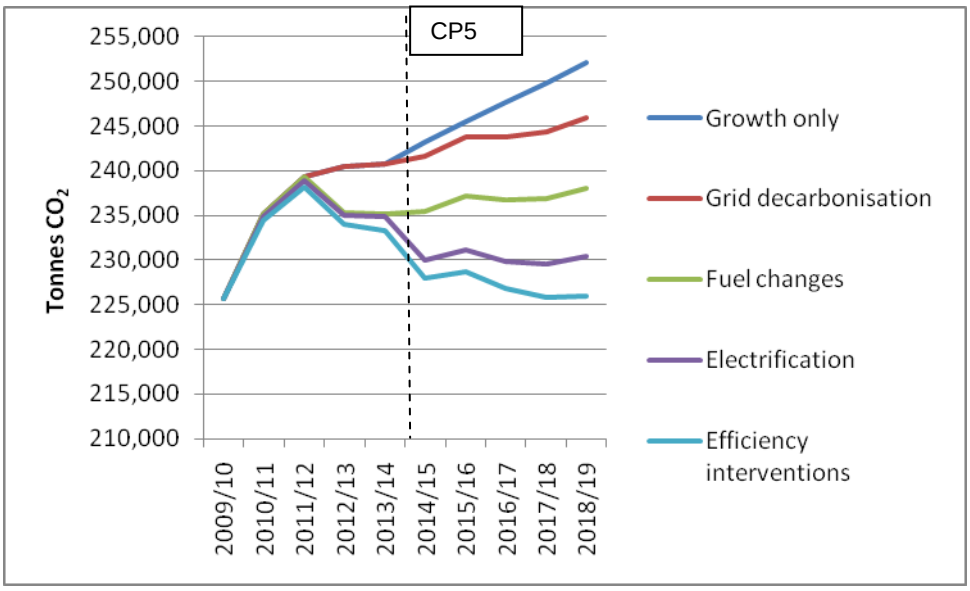
[16] *From August 2011 Guidelines to Defra/DECC's Greenhouse Gas Conversion Factors for Company Reporting. Emission factors quoted are 'Direct CO_2' for comparison with forecasts. Figure for cars adjusted for an average occupancy rate of 1.6 based on Transport Statistics Great Britain 2010.*

The industry recognises this and is clear that there is significant scope to reduce carbon emissions further both in the short and longer term.

Traction carbon

The graph below illustrates the expected trajectory in traction carbon emissions from rail services through to the end of CP5 as reported in the current UK Railway.

Graph 18 – Today's railway traction carbon emissions 2009/10 – 2018/19



The trajectory highlights that today's railway can deliver significant carbon efficiencies. A negligible increase in emissions (less than one per cent) is expected by the end of CP5, this is in the context of significant growth. As a result, carbon efficiency improves from 70.1 to 50.6 gCO_2 per passenger km and 27.2 to 25.8 gCO_2 per net freight tonne km.

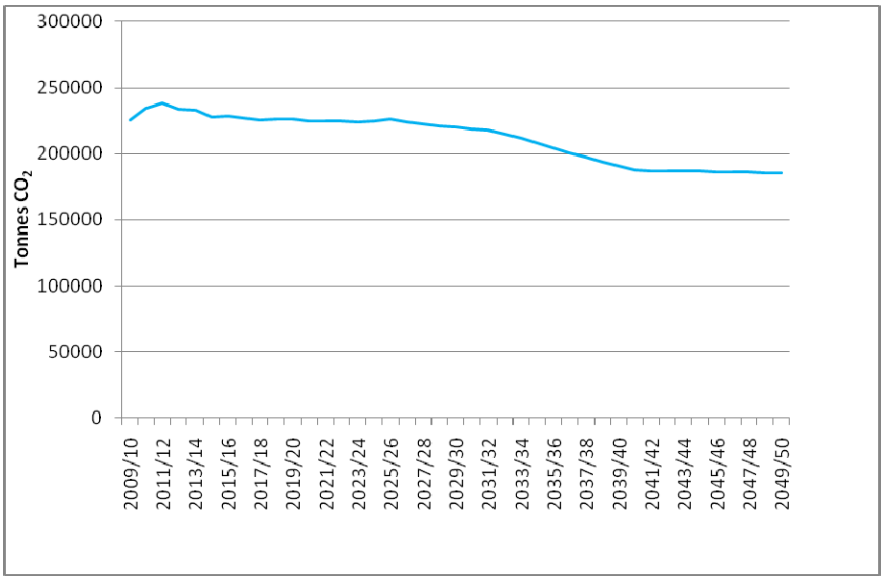
This is in part reliant on improvements outside the control of the rail industry. In particular the expected reduction in the carbon intensity of UK grid electricity, as well as reductions in the carbon intensity of diesel used by the rail industry, will deliver over half the expected improvements beyond the business as usual trajectory.

The industry is also committed to delivering significant improvements through its own actions. In particular; plans to electrify parts of the network through the Edinburgh Glasgow Improvement Programme (EGIP) will reduce carbon emissions and deliver increasing benefits as grid electricity becomes less carbon intensive in the future.

Furthermore it is clear that there are also significant opportunities for financially positive energy efficiency measures to be taken across the network. A conservative view of these is included in this trajectory. Delivering on these initiatives is doubly important as they will reduce the overall energy bill of the industry as well as its carbon footprint, highlighting the railway's commitment to lower carbon and lower cost.

The graph below illustrates the expected trajectory in traction carbon emissions from rail services to 2050 in today's railway.

Graph 19 – Today's railway traction carbon emissions 2009/10 – 2049/50



In this longer term view substantial carbon emission reductions are expected such that traction emissions could reduce by about 18 per cent. Much of this is driven by the transition to lower carbon electricity generation. However, in the context of Scottish Government's commitment to a reduction in national carbon emissions, today's railway may not deliver a sufficient improvement in emissions. To play its full part in delivering this target, the industry needs to commit to a long term, rolling programme of electrification, combined with continued focus on energy and carbon efficiency.

Non-Traction carbon

Non-traction carbon accounts for around 20 per cent of rail's direct carbon footprint. Stations, depots and train control systems are considered to be key contributors to these emissions. Non-traction energy will face similar rises in energy prices, with an additional levy for many rail industry organisations through the Carbon Reduction Commitment Energy Efficiency Scheme.

There is currently a lack of understanding around the future savings potential and key drivers in this area. One of the key issues is the lack of clarity with respect to energy flows, specific amounts used and by whom and who is responsible for managing and paying for this. This needs to be addressed. A substantial proportion of the key assets fall within Network Rail's operational responsibilities and Network Rail has stated that this is an area for particular focus.

3. Value for money

3.1. Introduction

The Rail Value for Money (RVfM) study was sponsored by the Department for Transport (DfT) and Office of Rail Regulation (ORR) and reported in 2011. It laid down a challenge to the industry to reduce its costs by 20 – 30 per cent by 2019. Improving the efficiency of the rail industry across Great Britain will give the funders and stakeholders of the industry the confidence to invest in its future and enable the industry to embrace the growth potential set out in the market analysis in the following chapters. Most of this is equally applicable to the whole rail industry in Great Britain although some elements will be less applicable in Scotland.

The industry is determined to take up the challenge posed by the RVfM study to improve cost efficiency. It is already developing proposals to tackle costs and develop greater partnerships between train operators, Network Rail and their supply chains. The Rail Delivery Group (RDG) will take ownership of key cross-industry initiatives that cannot be delivered without collective action across the industry. This Initial Industry Plan (IIP) identifies the impact of such cost savings on industry affordability and what action is required from funders and the ORR to enable this. Change and collaboration is required by all parties involved in the specification and delivery of the rail system.

The IIP explains how the different parts of the industry are embracing the need to improve the efficiency of the railway and describes the priorities and plans of the RDG. The IIP shows the quantum of savings that the industry hopes to achieve and the dependencies and permissions necessary to achieve those savings.

There are number of enablers to change that need to be put in place by those outside the industry, especially Government. The IIP sets out these enablers and highlights the priorities which RDG has indentified for addressing cross-industry barriers to improved value for money.

3.2. The efficiency opportunity

The publication of the RVfM study report was a timely reminder that despite the significant growth enjoyed by Britain's railways the industry needs constantly to be focused on reducing its costs. The report highlighted many achievements of the railway including growth in passenger and freight markets, continued improvement in safety, increasing customer satisfaction, improved operational performance and significant investment.

Despite these successes the study concluded that the cost of Britain's railway was higher than European counterparts and also higher than might have been expected if the railway industry had matched the performance of other regulated and privatised industries. The study acknowledged that some of the differences in cost might be systemic and not capable of elimination but still made the point that efficiency improvement of 30 per cent by the end of Control Period 5 (CP5) in 2019 should be achievable.

The RVfM study reported that the cost of the rail industry in Great Britain in 2009/10 at 2009/10 prices was £12.7 billion as shown in Table 20.

Table 20: Total money flows in GB rail 2009/10[17]

Organisation	*Cost (£biillion)*
Network Rail	5.6
Franchised train operators (own costs)	4.4
Rolling stock companies (ROSCO) charges	1.4
Freight operators	0.7
Projects	0.5
Regulation and administration	0.1
Total	**12.7**

3.2.1 The 'should cost' exercise

The RVfM study produced a high and low estimate of the realisable efficiency potential in the rail industry based on its assessment of what the industry should cost.

In the low efficiency scenario the study assessed that £2.5 billion of efficiency savings could be achieved of which £1.8 billion would be secured by Network Rail - already taken account of in the Control Period 4 (CP4) settlement and provisional savings for CP5 and £0.7 billion by train operators and Rolling Stock Companies (ROSCOs).

The study found that Network Rail's savings were already taken into account in the CP4 settlement and provisional savings for CP5 leaving the remaining efficiency gap of £0.7 billion still to be found by train operators and ROSCOs. The results are shown in Table 21.

Table 21: Low estimate efficiency gap[18]

£billion (2008/9 prices)	*Train OPerators and ROSCOs*	*Network Rail*	*Total*
Low estimate of efficiency gap	0.7	1.8	**2.5**
Deduct Network Rail savings committed for CP4		(1.2)	**(1.2)**
Deduct Network Rail savings provisionally indicated by ORR for CP5		(0.6)	**(0.6)**
Remaining efficiency gap	**0.7**	**0.0**	**0.7**

The study also provided a high estimate of the efficiency potential of £3.5 million. In this scenario the study expected Network Rail to save £2.3 billion of which CP4 and CP5 commitments and expectations amounted to £1.8 billion leaving an efficiency gap of £0.5 billion.

Train operators and ROSCOs efficiency potential in this scenario was £1.2 billion, none of which has been committed thus leaving a £1.2 billion efficiency gap in the high efficiency scenario. Combining this to Network Rail's efficiency gap produces a total gap of £1.7 billion. This is illustrated in Table 22.

[17] Realising the potential of GB Rail, Final Independent Report of the Rail Value for Money Study, Detailed Report, Table 3.1, Department for Transport (DfT) and ORR, May 2011
[18] Realising the potential of GB Rail, Final Independent Report of the Rail Value for Money Study, Detailed Report, Table 4.2, DfT and ORR, May 2011

Table 22: High estimate efficiency gap[19]

£billion (2008/9 prices)	*Train Operatorss and ROSCOs*	*Network Rail*	*Total*
Low estimate of efficiency gap	1.2	2.3	**3.5**
Deduct Network Rail savings committed for CP4		(1.2)	**(1.2)**
Deduct Network Rail savings provisionally indicated by ORR for CP5		(0.6)	**(0.6)**
Remaining efficiency gap	**1.2**	**0.5**	**1.7**

Applying the low and high efficiency savings to the industry cost base (in this case the costs in 2008/9) produced revised industry costs of between £8.5 billion and £9.5 billion as shown in Table 23.

Table 23: Impact on industry costs of 'should cost' exercise (2008/9 prices) [20]

£billion	*Low savings*	*High savings*
Total industry expenditure (2008/9 actual)	12.0	12.0
Effect of closing the total efficiency gap	(2.5)	(3.5)
Resultant reduced industry costs (using 2008/9 base)	**9.5**	**8.5**

These savings were calculated on an expenditure basis - that is before accounting adjustments were made to recognise that capital expenditure is charged to Network Rail's Regulatory Asset Base (RAB). In calculating the savings from the individual areas of research the RVfM Study converted expenditure based savings to funding based savings. This involved a funding adjustment in which capital expenditure savings were removed and replaced with an avoided cost of capital. The RVfM Study identified that savings in 2018/19 (compared with 2008/9) at 2009/10 prices would be between £740 million and £1,050 million as shown in Table 24. These are the headline figures quoted in the Rail Value for Money Summary report.

Table 24: Rail Value for Money efficiency savings (funding basis) in 2018/19 by area of study (£million) (2009/10 prices) [21]

Study area	*Subject*	*Low case*	*High case*
A	Objectives, strategy and outputs	90	110
B & C	Leadership, structures and incentives	40	130
D	Revenue	90	90
E1 & F	Asset and supply chain management	230	580
E2	Programme management	40	100
G	Safety, standards and innovation	190	190
H	People	260	260
Less	Double counts	(200)	(410)
Net funding savings		**740**	**1050**

[19] Realising the potential of GB Rail, Final Independent Report of the Rail Value for Money Study, Detailed Report, Table 4.3, DfT and ORR, May 2011
[20] Realising the potential of GB Rail, Final Independent Report of the Rail Value for Money Study, Detailed Report, Table 4.4, DfT and ORR, May 2011
[21] Realising the potential of GB Rail, Final Independent Report of the Rail Value for Money Study, Detailed Report, Table 4.5, DfT and ORR, May 2011

In addition to the efficiencies that had been researched in detail by the RVfM Study the report also suggested that additional savings may be available from improved train utilisation. The RVfM Study suggested that if train utilisation was improved by five per cent the industry could save between £500 million and £700 million from the cost of future growth (calculated as five per cent of total industry costs).

3.3. Network Rail's plans to improve value for money

By the end of Control Period 3 (March 2009) Network Rail had achieved overall savings of 27 per cent from 2003/4 (28 per cent when the impact of traffic is included). The savings over the control period came from a number of sources, including bringing maintenance work in house, restructuring, introducing new technology for improved asset inspection, renegotiating contracts and investing in new plant and machinery.

Network Rail has committed to reducing its annual costs by 23 per cent by 2014, or £800 million each year, to achieve £4 billion savings. Significant effort is underway to develop a greater understanding of Network Rail's comparative efficiency, particularly with its European counterparts. This benchmarking is discussed in more detail in Chapter 2.

3.3.1 Changing Network Rail

Network Rail is undertaking cultural and structural change to better meet the needs of its train operator customers and offer better value for money. The change programme includes creating devolved business units that are better aligned to the needs of its customers, developing deeper partnerships with customers and suppliers and introducing greater contestability into how it delivers projects.

Devolution

Network Rail is undertaking a major programme to devolve decision making and management accountability towards more local geographic route based organisations. Scotland was one of the first routes to be devolved in May 2011. This is intended to drive improvements in efficiency building on the progress made by the company over the last few years. It is also intended to improve Network Rail's responsiveness to the needs of customers, and to enable greater effectiveness and efficiency to be delivered through collaboration and partnership with train operators.

Network Rail within Scotland is now better able to interact with train operators and suppliers at a local level wherever possible. Operators will have to deal with fewer people, and these people will have control and influence over the full range of activities and decisions that are relevant to delivering a high quality and responsive service. The Scotland route has been empowered to interact with train operators in the most effective way to deliver outputs at the lowest possible whole life, whole system cost.

The devolved route organisation has brought together under local management all operations and maintenance activities, along with the development of asset plans, the delivery of small and medium size projects, and accountability for delivery of outputs. This will enable the balance of activities and related resource utilisation and expenditure to be managed according to local circumstances and customer needs. The creation of the devolved organisations is also designed to stimulate innovation and allow benchmarking across routes to identify and share best practice.

Some Network Rail activities remain centralised, particularly where these support network benefits, or where economies of scale and standardisation can be achieved. Devolution provides the opportunity to be more transparent about the cost and efficiency of activities that remain within the central business support services such as finance, human resource and information management services that are provided to the devolved routes.

In parallel with the organisational changes driven by devolution, a project is under way to co-locate many support activities in purpose built office accommodation in Milton Keynes - “The Quadrant” which is due to open in summer 2012.

Alliancing

Across Great Britain, Network Rail and a number of operators (including ScotRail) are negotiating co-operative agreements that align behaviours through shared incentives to work more closely together – the creation of alliances. In this context an alliance is a relationship between Network Rail and one or more train operators, and involving the sharing of complementary disciplines, technology, products, services, organizational structures, marketing, financial resources.

Improving value for money will be achieved by unlocking the costs inherent in the contractual interfaces and encouraging behaviours that are consistent with ‘one team’ rather than two contractual counterparties. Barriers and duplication between organisations will be removed creating new incentives to outperform operating, passenger, asset and financial targets. The multilateral nature of the network means multilateral decision making is a fundamental principle in the industry, and any alliance will work entirely within this environment.

A universal approach to stronger partnerships is unlikely to be successful and experience from elsewhere indicates that the parties involved need to define how a partnership should operate and of course this would apply to any alliances that may operate in Scotland. Network Rail and train operators can implement these stronger partnerships themselves but only with the support of, Transport Scotland (DfT in England & Wales) and ORR.

The opportunities for reform of franchising and stronger partnerships are clearly related. However, signalling the direction of travel by supporting early initiatives can help to accelerate change which will bring improved value for money. Thus Network Rail and the train operators are exploring alliancing opportunities ahead of any future franchise reforms.

Network Rail is also exploring the possibility of letting one or more concessions for the management of infrastructure at a route level, with at least one of these potentially starting early in CP5. The process of devolution will be a key enabler of this as it brings the accountability for the management of the infrastructure to a route level. The introduction of a concession would bring competition and benchmarking into the management of the rail infrastructure. However, it is important that the industry continues to optimise the network and Network Rail is therefore working with the rest of the industry to develop potential plans for a system operator to support both devolved routes and possible independent concessions.

Improved management and contestability in projects

Network Rail has developed proposals to reduce the cost of delivering projects and is encouraging greater contestability into the provision of project delivery services. This will be achieved through three initiatives:

- partnering: this will help drive down the unit cost of delivering projects by reducing man marking, introducing innovation earlier into the development process and improving construction performance through aligned risk management and integration. It will also reduce scope variations by aligning client, constructor and designer relationships earlier in the process
- developing the client capability to define the required outputs specification earlier in the project cycle and potentially to invite competing bids from the market place
- creating a project delivery business that can compete and win work in an open market for UK regulated and unregulated rail business.

The creation of enhanced client capability and a new project delivery business will enable smarter innovative solutions, lower overheads and unit costs, align with the devolution strategy, and deliver lower whole life cost.

The competitive delivery model will drive down unit costs by creating greater accountability and empowerment. Network Rail intends to have established the organisations in time to start implementing the proposals in April 2012.

Improving contractual relationships

Network Rail is introducing a less prescriptive approach with its partners and withdrawing in part from some areas of activity. Examples include:

- track renewals initiatives will give suppliers the freedom and incentives to innovate and invest in rail specific plant that is more productive than the current fleet of multi purpose road rail vehicles
- simplifying the supply chain by forming innovative and collaborative relationships as seen in Europe; for example in Switzerland the Infrastructure Manager uses a single contractor to deliver its modular switch renewal programme
- simplifying contractual regimes, reducing the degree of pre qualification for tenders and reducing the contractual burden such as bonds and warranties, contract retention and damage liability
- by in sourcing maintenance Network Rail has gained valuable asset knowledge and delivery expertise. The asset management capability developed by Network Rail will allow it to explore the benefits of outsourcing to facilitate the introduction of innovative work practices. Both Sweden and the Netherlands indicate that considerable savings have been delivered by contracting out maintenance activity. Network Rail does not believe that totally outsourcing maintenance is appropriate at this stage but it will increase the proportion of work undertaken by parties outside Network Rail
- for signalling and electrification Network Rail will continue implementing “strategic partnerships” with suppliers. The supplier will be involved earlier in the design process. Signalling is the only asset for which Network Rail intends to retain an internal design capability due to the complexity of the work and the general shortage of required skills. For telecoms Network Rail plans to reduce the dependence on two key suppliers by diversifying its supplier base.

Providing better defined, stable work banks

In tandem with improving the contractual relationship with its partners, Network Rail is seeking to provide greater visibility of its future work banks and is seeking to provide its delivery partners with greater confidence as to the stability of future

possible workloads. This will enable them to “smooth out” their own resources and allow them to plan better and subsequently to deliver at a lower price.

Scope and asset management savings

Network Rail continues to develop its asset management capability. Specific initiatives to reduce costs in CP5 that are already embedded in Network Rail’s cost projections in CP5 include:

- better targeting of the tamping workload allowing fewer poorly utilised shifts which arise from sub optimal deployment and site management. SNCF in France currently has a system which facilitates efficient use of its maintenance tamping fleet and Network Rail is working with it to understand this better
- intervening or inspecting at the optimum time based upon an improving understanding of life cycle cost
- making more efficient “maintain versus renew” decisions based upon an improving understanding of life cycle cost
- better identification of the root causes of problems rather than just the symptoms such as, for example, implementing an extensive sleeper re-padding programme to prevent much more expensive damage to rail assets or pre-emptive drainage treatment to prevent extensive water contamination
- further deployment of risk based inspection and servicing regimes. This is currently well established for signalling assets but it will drive additional benefits for the maintenance of other assets.

The table below summarises how planned changes in asset policies will improve the value for money of the railway. Further work on these policies is planned prior to the submission of the Strategic Business Plan (SBP).

Table 1: Asset management policy changes

Asset	The revised policy will deliver better value for money by:
Track	• Less complete renewal, more refurbishment, more preventative maintenance and more track treated for an overall reduction in whole life cost and spend in CP5
Signalling	• Targeted approach to renewal rather than full resignalling • Integration of the renewal work bank with operating strategy and European Rail Traffic Management System (ERTMS)
Telecoms	• More effective obsolescence management and technology change • Greater use of partial renewal intervention where appropriate
Electrical Power & Fixed Plant	• Prioritised based on condition and criticality in terms of impact on service outputs
Drainage	• Improved drainage asset condition on high criticality routes, maintained condition elsewhere and contribution to improved track quality with consequent reduction in delay minutes • Improvements in overall track quality by reduced track maintenance interventions and savings in abortive renewal costs • Reduced flooding leading to improved safety and reduced delay minutes
Buildings	• The ability to target the required CP5 performance outcomes - less spend on major station train sheds, buildings and platforms and more spend on canopies • Key assets are managed in a sustainable manner, maintaining long term condition and thereby securing the long term functionality of the asset
Structures	• Improved consistency in managing bridge strength and critical condition risks • Increased emphasis on maintenance and minor works

A number of rail companies from around the world, including those in Holland and Japan, have achieved significant reductions in asset management costs by maximising opportunities to rationalise their infrastructure both through the design of new layouts and the removal of redundant or very lightly used existing equipment.

Network Rail believes that such opportunities exist in Great Britain and will be exploring these opportunities with its industry partners.

Revising standards and operating rules

A well structured approach to standards and operating rules provides an important platform for an effective and efficient organisation. Studies of European practice have identified many different standards and philosophies and several different approaches to safety management, in general usually based upon individuals taking greater responsibility for their own safety.

This understanding is being used to underpin Network Rail's change in its approach to standards; moving from a regime of prescriptive standards towards a more performance related approach. This changes the emphasis in the standards from how work is to be done to what is to be achieved. It is also intended that these standards will be described more concisely, with increased use of visual aids so that the documents are more accessible and easy to understand and apply. This will also facilitate the move to a devolved organisation described above.

As part of the move to performance standards, a new framework, based on established asset management principles (PAS 55), has been developed. A priority list of engineering standards to be reviewed has been drawn up. These will be rewritten for publication in December 2011. As part of this change, the competence in place to achieve outputs will also be reviewed.

To improve engagement with the wider industry, the Company Standards Group's (CSG) membership has been widened to include representatives from Rail Industry Association (RIA) and the Rail Industry Contractors Association (RICA).

Multi skilling and delivery

European railways utilise a flexible and multi-skilled workforce. With labour costs accounting for a significant component of Network Rail's overall maintenance and renewal expenditure the benefits of multi skilling are considerable. Network Rail is examining opportunities to remove demarcation between contractors, implement more flexible working practices and utilise multi skilled teams rather than task-specific resources.

Reducing support costs

Network Rail has benchmarked its support activities including Human Resources, Information Management and Finance. Whilst the company has improved its efficiency in these areas it is not operating at world class levels of efficiency for a private sector business of its size. Network Rail intends to deliver savings from achieving higher efficiency on a function-by-function basis, and reduction in the complexity of inter functional processes.

3.3.2 Investing to reduce costs

This section outlines a number of key strategies Network Rail is implementing to deliver significant cost savings in CP5 and beyond.

Operating Strategy

Network Rail has identified an opportunity to reduce its annual operating costs in Scotland by an additional £18 million beyond that which current asset policies would achieve; and deliver significantly improved outputs. The operating strategy seeks to reduce the frontline operations workforce of 540 to less than 150 by migrating operational management from 89 disparate locations to 2 modern operating centres covering both the current signalling and control functions and deploy modern control

systems to enable the rail industry to optimise the use of the current network and maximise revenue/value.

Network Rail plans to migrate roles to the two new Scottish Operating Centres over a 15 year period in order to manage the levels of redundancies to a minimum through staff retirements, leavers and utilisation of staff at other locations where possible.

Bringing the operational roles together in a central team within Scotland also provides the opportunity to build upon the benefits previously realised through the creation of the Integrated Control Centres. Where a train operator is not currently co-located with Network Rail, the Operating Strategy will seek to bring together Network Rail staff and train operator staff to enhance joint operations decision making. By doing so the industry expects to see an improved relationship with customers becoming more attuned to their requirements and improve customer service.

Enabling elements of the Operating Strategy have been deployed in CP4 proving the capability to accelerate renewal investments to successfully reduce operating costs. Network Rail plans to invest £187 million in Scotland in CP5, 6 and 7 (including £49 million in CP5). In CP5 this would realise an accelerated reduction of nearly 80 staff compared to just 13 staff that would be saved through conventional condition led renewals which would not achieve any real savings based on the current wage assumption of an annual increase of RPI +0.5 per cent.

The operating strategy plan achieves consolidation of 89 per cent of the network into the new Operating Centres within the next 15 years.

Further work will take place over the next few months to strengthen the business case through the inclusion of industry revenue and output benefits.

Asset Information Strategy

As an asset-intensive business Network Rail's effectiveness is in part determined by its understanding of its asset base: what assets it owns; where they are; what condition they are in; how well they are performing; how they are being utilised and how they perform when combined as a system. Although much of this information is currently available, the number of disparate systems currently being maintained makes data integration across systems challenging. This can result in an inability to obtain a fully rounded understanding of the issues described above. To assess these challenges Network Rail has developed a comprehensive asset information strategy, primarily focussed on process change and data improvement and building on number of existing core systems – for example Network Rail's maintenance management system (Ellipse). The strategy will commence delivering benefits in early CP5 and is designed to provide:

- improved asset information to support strategic business planning (for improved alignment of infrastructure capability supply to demand)
- improved asset information to support implementation of Network Rail's asset management strategy and support whole life cost optimisation
- improved asset information available to enable a more effective response to operational incidents (reduced delay minutes and improved end-customer satisfaction)
- improved asset/network capability information available to enhance operational planning and delivery, particularly during periods where infrastructure outage has reduced availability, capacity or capability
- increased field workforce effectiveness (lower unit cost of work, safer working)

- an ability to meet external stakeholder (including EU, ORR and RDG requirements and recommendations) demand for improved asset information quality.

The project is currently expected to cost around £350 million in CP5 and £40 million in Control Period 6 (CP6) with financial benefits of around £300 million achievable in CP5. By the start of CP6 annual benefits of the order of £128 million are expected to be delivered by this initiative.

Intelligent Infrastructure

Costs will be reduced through investment in Intelligent Infrastructure in Control Period 4 (CP4) and CP5. This will provide savings in maintenance operating costs which will be delivered by migrating from a frequency based scheduled maintenance regime to maintaining assets based on their condition as measured by remote condition monitoring devices. The programme includes equipment that is located on rolling stock and measures condition of fixed infrastructure, and vice-versa.

Electrification

Further electrification of the network meets many industry objectives. Industry costs will be reduced particularly if electrification is carried out in conjunction with a programme of phased rolling stock replacement.

There are a number of generic changes to costs which apply when electrification permits a change of traction for a service from diesel to electric. The potential savings can be categorised as reductions in rolling stock operating costs (including fuel), infrastructure operating costs, increases in rolling stock availability rates, extensions to vehicle life and reduction in the capital costs of new vehicles.

Electrification will improve the product offered to customers, increase revenue, accommodate growth, provide a more environmentally friendly product, reduce reliance on potentially insecure energy sources and comply with changing environmental legislation. The plan is to increase from 25 per cent of electric trains to 63 per cent in Scotland during CP4 and CP5.

3.4. Passenger train operators plans to improve value for money

Within Scotland funders drive value for money from train operators primarily through franchising. The franchising process is highly competitive which has attracted the involvement of companies with strong track records in cost efficiency (such as bus operations). Within the constraints of structural, commercial and policy framework for rail, bidders demonstrate value against specifications set out by Transport Scotland.

Train operator unit costs per passenger km (excluding access charges) have overall fallen slightly since privatisation, and have declined in real terms since 2005/6. [22] In addition, while train utilisation (average loading calculated as passenger km / train km) has risen by 24 per cent[23]. Benchmarking indicates that train operator costs per train km are slightly lower than those of comparator railways in other European countries[24]. Train operator costs per passenger km have been falling in real terms

[22] ATOC analysis

[23] Realising the potential of GB Rail, Final Independent Report of the Rail Value for Money study, Detailed Report, Pages 13 - 19, DfT and ORR, May 2011

[24] Realising the potential of GB Rail, Final Independent Report of the Rail Value for Money study, Detailed Report, Page 38, DfT and ORR, May 2011

since 2005/6[25] Continued train operator led value for money improvement (both cost and revenue) against clients' specifications is already embedded in existing franchise commitments (reflected in train operator payment lines to/from Transport Scotland)

At the point of franchising, train operator premium or subsidy lines take into account the best view available of the potential to drive value for money through innovation, business development and efficiency. Over the duration of franchises, there will be further potential opportunities to derive additional benefit from a number of areas, including industry reform and closer working with Network Rail, better techniques for energy efficiency, improved approaches to techniques for revenue protection and yield management and responding to new demand. These need to be properly incentivised, while recognising that their cumulative impact on overall industry affordability will be incremental rather than a discrete step change.

Additional value from such initiatives to the taxpayer (ie. less subsidy/more premium) will be captured at franchise re let. In this context it is worth noting that the ScotRail franchise is planned to be re let in 2014. In addition the DfT plans to re let a number of franchises including both East Coast and West Coast by 2014.

The work underpinning the RVfM study assumed that, out of the study's estimate of total indicative industry value for money savings which could be realised by 2018/19, train operator/ROSCOs could account for £573 million (low case estimate of savings) to £666 million (high case estimate of savings). It is understood that this is based on savings in the following areas:

- the efficiency of delivery of franchise outputs through changes to franchising parameters such as longer franchises with residual value mechanisms and changes to the revenue sharing regime
- staff efficiencies, including:
  - wider implementation of Driver Only Operation (DOO)
  - changes to ticket retailing involving greater use of automation and, where appropriate, reduced ticket office hours or available windows
  - reducing station staff dispatch through automated train doors and other operational improvements
  - greater flexibility in staff terms and conditions to improve efficiency of operation
- standards and innovation including the development of lighter, more track-friendly trains and changes to rolling stock procurement
- revenue generation through investment in car parking facilities at stations and additional ticket gates.

In addition to these areas of potential savings, the RVfM study highlighted that train utilisation (defined as passenger km / train km) is lower than for the comparator railways in the RVfM study. In practice this reflects a range of factors concerning the size and shape of the rail network in Great Britain, including highly directional peak services and more frequent trains, the latter fact recognised by the RVfM study, which reports the Passenger Focus 2009 report showing that "most of Britain's passengers seem better served than other European passengers by the number and times of trains available". Nevertheless, the RVfM study estimates that "a five per cent improvement in train utilisation could represent a productivity improvement which the report estimated might be potentially worth some £500 –700 million

[25] ATOC analysis

annually against costs of future growth."[26] As noted above, train utilisation has already improved very significantly since privatisation (a 24 per cent increase in passengers per train) and the potential further improvement needs to be viewed in this context.

Further work is needed to validate more precisely how these indicative estimates of how train operator and ROSCO savings will impact the cost base in Scotland and to identify specific measures to realise the gains. The separate RVfM study suggestion concerning train utilisation particularly needs to be examined carefully (and RDG is already pursuing this), including in particular the cost saving estimated to arise from it.

It should also be noted that some of the proposals in the IIP have the potential to build in additional elements of costs, particularly initially, albeit for desirable objectives sought by funders. An example of this is the customer information strategy, set out in chapter 8, which focuses on delivering improved information, particularly during service disruption. However, this initiative, together with several other proposals relating to, for example, station improvements and asset management strategies to reduce whole life costs, will support the growth of the industry and facilitate the long term reduction of unit costs. The start-up costs of these initiatives need to be taken into account in assessing the feasibility of achieving the RVfM study forecasts.

The nature of the savings identified by the RVfM study indicates that these cannot be delivered by the train operators in the current franchising environment, because they are contingent on changes to the regulatory and commercial arrangements. For example on the timescales required to recover the value of investments, whether these be in capital infrastructure or the likely cost of pushing through changes to working practices. Therefore, we believe that to achieve even what we understand to be the RVfM study's indicative low end estimate of £573 million from train operators/ROSCOs by 2018/19 is heavily dependent on decisions which are for Scottish Ministers and the DfT to make. These include measures to deliver:

- deep and wide implementation of franchise reform on a "horses for courses" basis, including:
  - longer franchises, strengthening both the ability and incentives to pursue staff productivity gains and build strong relationships with suppliers whilst building up train operator capacity to play an enhanced role in strategy and projects
  - more flexible franchises with fewer constraints on the service specification and how this is delivered allowing service levels to be better tailored to demand and encourage more innovation at bid stage
  - improved risk sharing (e.g. ending the cap and collar regime), helping to improve incentives to train operators to grow revenue
  - National Rail Franchise Terms changes (e.g. on force majeure) supporting other reforms to help pursue staff productivity gains
- Changes to franchise terms: For example an improved incentive regime (such as efficiency benefit sharing as proposed by ORR) has important role to play here

[26] Realising the potential of GB Rail, Final Independent Report of the Rail Value for Money study, Detailed Report, Page 45, DfT and ORR, May 2011

- fares regulation: a review of future fares regulation, including nthe RPI + X per cent regime, and smart ticketing opportunities. Reviewing the Regulatory Agreement on Fares and Ticketing (RAFT) will provide an opportunity to update ticket retialing practices to better reflect market requirements.

The industry is enthusiastic to engage with Scottish Ministers to develop best practice approaches to the procurement of the franchise that fully reflects quality and bidder proposed alternatives. Such a broader approach to procurement, involving early supplier involvement, was recommended in the RVfM and is also very much in line with RIA members' recommended approach.

For the purposes of this IIP, it has been assumed that Scottish Ministers do make the decisions outlined above to create an environment which enables Train Operating Companies to contribute towards industry value for money gains consistent with the RVfM study low indicative estimate.

3.5. Rail freight

There are opportunities, as indentified in the RVfM study, to improve the value for money of the rail freight sector. The industry will examine the opportunities including:

- reviewing operating flexibility in respect of rigid passenger timetables
- maximising the length of each train so as to move a given volume of freight in the least number of network paths
- relinquishing unused paths, although the RVfM study acknowledges the need for strategic freight capacity and flexibility in freight path provision to accommodate the diversions required by engineering work and the volatile nature of the freight market
- supporting reform of industry processes to accelerate changes to capacity allocation and network capability
- amending operating practices to minimise the impact of freight trains on low volume/low maintenance branch lines
- agreeing to the removal of freight capability on some route where there is no prospect of freight activity and which can be downgraded to accommodate light weight passenger trains with commensurate savings in track maintenance and renewal costs.

3.6. Scotland specific value for money opportunities

It is recognised that Scotland has unique railway, political and economic geography and that only some of the generic opportunities will apply in Scotland. Domestic services are likely to remain subsidised for the foreseeable future so focus has to be on driving maximum value from industry for passengers/freight users and taxpayers.

In taking this forward, it is important to focus particularly on areas where rail can deliver best value for money:

- moving large volumes of people into and out of city centres, particularly from outer areas
- moving large volumes of people over medium and long distances
- moving freight over medium and long distances where there is sufficient volume.

Conversely there are some markets where other modes may provide a better option for the public at a more efficient price. For example on some inner suburban routes bus services may be able to link key origins and destinations more frequently and

quicker than circuitous rail routes with frequent calls, freeing up capacity for longer distance movements.

For the railway to deliver as efficiently as possible Scottish Ministers need to specify clearly what they want from the railway. It should then be for the train operator working closely with Network Rail to consider how best to deliver this. Previous and existing ScotRail franchise specifications have made changing the basic timetable structure difficult. This has resulted in the current service pattern being largely based around 1994 travel patterns that may not reflect changes in demography or economy.

If the franchise specification was more outcome based, the train operator could optimise changes to the timetable and make informed trade offs. The current process often results in additional trains/station calls being added to the current timetable which in turn can drive infrastructure enhancements to provide the required capacity. There may be better ways of delivering these improvements to the overall public transport offering.

In addition once an additional service has been introduced, it has been difficult to withdraw or radically change it even if the actual demand for that service is low. For example the service provided between Motherwell and Cumbernauld carries very few, and on many occasions, no passengers at all.

Fares policy can also be used to manage demand on high-peak services by having more focussed differentiation. This can help reduce the need for rolling stock which is only used for very short periods by encouraging passengers with flexibility to travel outwith the high peaks. The introduction of smart card technology can help to manage the differentiation. On longer distance interurban flows, the use of reduced rate advanced purchase fares can help to increase load factors on off-peak services while on rural routes with a high tourist demand summer/winter pricing is an option.

The current franchise specification only gives the train operator limited flexibility to vary fares and greater flexibility could drive better value from the next franchisee.

In a highly supported network it is obviously important for Government to ensure they are getting value for money as decisions made purely on fare box revenue may not drive the optimum service. Nevertheless the train operator may be able to deliver efficiencies by changing the train service offering within agreed parameters, particularly at off-peak times when a better balance between demand and seat offering may be deliverable.

There is a need for strategic choices to be optimised across the industry: electrification on relatively densely trafficked routes should be a priority investment on environmental grounds but phased to optimise management of rolling stock. This needs to take account both of where in the rolling stock life cycle existing diesel trains are and whether there are any opportunities to reduce rolling stock volume (and hence costs) by better integration with electric fleets. A good example of this is in the Glasgow south area where enabling replacement of life-expired Diesel Multiple Units (DMUs) may be more beneficial than early displacement of higher specification units (with recognition that electrification is a rolling aspiration that will take 15-20 years to complete the core network). This should reduce the overall fleet size.

Opportunities to review service provision include:

- the method of Passenger Service Requirement (PSR)/ Service Level Commitment (SLC) definition – allow the ScotRail franchisee to optimise the resource base
- the PSR/SLC should include a minimum specification with the franchisee appropriately incentivised to provide additional commercial services at "risk"
- optimising capacity use – review timetables, calling patterns and encourage interaction between all train operators to make best use of resources – as well as possessions strategies
- the ability to quickly and effectively review and withdraw services that have not delivered the expected outcomes.

3.7. The supply industry

The rail industry supply chain in Scotland plays an important role in delivering improved value for money and will continue to do so in the future. In addition to much of the material used in managing and renewing fixed infrastructure and rolling stock, a great deal of technology and expertise is provided by the industry's suppliers. The rail industry is committed to working with its suppliers to seek out further opportunities to improve the value of the rail services provided.

In 2008, following the publication of the Network Rail Strategic Business Plan (SBP), RIA carried out an intensive series of discussions across the industry concerning the content and direction of this plan. Issues considered included Network Rail's efficiency assumptions and the deliverability considerations of Network Rail's plan and input price assumptions.

For CP5 additional benefit can be delivered if the process is brought forward. At a joint Network Rail / RIA conference held in July 2011, over 40 supplier organisations were represented at this event. Key messages to the rail industry from suppliers present included:

- the need to embrace more fundamentally the concept of identifying and implementing minimum whole life cost solutions. Opportunities identified included changes to tender assessment methodologies, a relaxation of tender and project specifications to improve innovation opportunities, and ensuring that minimum whole life cost considerations are embedded in remits during the early project development stages
- the considerable benefits arising from workload continuity (including across control periods, where hiatus has occurred in the past) and visibility in helping drive down costs
- the rail industry should accelerate the introduction of standard products and processes and increase use of best practice from elsewhere. Although rail has its complexities it is perhaps not as different from other industries as has been the view from within the industry in the past.

Network Rail welcomed and accepted these challenges and acknowledged that there are opportunities to improve how each of these issues is currently addressed. Network Rail and RIA are building on the momentum from this workshop through a variety of mechanisms to provide an input to the next SBP, using in part the framework adopted for the CP4 exercise and with particular reference to the points raised at this workshop, including:

- asset based supplier working groups to be convened later in 2011, with Network Rail participation as required

- a joint steering committee with representatives from across the supply chain to provide inputs to these groups, producing a non-exhaustive list of questions for each working group to address, and providing consistency but without preventing individual groups from considering other issues which may be important to their asset
- encouraging bilateral dialogue between Network Rail and individual suppliers where commercial confidentiality considerations dictate.

Supply chain representatives have emphasised the better outcomes which they believe will result from suppliers being given the opportunity to provide an early input into the planning process rather than, as in the past, an opportunity to comment on plans already well developed.

3.8. The Rail Delivery Group's plans to improve value for money

A principal recommendation from the RVfM study was that the rail industry should create a Rail Delivery Group (RDG) to provide leadership to the industry. Following its creation in May 2011 the RDG, comprising the Chief Executives of the Passenger and Freight Train Owning Groups and Network Rail published its terms of reference[27]. These emphasise the role of the group in leading on cross or whole industry issues. The RDG has been reviewing the RVfM study recommendations and has decided to pursue the following priorities.

3.8.1 Establishing leadership and credibility through behaviour, communication and demonstrating progress with other priorities.

The RDG's particular focus will be on cross-industry issues. By listening and giving guidance to the various cross industry bodies involved in planning, technology, safety and standards RDG can harness additional resources to achieve its objectives.

The RDG enjoys a position of leadership in the rail industry by virtue of its membership. Preserving that status will be a function of engendering the confidence that comes with accomplishment. Leadership that is recognised in the wider community must be earned. The RDG believes that will be done only by delivering on its initial agenda. As the RDG pursues its initial agenda, which is largely framed by the RVfM study, the group also believes that it must articulate how its work benefits passengers, freight shippers and the public more generally.

Although the RDG will have a focus on cross-industry issues and delivering the efficiencies identified by the RVfM study it may, in time, play a wider role. The RDG will respond to the need to provide compelling leadership that inspires a unity of purpose in the industry in which the many industry parties recognise that more can be achieved acting together than acting alone.

3.8.2 Asset, programme and supply chain management

These are the areas with the greatest savings identified in the RVfM study and are consequently of highest priority in the RDG's initial efforts. Most of the savings accrue to Network Rail but the RDG's view is that many are neglected because of industry structure and focus. Although asset management, programme management and supply chain management are separate and shall have to be subdivided even

[27] http://www.raildeliverygroup.org/files/2011/06/Summary%20of%20proceedings%20-%208th%20June%202011.pdf

further for practical analysis, too many of the shortcomings from the past involve the same issues: the absence of collaborative planning, information management, a commercial focus and capital discipline within the industry.

Although the savings associated with rolling stock are being addressed in separate workstreams, rolling stock issues that affect whole industry programme management or infrastructure asset management strategy are expected to be in scope.

3.8.3 Revised form of commercial agreements to include a summary of the problems created by the existing contractual structure and the barriers to improving efficiency

A new contract between Government and the rail industry is the key to a better, more affordable railway. At the heart of this approach should be a more mature commercial relationship between the parties, based on a stronger sense of trust and common purpose.

This means that Government should focus on setting demanding, high level goals for the industry and creating the framework in which the parties are incentivised to achieve those goals. Industry's role should be to commit to improvements and to innovate (working closer together where appropriate) in delivering those commitments.

This contract should include two important new elements – a smarter approach to the franchises which bind Government and train operators, and stronger partnerships between Network Rail and train operators which foster greater and more effective joint working.

3.8.4 Embracing technology and innovation

The RDG has observed the effect of new technology in other industries, other transport modes and other railways. The technology covers all aspects of rail activity from operations to maintenance and from control to retail. Advances in mobile communications, the use of new materials and the adoption of new systems and working techniques have all affected travel and transportation.

RDG is examining the effect of applying new technology in the rail industry, the impact on service quality and passenger and freight shipper demand. The work will look at the blockages to implementing new technology and the consequences for existing industry structures and resources.

The industry recognises the importance of its employees in delivering to its customers. The industry also recognises the relevance of employee costs to the overall costs of the industry, given that they represent around one-third of the industry's expenditure.

Whilst relationships with staff and their representatives is a matter for individual companies the industry does recognise that recent trends have added to the industry's employment costs. In 1996/97 the industry employed directly 81,000 staff, by 2008/9 this had increased to 92,000. Over the same period average earnings in the rail industry have risen at a faster rate than average earnings across industry as a whole.

The industry acknowledges that the costs of the industry are driven by many factors of which emloyment costs are only one part. There must, however, be meaningful

dialogue between employers and employees if greater efficiency is to be achieved in this area as well as all other facets of the industry.

The industry appreciates that discussions with staff about working practices, salaries and other aspects of employment are covered by laid-down procedures relating to consultation and negotiation.

3.8.5 Passenger information

Improving passenger information is a key priority for the industry. RDG recognises the importance of accurate and timely passenger information and the industry describes its plans to improve this in Chapter 8.

3.8.6 Train Utilisation

Significant differences in train utilisation between Great Britain and mainland Europe were identified in the work by the RVfM Study, potentially offering high savings. Supporting analysis by the Study was limited. RDG is responding to the challenge from the RVfM Study to understand more about the issue and to identify whether it will generate cost saving or cost avoidance opportunities. Some initial analysis of train utilisation issues is set out in Chapter 2.

3.8.7 Tackling technical issues and standards and innovation through the possible creation of a Rail Systems Agency

One of the first actions of the RDG was to ask a small group, led by one of its Members, to undertake a quick review of the problems and solutions identified by the RVfM Study, looking specifically at the benefits of creating a Rail Systems Agency (RSA). Its initial findings are that an RSA that primarily drew on the resources of industry members but contained high calibre individuals focused on cross-industry technical issues, innovation and projects would generate significant savings.

3.8.8 Identifying the actions that others must take to enable the industry to improve efficiency

Whilst the RDG is focusing on specific cross-industry priorities to improve efficiency there are areas where action by Government and Regulatory authorities will be necessary to allow the industry to improve its efficiency. Foremost amongst these are changes to the contractual and commercial arrangements between the industry and the Government and between industry parties but there are a number of other areas for action. These include a clearer view about the responsibilities for regulation, supporting industry in embracing innovation and providing clarity about its rail and transport policies, how different strands of policy fit together, and how the different levels of policy, objectives strategies and implementation are linked together.

3.8.9 The Rail Delivery Group approach

The RDG has decided to tackle a number of significant cross-industry issues. Neither the issues nor the solutions are simple and establishing permanent cost efficiencies is not something that will be achieved overnight. Part of the Group's task will be to establish a timetable for change, assess the value of the proposed efficiencies and identify how those efficiencies will be delivered. This is a considerable task and the RDG will look to draw on all parts of industry to achieve success.

Adding RDG's efforts to those of the individual parts of the industry will enable the industry to create a more efficient and productive railway. There are many barriers to achievement and actions required by those outside the industry, especially

Government, to enable change. The industry is ready to deliver improvements but others will need to play their part.

Summary

The industry will respond to the challenge posed by the RVfM study to improve efficiency. The RDG and individual parts of the industry are developing proposals to tackle costs and develop greater partnerships between train operators, Network Rail and their supply chains. The RDG is determined to take ownership of key cross-industry initiatives that cannot be delivered without collective action across the industry. Achieving value for money in the industry is not a simple task and will require all parts of the industry, its stakeholders and funders to change. The industry has identified a range of enablers that governments and regulators, in particular, will have to put in place if the efficiency potential is to be fully realised. The industry is confident that it can achieve a level of efficiency consistent with the RVfM study in its low scenario largely through its own initiative providing key enablers are put in place. If further, but wider ranging, enablers are introduced the high efficiency scenario might be within reach but this will require a step change in the degree of cross-industry collaboration.

4. ScotRail

4.1 Strategic importance

ScotRail operates virtually all internal passenger services within Scotland as well as overnight sleeper services from various Scottish towns and cities to London and services to Carlisle via Dumfries. The franchise outputs are specified and funded by Scottish Ministers. Overall the ScotRail franchisee is responsible for 95 per cent of trains operating in Scotland and 75 per cent of all train miles.

Scotland currently has a population of 5.2 million, and this is forecast to grow by 0.3-0.4 per cent annually over the next few years. Seventy per cent of the Scottish population are resident in the central belt of the country. Outside of the central belt, Aberdeen is also of significant economic importance due, in the main, to the oil industry.

Scotland's railways play an important part in providing Scotland with a safe, integrated, effective and efficient transport system. The rail network in Scotland reflects this role as it provides high quality commuting services into the major centres such as Glasgow, Edinburgh, Aberdeen and Dundee. This allows access to jobs, education and leisure services within the city centres taking pressure off the road infrastructure. The network also provides longer distance services which link communities and the urban centres together, as well as playing a role in providing essential access to services and employment opportunities for some of Scotland's rural areas.

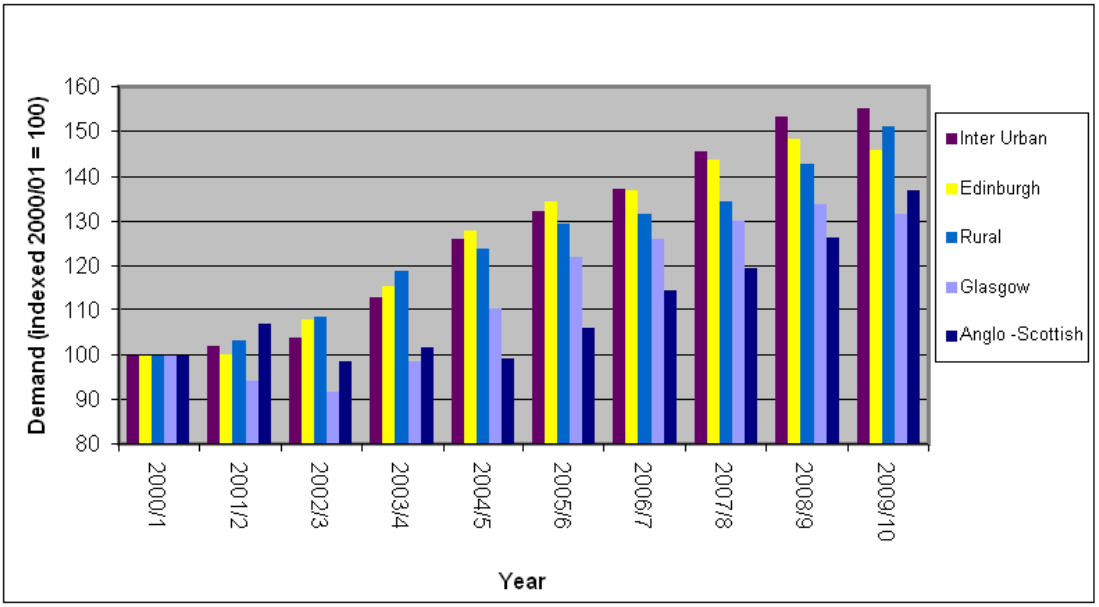
Scottish Ministers recognise that:

"The Rail network supports economic growth, provides a quality interurban link between city regions in Scotland as well as links to major English cities and connects people to jobs and families, thus supporting local economies."[28]

Scottish's Ministers fund the rail infrastructure in Scotland directly through Network Rail and the train services internal to Scotland as well as the Caledonian sleeper service to London through the ScotRail Franchise (note : the remaining passenger services - the Anglo Scottish services - are specified by the Department for Transport (DfT)– see chapter 5).

[28] Source: Scotland Railways

Figure 25: Passenger growth in Scotland 2001-10[29]



As the graph above shows, in the last ten years, there has been substantial growth in demand for rail travel within Scotland. This growth is linked to the concentration of employment in the city centres, and the increased relative attraction of rail as road congestion has increased. The commuter market into Scottish centres benefits from modal shift and continued growth in employment. The ability of the rail sector to serve this growth market is essential to the desired outcome of supporting sustainable economic growth as well as providing access to employment.

Currently, there are approximately 80 million journeys on ScotRail services each year. Sixty five per cent of these trips are made in the Strathclyde area, reflecting the fact that the Glasgow suburban rail network is the largest network outside London.

The Edinburgh – Glasgow service via Falkirk High is the 'flagship' ScotRail service, operating with four trains per hour throughout most of the day, which contributes 15 per cent of the total revenue, and nine per cent of total journeys. This service, and the other three services linking Edinburgh and Glasgow account for over one quarter of total revenue and journeys, underlining the importance of these two cities in terms of the overall Scottish economy and transport links.

Likewise the demand for longer journeys has grown strongly reflecting an increasingly attractive rail product relative to car, particularly between the central belt and Aberdeen. Services from the central belt to Aberdeen contribute six per cent of the passenger journeys, but 16 per cent of the revenue.

Rail's competitiveness on the other interurban routes from the central belt to Inverness, and between Inverness and Aberdeen is more limited due to the quality of and investment in the parallel road network.

[29] Scotland Route Utilisation Strategy (Generation Two)

In terms of segment demand, around 35 per cent of passengers carried are for commuting purposes, eight per cent are travelling on business, with the remainder being leisure travellers.

4.2 What users want

According to the National Passenger Survey (Autumn 2010), passengers travelling on ScotRail services demonstrate a relatively high level of overall satisfaction with their journeys, two percentage points higher than the national average.

Analysis of customer satisfaction drivers has confirmed that performance underpins overall satisfaction, value for money and many other attributes. When punctuality and reliability actuals (or perception of actuals) are suboptimal, customer satisfaction scores in other areas tend to suffer also.

Over recent years the sector has shown considerable improvement in meeting passenger needs in a number of areas, including punctuality and reliability, sufficient room on trains, information provision, and dealing with delays.

ScotRail services also score higher than the Great Britain average with regard to perceptions of value for money (12 per cent points higher than the national score), although the absolute percentage satisfied in this area remains below 60 per cent. ScotRail compares poorly against the regional average on perceptions of connections with other transport, but it is worth noting that the sample size is small.

4.3 Demand for rail - market analysis

The demand for rail travel within Scotland was forecast for the Scotland Route Utilisation Strategy (RUS) (Generation Two) in 2010. The forecasting approach considered two scenarios for growth, a low and a high, taking account of growth over the last 10 years. The results of this analysis are used to understand the growth potential of the Scottish railways over the next three control periods. The forecasts included the impact of the committed schemes known at the time.

The forecasts for growth in the Glasgow commuting market from 2008/9 to 2024/25 is between 24 and 38 per cent, which corresponds to between £7 million and £11 million additional trips in the Strathclyde area.

The Edinburgh commuting market is forecast to grow faster but from a much lower base, at between 90 and 118 per cent from 2008/09 to 2024/25. The higher growth rate is directly related to the completion of a number of major schemes (Borders railway, Airdrie to Bathgate re-opening and the Edinburgh to Glasgow Improvement Programme (EGIP)).

The interurban services likewise are affected by EGIP and the Airdrie to Bathgate re-opening which will increase demand between Edinburgh and Glasgow, as well as Stirling. This market has forecast services to grow between 48 and 74 per cent from 2008/9 to 2024/25.

The rural market, which is the smallest in terms of total demand, is forecast to grow between 27 and 46 per cent. The rural railways within Scotland continue to play a significant part of the connectivity to those parts of the country. Further examination of the timetable on these routes is required to better match the supply and demands to travel; this could include separate summer and winter timetables for example.

Social inclusion and a minimisation of the resource base are key drivers for timetable construction and fares policy on these routes.

Coping with the growth across all parts of the market raises issues about the ability for the major terminals, particularly in Edinburgh and Glasgow to cope with the volume of passengers in the long term. During Control Period 5 (CP5) further work is planned to develop options to ensure enough passenger capacity is provided when required.

4.4 The current railway

4.4.1 Outputs

4.4.1.1 Train service specification

Train services in the sector are specified by Scottish Ministers through the service level commitment (SLC) for the ScotRail franchise. The ScotRail franchise is due for replacement in 2014 and represents an opportunity for a reassessment of train service levels.

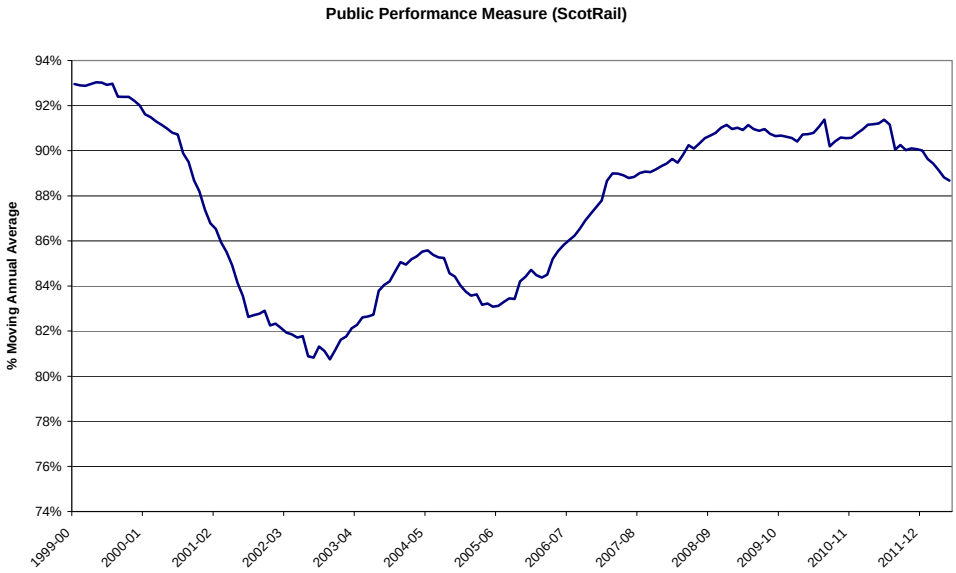
In general, train services are fixed for the duration of a franchise, although the franchising authorities can exercise a change mechanism to alter the service specification if necessary.

The current level of service operating in Scotland is mainly that which was provided in the latter years before privatisation in 1997, with a number of bespoke enhanced services being added to this base. The role of the rail services, and their success should be more objectively assessed to ensure the service meets the needs of the stakeholders / customers at the most cost effective price.

A mechanism should be developed where new services can be added quickly and cost effectively, but also enable withdrawal or change, should the services not deliver value for money.

4.4.1.2 Performance

The ScotRail franchise has historically enjoyed performance greater than the Great Britain network average, and until recently exceeded the targets set for Control Period 4 (CP4). It is anticipated that recent relatively poor performance will be recovered before the end of CP4



4.4.1.3 Network availability

It is generally recognised that there would be merit in moving towards a regime whereby fundamentally the same off-peak timetable is operated on a daily basis, reflecting the increasing demand that passenger services at weekends should more closely match the Monday to Friday service. Nevertheless, this needs to be delivered in a way that balances with the need to access the railway to maintain and upgrade it, and take account of the overall cost to the rail industry. This includes both the cost of providing replacement services when the network is not available for any reason and the higher unit costs associated with undertaking work in shorter periods of access.

Network Rail has prepared a Joint Network Availability Plan (JNAP) with ScotRail to balance the level of access required for maintenance and renewal with the need to operate services at times when passengers require them.

To assist with the planning of engineering work, the Network has been categorised according to its criticality with the level of planned disruption normally permitted dependent on this. On those routes categorised “A” (e.g. Edinburgh to Glasgow) a through rail service will normally be available with any diversion adding no more than 30 per cent to the planned journey time.

4.4.1.4 Capacity

During CP4 there has been an increase in the capacity provided across a number of routes, and this is expected to continue.

The capacity has been/will be increased by:

1. the delivery of enhanced infrastructure in December 2009 which supported the introduction of the full half hourly frequency of service on the route between Glasgow and Kilmarnock

2. the introduction of an additional hourly semi-fast service between Glasgow Central and Edinburgh Waverley via the Shotts route in the December 2009 timetable (as the first deliverable of EGIP)
3. the re-opening of the rail route between Airdrie and Bathgate in December 2010, which facilitated the introduction of a new service between Glasgow Queen Street Low Level and Edinburgh Waverley, operating on a four trains per hour frequency throughout most of the day. (These services operate beyond Glasgow Queen Street to Helensburgh and Milngavie)
4. the procurement and delivery of the 38 Class 380 electric trains, which have been introduced during 2011 on the Glasgow Central to Ayrshire and Inverclyde routes, and Edinburgh Waverley to North Berwick and Dunbar routes
5. the rolling stock previously used on the routes in point 4, above has been cascaded and has enabled the provision of additional capacity on the Argyle line group of services, and on the route between Edinburgh and Glasgow via Airdrie and Bathgate
6. the projected completion of the network enhancements on the Glasgow to Paisley corridor early in 2012 will allow additional trains to operate into Glasgow from Ayrshire.

Nevertheless standing is experienced on a number of services, primarily in the morning peak. With growth the level of crowding is forecast to increase. The Scotland RUS (Generation Two) noted that crowding will be most severe on Glasgow suburban services.

4.4.2 Affordability

As discussed above, the ScotRail franchise services and the infrastructure that they operate on only represent a portion of the overall cost of the Scottish railways. Chapter 8 – “Assessment of the Plan” summarises the affordability of the railway in Scotland as a whole.

4.5 Strategic options

4.5.1 Making best use/asset utilisation

Improving the utilisation of assets will involve a policy response from Government. Scottish Ministers specification of the train service affects the costs of the industry.

The franchising process has encouraged operators to make the most efficient use of rolling stock and train crew resources within the constraints of the requirements to deliver those services specified in the SLC. It is clear that more effective use of resources is likely to be achievable if the specification is more flexible in future franchise competitions, perhaps by reverting to specifying the minimum service level. This would allow a future franchisee the flexibility to match demand, capacity and resources in a more targeted way, helping to ensure the optimum value for money was delivered.

Likewise Scottish Ministers’ target in Scotland is that passengers should not stand for more than 10 minutes. To deliver this the ScotRail franchisee is required to provide additional capacity where practical within the constraints of the existing rolling stock fleet. The impact of the 10 minute standing rule, combined with the SLC has led to some services being strengthened at the commencement of their journey, many miles from where the actual increased passenger capacity is required. The most extreme example of this is a morning commuter service into Glasgow from Aberdeen being strengthened from Aberdeen (160 miles) to support the passenger numbers from Larbert and Lenzie (22 miles and 7 miles respectively). With the current SLC,

there is insufficient flexibility to provide an alternate local service. This is inefficient in both financial and carbon terms. Given the infrastructure constraints meeting this requirement is going to be increasingly expensive.

This Plan proposes that a move towards a more flexible SLC or minimum service would allow the Franchisee to better respond to demand. Also proposed is for a review of the maximum standing time target. The cost efficiencies need to be balanced against the disincentive of standing on routes with a competitive road network. Changing the standing rule would also make the introduction of high density rolling stock more appealing. High density stock can move more passengers in the same space by having a larger proportion of that space available for standing. The Rail Value for Money (RVfM) study highlighted the potential for new technologies, including smart ticketing, to be used to better manage peak demand and make better use of existing resources.

Outside of the major centres there are some rural routes with relatively low load factors. Although the train length is normally optimised for the level of traffic carried, with significant use of two coach trains the current specification requires some services which have poor load factors.

There is also a need to balance the priorities of Anglo Scottish services against those of the internal Scottish services. There is infrastructure which both groups of services use which creates conflict over which services have priority for the available capacity. This leads, in some instances, to the regular interval Glasgow suburban services being altered to suit the needs of the Anglo Scottish services. This can lead to a less than optimum use of the existing infrastructure capacity, rolling stock and train crew. Further work is required on this issue to ensure that the capacity utilisation is maximised to the overall benefit of both groups of services. This might include a move towards all services on congested sections of the network operating at regular intervals (or at least in the same “slots”) to make best use of the available capacity. The industry parties will continue to work together to achieve this.

4.5.2 Sustainability

The Plan proposes a series of investments to reduce the financial and carbon impacts of the sector. This is to be delivered through the electrification of most of the diesel operated Glasgow Suburban Network (phase 2 of the Strategic Transport Projects Review (STPR) electrification proposals). Electrified services are recognised as cheaper to operate, produce less carbon emissions and offer an improved passenger product. In addition there would be the opportunity improved integration with the existing fleet.

Likewise there are options for potential infrastructure interventions that will reduce operating costs to train operators. The industry will pursue this through closer working between train operators and Network Rail.

It is proposed to electrify:

- the Rutherglen and Carmyle line to Whifflet
- Paisley Canal Line
- Shotts Line
- East Kilbride / Barrhead
- Shields Junction to High Street Junction.

The electrification of these lines are most likely to deliver the stated outcomes at minimal cost compared to other lines in Scotland. Further network electrification also increases operational flexibility.

4.5.3 Fares / pricing

The planning assumption is that Scottish government policy on capping the increase in regulated fares remains as at present (RPI +1 per cent).

Fares per passenger kilometre are significantly lower in Scotland than the England and Wales average. Likewise the cost per travel per mile varies within Scotland and there may be scope to undertake targeted increases to improve value for money in certain parts of the network. In some parts of the network in Scotland, fares could be rebalanced to better reflect the competitive position of rail which would help to recover a greater proportion of costs as well as allowing resources to be better focussed to meet demand.

Fares may also provide a lever for delivering better utilisation of rolling stock outside of periods of peak demand, but in many cases this would require intervention from Scottish Ministers.

4.5.4 Growth

In CP5 additional capacity to accommodate growth will be provided through the following commitments:

1. the completion of EGIP, delivering:
    - an increase in the frequency of services between Edinburgh Waverley and Glasgow Queen Street High Level via Falkirk High from four to six trains per hour
    - additional semi-fast services between Glasgow Central and Edinburgh Waverley via Motherwell and Carstairs
    - complete the half hourly service provision between Glasgow Queen Street and Perth
    - the withdrawal of the inner suburban station calls at Bishopbriggs, Lenzie and Croy from the longer distance services from Glasgow Queen Street replaced by a new dedicated inner suburban service
    - diversion of the services between Glasgow Queen Street High Level and Cumbernauld onto the route serving Glasgow Queen Street Low Level station.
2. potential cascade of diesel rolling stock to other routes following completion of electrification of the Edinburgh - Glasgow via Falkirk route.

Beyond this the Plan proposes schemes to deliver targeted additional capacity. The further electrification of the Glasgow suburban network, including the routes serving Paisley Canal, East Kilbride, Whifflet, Shotts and Shields Junction to High Street will provide the chance to increase capacity. There may also be opportunities to make better use of rolling stock. In the north of Scotland additional capacity on the Aberdeen to Inverness line provided by the proposed Aberdeen to Inverness scheme will increase commuting capacity.

The Scotland RUS (Generation Two) also proposed value for money schemes without a capital cost that would increase capacity on the Argyle line and into Aberdeen from the South. The rail industry recognises these as value for money and believes they should be provided in the next franchise. In addition there may be opportunities to further improve the utilisation of the existing rail network, and carry

more passengers by carrying out targeted recasts of the timetable, to maximise the loadings of trains, whilst minimising the journey times. This, in turn, should reduce the overall numbers of passengers standing, and improve journey times for many passengers.

The above schemes represent value for money ways to deal with capacity on the rail network. They are not intended to remove all standing in excess of 10 minutes from the network. The proposed Plan is targeted on value for money schemes to bolster utilisation of rolling stock and infrastructure to best match supply and demand.

4.5.5 Journey times

The Plan proposes a number of options for the reduction in journey times in Scotland. The need to reduce journey times is noted as a key goal for Scottish Ministers,

"which impact on our high level objectives for economic growth, social inclusion, integration and safety "

The plan for the ScotRail Franchise is for an improvement in rail journey times. In the shorter distance market, commuters tend to value service frequency and punctuality over end to end journey time. EGIP will increase the service frequency between Edinburgh and Glasgow, providing passengers with improvements in journey opportunities across a number of different routes. The electrification programme for suburban Glasgow and EGIP will improve journey times by being able to take advantage of the faster acceleration and deceleration of electric rolling stock. Beyond this, journey times can be improved by taking advantage of planned renewals for small improvements, deployment of new rolling stock and the ability to recast the timetable to create a more 'tiered' service (e.g. inner suburban, outer suburban and interurban) across a number of routes and service groups.

On the longer distance interurban services, there is a potential to provide more attractive journey times, particularly between the major cities. The Scottish Government recognises the need to improve journey times between the major Scottish centres, especially to allow business to make effective use of the working day. The proposed plan is for a step change in frequency and journey times on the routes between Perth and Inverness, and Aberdeen and Inverness. These routes which are predominantly single lines with passing loops, which significantly impact on both the frequency and journey times of services using these routes. Significant infrastructure enhancements are planned on both of these routes to facilitate a reduction of journey times and an increase in frequency. Inevitably the timetable will remain a compromise between quantum of service and journey time, without significant enhancement of the amount of double line on these routes, (as for every train that requires to be 'crossed', additional time is introduced to the journey).

Journey times could be reduced in certain areas by undertaking infrastructure enhancements to increase line speeds or improve the capability of the network by removing junction conflicts or capacity pinch points. This Plan includes options to enable these improvements where a business case exists. There is also the potential to reduce journey times by considering the opportunities within the existing train plan. For each of these proposals, the actual interventions progressed are inevitably a compromise between the minimum requirements for a specific timetable and the optimum layout to facilitate long term flexibility.

There remain opportunities across Scotland to introduce timetable recasts to optimise journey times on priority flows. Additionally, with the improvement in rolling stock and signalling systems, the planning rules used for timetabling are, in some

cases, out of date, and require to be reviewed. The implications in terms of performance and capacity utilisation would need to be studied in detail so that decisions can be made as to the optimum balance between journey time, performance and network capacity.

Proposals:

- electrification of the Glasgow suburban network which will deliver journey time improvements
- deliver improved journey time and frequencies between Aberdeen and Inverness
- deliver improved journey time and frequencies between Perth and Inverness
- upgrade Carstairs Junction to improve journey times between Glasgow and Edinburgh via Motherwell and Edinburgh and the West Coast Main Line
- target a Small Projects Fund at improving journey time improvements on a tactical basis.

4.5.6 Performance

We plan to maintain the high levels of performance of the current railway, and specifically focus on improved resilience of the network to extreme weather conditions. See Chapter 7.

4.5.7 Station Accessibility

The ability of passengers to access the rail network is recognised as being essential to make best use of the rail services provided. It is recognised that some stations are not designed to enable easy access for all members of the travelling public. Improving access to the station for less mobile passengers as part of improving the station environment is likely to increase patronage, although this may not always be the best use of scarce resources.

It is also recognised that improved passenger information systems, displaying for instance real time train information will increase the ease of travel. This is of particular relevance in time of perturbation.

The Plan is for a fund of money to be available to improve stations where a need is presented in terms of the current asset condition and the needs of stakeholders.

4.6 A value for money strategy

In summary the key issues affecting the ScotRail operator in this Plan are as follows:

- maintain the high levels of performance of the current railway
- support sustainable growth through electrification
- deliver options for targeted enhancements to provide additional network capacity
- invest to reduce journey times on key interurban flows
- undertake improvements to station facilities and passenger information
- make proposals to optimise the service specification to better respond to passenger demand in the diverse markets in the sector.

5. Anglo Scottish

The Anglo Scottish market includes the passenger train operations on the Scottish rail network that operate outside the ScotRail franchise. Within Scotland funding/ specification of these services is split; infrastructure within Scotland is funded by Scottish Ministers, and train services are specified by the Department for Transport (DfT) through the service level commitments in the franchises. Scottish Ministers have the opportunity to issue non-binding advice to the DfT as part of the refranchising process. A small number of Anglo Scottish services are operated as part of the ScotRail franchise, principally sleeper services from Scotland to London.

5.1 Strategic importance

The cross-border rail links are important to the economy of both Scotland and England providing access to major cities and economic opportunities in both countries. The Scottish Government recognise this.

"Cross-border rail links are of significant economic importance for Scotland[30]*"*

Anglo Scottish services are part of the Great Britain long distance sector which serves a diverse range of markets including:

- long distance leisure travel (e.g. tourism, visiting friends and relatives)
- interurban business travel

The train services which operate in the sector also serve some shorter distance markets, for example links between regional centres (Lockerbie to Glasgow, Berwick-upon-Tweed to Edinburgh). Similarly a number of Anglo Scottish services operate north and west of Edinburgh towards Aberdeen, Inverness and Glasgow. These services provide a dual role of linking these cities with the English centres they serve and as part of the domestic service pattern in Scotland in conjunction with the ScotRail franchisee. This diversity presents challenges in balancing market needs, for example in providing stopping patterns which address the local market, while offering attractive journey times to the longer distance business and leisure markets.

In respect of its role in serving the business and commuter markets, the Anglo Scottish sector plays an important role in providing a more carbon fuel efficient alternative to road and air travel for longer distance journeys. This also has an impact on the leisure market by providing a more sustainable travel option for the tourist market.

In delivering this the Anglo Scottish franchisees form part of the wider rail network. This requires all operators to collaborate to provide the most efficient service possible on a constrained infrastructure.

[30] High Speed Rail Strategic Business Case 2009: Introduction

5.2 What users want

According to the National Passenger Survey (Autumn 2010), the principal drivers of satisfaction for passengers travelling on longer distance services are train service performance, train cleanliness and the ability to get a seat on the train.

Overall satisfaction in the long-distance sector in Great Britain is generally higher than the national average. The sector generally scores highest in most areas of passenger satisfaction, with the exceptions of the value for money, and sufficient seating/standing room, in which the sector lags behind the regional sector.

The survey also showed that passengers are generally satisfied with the punctuality and performance of these services although it is acknowledged that the Public Performance Measure (PPM) for these services is not as good as for shorter distance services. This may be driven to an extent by the fact that a delay which causes a PPM failure may represent a relatively small proportion of the overall journey time compared with the shorter distance of most journeys in the regional sector. Longer distance travellers also tend to travel less frequently than in other sectors.

5.3 Demand for rail

Passenger demand on Anglo Scottish services grew by almost 40 per cent between 2000/1 and 2009/10. The strong growth appears to have continued in 2010/11. The growth has been driven by:

- continued economic growth in most years
- increased propensity for longer distance travel for leisure purposes
- train service improvements, especially on the West Coast Main Line (WCML) following the delivery of the route modernisation
- modal shift from air and road

Demand is expected to continue to grow, as a consequence of these factors, further stimulated by the major enhancements in the sector, including the Intercity Express programme and additional train capacity on WCML services.

In terms of modal shift from air, there has been significant pressure on the domestic air market in recent years and it is anticipated this will continue. There are a number of reasons for this. The impact of accelerated journeys on the WCML is undoubtedly a factor in a significant reduction in the number of flights between Glasgow and Heathrow, and reductions in the regional air market within Great Britain.

In addition airlines are being driven to reduce domestic services as a result of lower yields. Costs are rising as a result of fuel prices, increased security (which also has an affect on overall air journey time which is significant on short flights) and the higher value of longer haul “slots” at major airports. It is anticipated that there will be continued pressure on domestic air services as airports approach capacity and focus more on medium and long haul services. This is expected to particularly affect services from Edinburgh/Glasgow to Manchester /Birmingham and London but is also affecting regional air routes between Scotland and other destinations in England and Wales. Because of the distances between Scotland and most other parts of mainland Great Britain, domestic air links have generally played a relatively important part in Scotland’s connectivity over recent decades, and current trends in the aviation

sector could result in a reduction in key economic linkages unless cross-border rail services are in a position to provide an effective substitute.

The forecasts published in the West Coast Main Line Route Utilisation Strategy (RUS), show that growth on WCML Anglo Scottish services is forecast to be significant with growth in demand for travel to and from London and Glasgow ranging from 41 to 54 per cent between 2009/10 and 2024/25. On the East Coast Main Line (ECML) journeys between London and Edinburgh were forecast as part of the Network RUS (Scenarios and Long Distance Forecasts) using the higher demand growth to grow by up to 109 per cent between 2007 and 2030.

It is worth noting that over the last few years actual demand has exceeded forecast over a number of Anglo Scottish routes. This has been partly driven by the step change in journey time and service frequency on the WCML but the industry will continue to review its forecasting methodology to improve its reliability.

5.4 The current railway

5.4.1 Outputs

Train service specification

Anglo Scottish Train services are specified and funded by the DfT. Some long distance operators also choose to operate services beyond the base franchise commitment on a commercial basis. All of the Anglo Scottish operators are due to have their franchises replaced between now and the end of Control Period 5 (CP5), providing opportunities for the service specifications to be reviewed as an enabler to improving the overall value for money of their business.

Performance

Train service performance on long distance services has historically not been as strong as on domestic Scottish services particularly on the ECML and WCML. Remedial plans are in place or being developed for each route within Scotland and in England.

Network Availability

Network Availability needs to take account of passenger demand as well as the need for access to the network to undertake maintenance, renewals and enhancements. Traditionally much of this work has been done at weekends but on the Anglo Scottish routes (like most long distance services in Great Britain), peak demand is on Sunday afternoon and evening. As such, Network Rail has agreed with train operators on long distance routes such as this to limit disruption to Saturday lunchtime to Sunday lunchtime wherever practical. This needs to be balanced on routes with local operators with higher demand on Saturday afternoon and evenings.

In CP4, Network Rail have attempted to meet the Transport Scotland (TS) High Level Output Specification (HLOS) of keeping one route between Scotland and London available during engineering work periods and in 2010/11 this was achieved on all but four weekends when one route had minor disruption and one had more significant work.

Joint Network Availability Plans (JNAPs) have being developed with each operator agreeing how to balance their requirements based on passenger demand with the need for access to the network for engineering purposes.

All long distance operators are beneficiaries of route categorisation principles which protect key flows from disruption as a result of engineering work. This includes routes between Edinburgh/Glasgow and London. On these routes, Network Rail and train operators have agreed that wherever possible, passengers will be carried by a diverted train rather than by bus and any such diversion will not add more than 30 per cent to the journey time between key locations.

Capacity

The Anglo Scottish franchisees are generally in a better position to manage capacity through demand management techniques than the ScotRail franchisee. A number of tactical schemes have been implemented to provide additional capacity, such as the current project to lengthen Class 390 trains on the WCML. The Intercity Express Programme (IEP) will also provide additional capacity on ECML services.

As recommended in the West Coast Main Line RUS, in addition to the baseline of an hourly Euston to Glasgow service, additional trains between London and North West England (Preston) would leave capacity on London - Scotland services for long distance passengers. The RUS also recommends the use of longer trains on the Birmingham and Manchester to Scotland routes. In general no additional infrastructure would be required to deliver these options, although the need to balance all operators services may affect journey times.

The West Coast Main Line RUS recommended longer and additional loops between Preston and Mossend. This is being considered further in a joint timetable study with freight operators (as part of the Strategic Freight Network workstream), feeding into the 2013 WCML timetable study. Such additional/improved loops would provide the potential for additional paths for both freight and passenger services.

Additional capacity can also be provided by greater use of standardised timetables and opportunities may exist for the industry to work together to deliver these to maximise the output available from existing capacity.

In other parts of the world portion working is used to maximise train length on congested sections of the network while maintaining through journey opportunities. There may be opportunities to explore the use of portion working on the West Coast Main Line, where there are numbers of potential towns and cities to be connected, recognising the potential journey time and performance implications of splitting and joining trains.

There is evidence that the average number of passengers carried per train on the Great Britain network is relatively low compared with other European railways. On Anglo Scottish services there are low load factors on some train services, for at least part of their journeys, due to the relatively high frequency of services specified in the franchises, and the fixed formation of rolling stock. Nevertheless it is worth noting that once rolling stock is leased at a fixed price, it is often worth operating additional services to maximise net revenue. Operators use sophisticated revenue management techniques to maximise yield of train services.

Franchise replacement may give the opportunity to optimise service patterns to better meet demand.

Affordability

Where train services are funded by the DfT the overall affordability of Anglo Scottish services is included within the England and Wales Initial Industry Plan (IIP). Scottish

Ministers fund the network in Scotland but Network Rail receives an allocation of the Variable Track Access Charges from the DfT specified operations in Scotland.

5.4.2 Strategic options

Fares / pricing

This plan assumes that the Westminster government's policy on capping the increase in regulated fares remains as at present; i.e. RPI+3 per cent until 2014 and then reverting to RPI+1 per cent).

The Anglo Scottish operators have taken opportunities to manage demand and improve yield by using revenue management techniques similar to those used by the airline industry, and it is assumed that unregulated fares will continue to be optimised on this basis to provide maximum yield per train.

Growth

The England and Wales IIP offers options for tactical interventions to accommodate the forecast demand growth. The key schemes in the sector are:

- IEP
- various power supply upgrades
- Industry Timetable Working group developing the future timetables for the WCML
- lengthening of existing train formations

These changes are proposed to be funded through the DfT, HLOS and Statement of Funds Available (SoFA). See the England and Wales IIP available on the Network Rail website.

Journey times

Improvements in journey times on the Anglo Scottish services are essential to meeting the strategic needs of the sector in promoting modal shift and a value for money product. The Strategic Transport Projects Review (STPR) confirms Scottish Ministers' commitment to improved journey times and frequencies to and from key English destinations such as London, Manchester, Leeds and Birmingham.

Anglo Scottish operators and their stakeholders have expressed a desire to reduce advertised journey times, because journey time reductions are known to stimulate demand growth and improve the competitive position of rail compared to other modes.

Some operators have already taken the opportunity to reduce the differentials between the working timetable and the advertised timetable. This does not generally affect the actual journey time or performance of a train (other than slightly changing the performance management focus), but it does allow a shorter journey time to be advertised. Such changes to the timetable increase the challenge to deliver PPM.

Analysis of the working timetables on Anglo Scottish routes has shown that some routes have journey times lengthened considerably by the allowances included for pathing (including junction conflicts), performance, engineering works (speed restrictions), and station dwell times (related to the rolling stock used). This highlights that all operators need to co-exist with each other leading to the need to compromise on journey time in some cases. For example, threading long distance Anglo Scottish services through an intensely used suburban network with numerous flat junctions

and single line branches can result in the need to balance journey time between services. This in turn needs to take account of the resource impact of lengthened journey time as well as the impact on the passengers of the extended journey times.

The evidence suggests that there may be opportunities to improve journey times without significant expenditure on infrastructure enhancements, but there is no simple, formulaic relationship between reduced journey time and other outputs, and initiatives in this area will require substantial analysis of the overall timetable on a case by case basis to determine whether there are opportunities to be gained. The rail industry will use the timetable development processes to seek opportunities to identify improved timetable paths. In addition there may be opportunities as renewal plans are developed further to deliver line speed enhancements that will reduce journey times. In doing this the benefits (economic and social) need to be balanced against the cost by developing appropriate business cases.

This plan includes initial options for line speed improvements on the following sections of route which are served by the Anglo Scottish markets. These are being developed to establish an appropriate business case:

- Carstairs Junction upgrade
- Portobello Junction upgrade
- Scotland Traction Power Scheme

Performance

The industry plans to maintain the high levels of performance of the current railway, and specifically focus on improved resilience of the network to extreme weather conditions. Performance for long distance operators is monitored at both train operator and Network Rail route level although PPM can only really be reported on end-to-end journeys.

Across Great Britain the long distance sector has been the poorest performing passenger sector in recent years, both in terms of PPM and Cancellations and Significant Lateness. There have been specific infrastructure issues on the East Coast and West Coast Main Lines and plans are being agreed between Network Rail and operators to bring performance back to the Control Period 4 (CP4) targets. Even at this level, performance will still lag behind that of other operators, and the performance management focus in Control Period 5 (CP5) will be on moving the long distance operators closer to the network average with a consequential increase in both passenger satisfaction, revenue and market share.

5.5 A value for money strategy

In summary the key issues affecting Anglo-Scottish operators in this plan are as follows:

- address the specific areas of poor performance of the current railway
- support economic growth by providing the optimum service level to accommodate future demand
- options for targeted enhancements to improve journey times
- make proposals to optimise the service specification to better respond to passenger demand.

6. Rail freight in Scotland

6.1 Strategic importance

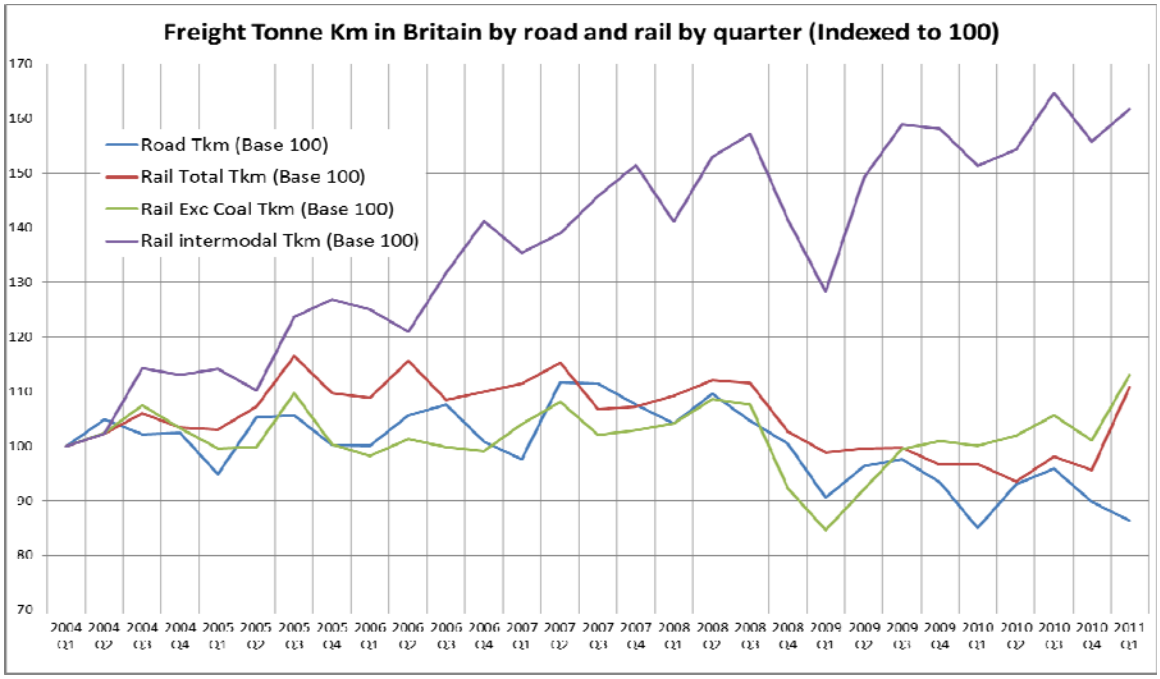
The rail freight industry delivers significant economic and environmental benefits to the Scottish and wider British economies. Each year, it directly contributes £870 million to the Great British output (of which £299 million is attributable to profits and wages), but when indirect and induced effects are taken into account, the total contribution is estimated to be £5,900 million[31]. This supports nearly 67,000 jobs.

Its strategic importance to the growth of the national economy is significant. For example:

- around 25 per cent of the electricity consumed in the UK is generated by coal that has been moved by rail. 16 per cent is generated by nuclear power, the spent products from which depend on rail for safe disposal
- for every 100 tonne KM that coal is transported in Britain, 79 per cent is transported by rail[32]
- rail moves aggregates and cement into major conurbations to enable developments that in turn enable the economy to grow
- 28 per cent of all deep-sea containers that arrive or depart from the major ports are transported by rail carrying goods including food, clothes, electronic and white goods, raw materials, and chemicals for retailers and manufacturers
- the rail freight industry has itself invested over £1.5 billion since 1995
- whilst the total tonne-kilometres of freight transported by road has declined since 2004, rail freight tonne-kilometres (and intermodal rail freight in particular) have grown as demonstrated in the chart below (source: MDS Transmodal, September 2011).

[31] Source: 'Value and Importance of Rail Freight', Network Rail, July 2010, and quoted in 'Realising the Potential of GB Rail: Final Independent Report of the Rail Value for Money Study', DfT/ORR, May 2011 (also known colloquially as the McNulty Report)

[32] Transport statistics Great Britain 2008, November 2008, ONS (and NR value of Rail Freight Document)



In 2010/11 some 19.230 billion tonne-kilometres were accounted for by rail freight, representing growth of 48 per cent since the time of rail privatisation in 1994/95. Just prior to the recent recession, rail tonne-kilometres reached a total 21.9 billion (2006/7), an increase of 68 per cent since 1994/95. Growth by rail in the intermodal sector has been even greater with growth of 61 per cent since 2003/4 while road fell by 14 per cent, implying that in mode-share terms, intermodal by rail is growing 3.6 per cent per annum faster than road.

On average, the removal of one mile of road freight (a 'lorry mile') generates £0.44 of benefit, taking into account the costs of congestion, accidents, and environmental factors, and net of taxation and rail/water externalities[33].

Whilst, in terms of volume, bulk traffic represents around 70 per cent of traffic moved to and from Scotland there is not expected to be significant growth in this sector. Growth is forecast in Domestic and Deep Sea intermodal traffic both long distance from English ports and Distribution Centres and also short haul flows internal to Scotland. UK wide, Deep Sea intermodal traffic to/from ports is forecast to grow by 38 million tonnes (12 million tonnes to 510 million tonnes) and Domestic Intermodal by 23 million tonnes (2 million tonnes to 25 million tonnes) over the same period, 2006 to 2030**.**[34] The case study below is a good example of the ability to introduce new freight services over relatively short distances.

[33] Source: 'Mode Shift Benefit Values: Technical Report', DfT, April 2009
[34] Source : Scotland RUS Generation Two

Figure 26: Case Study Mossend to Inverness

Case Study : Mossend to Inverness

Contrary to the historical industry view, intermodal services can be successful over shorter distances. The service which started in early November 2009 runs six days a week between Mossend and Inverness transporting Tesco produce from the Tesco distribution centre at Livingston to stores in the Inverness area.

Running with 10 megafrets (large container wagons) the train is an example where infrastructure constraints (in this case the train exceeds the published length capability of the route) can be overcome by a train planning solution and excellent train performance.

Since the service started nearly 18,000 lorry journeys (round trip) have been removed from Scottish roads, most notably the A9.

Rail freight has a vital role to play in tackling climate change and helping the Scottish Government to meet its commitment of reducing net emissions by at least 80 per cent (lower than the 1990 baseline) by 2050, with an interim target of at least 42 per cent emissions reduction by 2020.

UK Transport currently contributes 21 per cent of carbon emissions of which seven per cent originates from lorries. Given that rail freight produces 76 per cent less carbon dioxide than road freight, it is clear that every tonne of cargo carried by rail rather than road makes a positive contribution towards reaching the targets.

Fewer emissions which directly impact upon people's health are generated by rail freight – for example, less than a tenth of the nitrogen oxide and fine particulates per tonne produced by road transport.

Transporting goods by rail is significantly more fuel efficient than transporting by road. On average, a gallon of fuel will move a tonne of goods 246 miles on rail but only 88 miles on the road network. An average coal train is equivalent to removing 52 Heavy Goods Vehicles (HGVs) from Scotland's roads and an average intermodal train running from England to Scotland is equivalent to 43 HGVs [35]

The rail freight industry is making active strides to increase its own environmental credentials still further, through measures such as efficient driving techniques,

[35] Analysis of data contained in Transport Statistics Great Britain 2009, Office of National Statistics (ONS) and Road Freight Statistics 2008, DfT (and in Network Rail Value of Rail Freight Document)

reducing empty running and longer trains. The latest locomotives introduced over the last couple of years are 10 per cent more efficient than their predecessors. Whilst the currently committed plans for further electrification of the network are unlikely to encourage operators to purchase new electric locomotives, that position is expected to change if a rolling programme of electrification enables more end-to-end electric journeys over a greater network of routes used by freight. In Scotland works associated with the Edinburgh-Glasgow Improvement Programme (EGIP) of electrification works will enable Anglo Scottish Grangemouth bound services to run with electric traction, improving journey times and haulage capability.

The environmental benefits of such a switch are considerable, reducing emissions by around a further 30 per cent assuming that the energy mix for producing electricity is also decarbonised.

6.2 What customers and potential customers want

In most markets rail operators are competing directly with road operators to move goods around Great Britain. In order to compete, rail must offer a logistics package that can satisfy the individual needs of customers - but at a level of price and service quality at least equal to the road offering.

The users of rail freight range from industrial users such as power station and quarry owners, through steel and car manufacturers, to shipping lines and (increasingly) logistics companies and retailers. The requirements for each customer are different, but all customers want a competitive price together with a reliable and consistent service. Increasingly, as society changes, customers are seeking train services which run across 6 or 7 days a week. The road network is available 24 hours a day, 7 days a week, and lorries can access it at all times. To be able to compete fully, rail must be able to offer an equivalent service.

In order for rail freight to continue to grow, therefore, the rail freight offering must continue to evolve. Road‘s inherent flexibility, coupled with assets that have a shorter life (which in turn enables new technologies to be adopted more easily and quickly) means rail has to become ever more efficient in order to compete effectively.

The ‘Final Independent Report of the Rail Value for Money Study’ (RVfM) concluded that rail freight operators had achieved a 32 per cent betterment in staff productivity since 1998/99, and had achieved growth with half the locomotives and two-thirds of the wagons employed in the mid-1990s. Going forward, however, even more efficiencies must be achieved.

The needs of users can be divided into strategic requirements and day-to-day performance requirements, as described below.

Strategic requirements

In July 2007, the then Government published its Rail White Paper ‘Delivering a Sustainable Railway’. This document acknowledged the importance to the economy of an efficient and successful rail freight industry, and proposed the establishment of a Strategic Freight Network (SFN) defined as “a core network of trunk freight routes, capable of accommodating more and longer freight trains, with a selective ability to handle wagons with higher axle loads and greater loading gauge, integrated with and complementing the UK’s existing mixed traffic network.”

In England and Wales, this policy was taken forward in the Department for Transport's (DfT's) High Level Output Specification (HLOS) accompanying the White Paper with funding of £233 million to be invested in Control Period 4 (CP4 – 2009-2014). In addition to the SFN funding stream, funding was also allocated for freight schemes in CP4 from the then Transport Innovation Fund. This totalled £152 million, and enabled a further £72 million to be leveraged in from other sources.

In CP4, the SFN funding did not encompass Scotland. In December 2008, Transport Scotland published its 'Strategic Transport Projects Review' (STPR), which outlined the role of a safe, efficient and effective transport system as a key enabler of the development of a successful and dynamic nation. It promotes and supports a more sustainable transport network by encouraging efficient use of existing road and rail resources, encouraging sustainable mode choices through targeted rail enhancements and providing better opportunities for strategic public transport and freight movements. In consequence, specific rail freight capacity enhancement projects were promoted and developed in Scotland during CP4 in line with SFN principles.

Commitment to the continuing development of the SFN was re-affirmed by the UK Coalition Government in December 2010, and endorsed further by the RVfM report which concluded: "The Study notes that the development of a SFN remains government policy and believes that this is aligned to the Study's recommendations on freight."

The SFN is governed by an industry wide steering group. Although the SFN concentrates on long distance routes in England and Wales, it also includes Anglo Scottish flows. It should be noted that Transport Scotland are represented on the steering group in recognition of the fact that the railway is a network serving the whole of Great Britain.

The objectives of the SFN were developed collaboratively by all the key parties in the rail freight industry. These were underpinned by demand forecasts stretching out to 2019 and 2030, developed by the industry in 2006, and endorsed by the wider rail freight stakeholder community. Nine core principles or objectives for the ongoing development of the freight network were established:

Objective I - Longer and heavier trains

To optimise path and asset utilisation, the aim is to move towards the operation of longer and/or heavier trains, with the future standard intermodal train becoming 775 metres long (including a locomotive).

Objective II - Efficient operating characteristics

To aim to achieve more through-running of freight trains without the need for looping and recessing, thereby delivering both environmental and journey-time improvements.

Objective III - 7-day and 24-hour capability

Increasingly, there is a demand to provide the ability for operators to run trains to suit the requirements of end-user customers. More Great Britain distribution networks now operate on a 24-hour, 7-day basis as retail facilities and internet retailing become 'round the clock' businesses. Rail freight aspires to meet this need by operating across more hours of the week, requiring less disruptive track maintenance policies, co-ordinated planning of engineering possessions and the provision where justified of diversionary routes with appropriate capability.

Objective IV - W12 loading gauge

All strategic intermodal routes identified as part of the SFN (including appropriate diversionary routes) should offer W10 and W12 loading gauge where there is an economic case to do so, in order to accommodate both short sea and deep sea high cube containers on standard wagons.

Objective V - UIC GB+ (or 'European') gauge freight link

By using High Speed 1, the ability exists to operate European gauge traffic from the Channel Tunnel to Ripple Lane in east London. There is an operator aspiration to provide the ability to convey such traffic, without transhipment, to further destinations in the country.

Objective VI - New freight capacity

New SFN capacity, particularly on key intermodal routes, will be required to meet industry growth forecasts if this additional traffic is not to be forced onto the congested road network.

Objective VII - Electrification of freight routes

To secure diversionary and resilience benefits, and also to provide incentives for the use of electric freight traction (which provides environmental benefits, and can deliver both performance and capacity improvements), the SFN should consider selective strategic and infill electrification as part of an ongoing, rolling programme of electrification schemes.

Objective VIII - Strategic rail freight interchanges and terminals

Accommodating growth and achieving modal shift depends upon the ongoing provision of suitable terminals and interchange facilities, offering the ability to handle both longer and electrically hauled trains.

Objective IX - Strategic freight capacity initiative

The growth of intermodal traffic from ports to UK centres is putting considerably more demand onto mainline arteries such as East Coast Main Line (ECML), West Coast Main Line (WCML), Carstairs to Midcalder, Wishaw to Holytown and the Scottish central line. This highlights the need and value of identification and reservation of capacity on capacity constrained routes if demand is to be satisfied. Alongside this the industry will develop tighter 'use it or lose it' criteria, in order to optimise the use of capacity and to facilitate competition.

Taken as a whole, the SFN for England and Wales is a long term vision going beyond Control Period 5 (CP5) to the following two control periods (up to 2029), and taking into account predicted demand up to 2030. It is recognised by the Rail Freight Industry that similar funding will be required in Scotland to enable modal shift and achieve the demand forecasts. Some of the interventions will not need to be delivered until Control Period 6 (CP6) or Control Period 7 (CP7) however, they will require development, whether this be planning infrastructure changes, or commissioning research into new, more efficient and/or innovative technologies to better exploit the existing railway. For that reason, the rail freight sector sees a requirement for an ongoing research and development (R&D) fund in CP5, to be used to plan further outputs for the SFN. In principle such an R&D fund could be a ring fenced element of any future freight fund for CP5.

Day to day performance

The industry and its customers wish to see measures which encourage improvement in the day to day performance of rail freight - not just in the existing control period, but going on into CP5 and beyond. Performance includes not just punctuality and reliability, but also measures of network availability.

The current Network Rail regulated measures are:

- delay minutes per 100km
- possession disruption index – Freight (PDI-F - which measures the availability of the network by mileage).

The industry proposes to continue to use delay minutes as a simple metric that captures the overall impact of Network Rail performance on freight services. However a key development would be that instead of one national target, this should be established on a route basis. This would have the considerable merit of helping devolution by focusing the devolved route structures on the specific impact on freight services from performance issues on their route.

The industry is also proposing to jointly develop and introduce a Network Rail Cancellation and Network Rail Significant Lateness measure. This has been a successful measure with passenger train operators and reflects the fact that large incidents have the greatest affect on our customer's business.

The freight operators are also committed to working with Network Rail to produce action plans between Network Rail and each individual freight operator in order to reduce overall delays and improve our individual operational performance (this work is already under way for the remainder of CP4).

The industry proposes for CP5 that replacing the PDI-F used in CP4 with some agreed targets based around the key traffic flows listed in the Joint Network Availability Plan agreed between Network Rail and freight operators in 2010. The industry believes that this will help to enable the devolved routes to be clear about what they need to aim to deliver and should encourage collaborative working between routes.

The complexity of the different logistics chains involved in the various rail freight markets, together with the more directly commercial and competitive customer interface which freight train operators have, rendered it difficult to construct a specific customer satisfaction metric akin to the survey-type measures used in the passenger railway. As a proxy, therefore, it is proposed that, once the suite of existing performance metrics are enhanced, these and other output metrics can be used as an indicator of customer satisfaction.

6.3 Demand for rail freight

The demand for rail freight has grown since privatisation. From the low point of rail freight demand in 1994/95, when 13 billion tonne-kilometres were moved, the industry had grown 48 per cent by 2010/11 when a total of 19.23 billion tonne-kilometres were moved. Within this aggregate growth, the mix of commodities moved has also changed. Coal for electricity generation has traditionally formed the largest commodity type moved by rail, but in 2010/11 the intermodal sector (containers) became the largest part of the market for the first time.

Recent work commissioned by the Rail Freight Group from MDS Transmodal suggests similar growth rates to those developed by the industry. The forecasts for 2030 are:

	Rail Tonnes in 2030	Rail Tonne-Kms in 2030
• MDS Forecast	176m	43bn
• SFN Forecast	179m	45bn

These figures suggest that between 2010 and 2030 there will be growth of approximately 3.5% per annum in tonnes carried, and 4.3% in tonne-kilometres.

The rail freight market can be segmented in many different ways, but for the purposes of this document, the market has been split into four major groupings: fuel for electricity supply, intermodal, construction, and other.

6.3.1 Fuel for electricity supply

The movement of coal for electricity generation continues to be a major market for rail freight. In 2010/11 it generated the largest amount of tonnes lifted and the second greatest in tonne-kilometres. In Scotland, coal accounts for approximately 70 per cent of the total tonnes moved from Scottish terminals to both Scottish and English power stations.

The demand for coal burn, and therefore the movement of coal by rail, fluctuates considerably depending on the price differential between the delivered cost of coal and other forms of power generation. This is outside the control of the rail industry and makes accurate forecasting of the actual usage of the network complex and difficult. Demand for coal burn increased between 2000 and 2006, but, between 2006 and 2011, the price differential frequently favoured other fuels and the amount of coal transported decreased. Concerns over nuclear power since the Fukushima nuclear plant accident and the high price of oil (which drives the prices of gas) have since led to an increase in coal burn. However the outlook for coal burn remains uncertain and is subject to volatile global influences.

The other major impact on the demand for rail will be the Government's energy policy.[36] The current assumption is that coal power stations that have not fitted Flue Gas Desulphurisation equipment will close by the end of Control Period 5, which in Scotland would include Cockenzie Power Station. A Carbon Price Floor (CPF) was announced in the 2011 Budget to provide a greater degree of certainty of carbon prices and to act as an incentive to invest in low carbon electricity generation. This is due to be introduced from April 2013. While it will probably make coal generation less competitive, it remains the case that the underlying demand for coal will be driven by the price differential between the various generating fuels. Additionally, the success of development of carbon capture storage technology (CCS) and whether it is retrofitted at existing power stations will also have an impact on demand.

Therefore the forecast for overall coal demand on rail is that it will reduce with the closure of the Cockenzie plant not fitted with Flue Gas Desulphurisation although some of that demand in Scotland may be taken up by Longannet Power Station. Beyond 2015, given the uncertainty in the price differential and government energy policies, the tonnage of coal moved is subject to change but is most unlikely to increase.

Against this backdrop, the 'UK Renewable Energy Roadmap' published in July 2011 by the Department for the Environment, Food and Rural Affairs (DEFRA) sets out a strategy for accelerating the development of renewable energy sources over the next 10 years. Biomass for electricity generation has the advantage of being a predictable and non-intermittent technology. Currently, capacity is 2.5 Giga Watts but DEFRA forecast that this could rise by nine per cent per year to reach 6 Giga Watts by 2020. Conversion of coal fuelled power stations to biomass is viewed in the report as offering significant potential and this will also have an impact on rail demand. There is also the potential for other new power stations to be fuelled with biomass and with waste products which are presently sent to landfill; some of these new facilities could be served by rail.

In Scotland the Scottish Government have published their energy policy in 2008 which also focuses on renewable sources but recognises that fossil fuels will continue to play an important part in the generation mix.[37]

Whilst future energy policy represents a significant volume risk for the UK rail operators in terms of coal, the development of new generation technologies, such as biomass and 'waste to energy', offers opportunity for substitution and even growth in the sector. Generally existing coal burning power stations have sufficient scale to allow them to invest in biomass burn. If this occurs it would have a significant effect

[36] http://www.scotland.gov.uk/Publications/2008/09/08110631/0
[37] http://www.scotland.gov.uk/Publications/2008/09/08110631/5

on the need for rail paths. The lower calorific value and lower density of biomass compared with coal, means that generators require about 1.5 times as much biomass as coal to generate the same energy. However, it appears likely that biomass would be imported through the same ports which currently import coal, and this suggests that a strategy which assumes coal or biomass requiring broadly the same capacity across CP5 as today, both in terms of volumes and routeing, is prudent.

There are currently 10 nuclear power stations across England, Scotland and Wales, providing around 16 per cent of the electricity consumed in the UK in 2010 – about six per cent of total UK primary energy supplies. On the basis of current plans and as the fleet of stations have grown older, all but one of the existing nuclear power stations will have shut by 2023. As a result the contribution of nuclear power to electricity generation in the UK is in decline at the moment, having produced 30 per cent of all electricity output during the 1990s. Nevertheless, the Westminster Government has stated that nuclear generation has a role to play in the national energy mix, but without public subsidy specific to the nuclear industry[38]. The Scottish Government policy is to retain existing nuclear power stations to the end of their economic lives but not to build any new ones. On this basis rail freight will continue to play a part in servicing the nuclear generation sector in Scotland for the foreseeable future.

6.3.2 Intermodal

Since privatisation, the intermodal sector has seen strong growth, with rail becoming more competitive over the past few years. Key to this success were the reduction in variable track access charges in Control Periods 3 and 4, improvements to infrastructure (especially gauge clearance), and the introduction of more competition within the rail sector.

Operators have reduced their unit costs through operating longer trains and pushing other efficiencies throughout the logistics chain. Intermodal is now the largest rail freight market in terms of tonne-kilometres. It continued to grow during the recession despite the overall UK freight market contracting.

The intermodal market is in fact three distinct markets: maritime containers, domestic intermodal and Channel Tunnel traffic. As each of these have different drivers of demand and operating characteristics, they are best treated individually.

Maritime

The maritime container market is the movement of containers between UK ports and inland distribution centres. The drivers of the market are a) the share obtained in competition with road haulage (which still moves around 70 per cent of containers); and b) the volume of containers moving into and out of the UK by sea (a function of UK GDP, together with trends in worldwide manufacturing and containerisation of goods) The beverage sector is one of Scotland's main rail borne exports – a sector which contributes around £2.7billion of Gross Value Added to the Scottish economy[39].

[38] Source: Department of Energy and Climate Change
[39] Source: HiTrans/MVA Consultancy, Whisky Logistics Study

Volumes by rail are forecast to continue to grow broadly in line with the growth trend of the last 20 years. Both the overall number of container movements and rail market share are forecast to continue to increase, with circa 40 per cent market share a long term aim. Estimates completed before the recession predicted growth of six per cent per year up to 2030. However, the recession means that achieving the forecast volumes is likely to be delayed by 2-3 years.

Domestic

The domestic container market describes the movement of freight between UK distribution centres, and is the largest of the intermodal sectors for Scottish volumes. Road currently dominates this market with some 98 per cent market share. At present, rail serves the longer-distance flows to/from Scotland, and within Scotland there are some buoyant shorter-distance flows. There is an opportunity for this market to grow rapidly from a low base with interest in modal shift from the key UK retailers who are already investing in rail-linked warehousing at sites such as Daventry and Castle Donnington.

More rail linked warehousing (to reduce lorry journeys), the ability to offer a seven day a week service (in line with road hauliers) and paths that enable competition with road timings will all contribute to the growth. The sector was forecast to grow rapidly but the recession and uncertainties in planning policy has meant much of the investment in rail linked distribution sites has not yet commenced. When the economy resumes stronger growth, the forecast is for a return to the pre recession demand trajectory with a growth rate of 1.1 per cent per annum in tonnes lifted.

Channel Tunnel

Channel Tunnel traffic is the third part of the intermodal market. The traffic competes predominantly with short sea shipping routes although there is some competition with Eurotunnel's 'Le Shuttle' service and other roll on roll off ferry services. End markets are primarily in south central and eastern Europe although there is some localised competition from ferry services where rail borne cargoes from end markets have been transhipped in Northern France or Zeebrugge.

The costs of traversing the tunnel, the long distance from the tunnel and other institutional factors have limited the competitiveness of rail against other modes for the Scottish market. 2010/11 has shown the first notable growth in this traffic for some years with a 21 per cent increase in volumes. Higher growth in the market could be achieved in the future although for traffic to/from Scotland coastal shipping is likely to remain a strong competitor.

6.3.3 Construction

UK wide construction tonne kilometres have grown at 4.3 per cent per annum since 2006 and whilst there is currently limited construction traffic to/from Scotland there are several planned construction projects (for example; the A8 upgrade which will complete the motorway between Edinburgh and Glasgow and A9 phased upgrade extending existing dual carriageway between Perth and Inverness) which could result in a significant increase in this sector.

If the forecast growth rate continues, by 2030 some 35 per cent more tonnage would be conveyed on the rail network. The competitiveness of rail as a mode for delivery

of construction goods to city centres is likely to continue as other available sources of aggregates and cement diminish.

6.3.4 Other

The other commodities, such as metals and petrol, are not forecast to have as much change in demand, and tend to be very dependent on the decisions of a few major customers. While the amount moved by rail fell during the recession, there has been a recovery especially in steel products. The metal sector is forecast to recover to its pre recession levels but is then predicted to have only modest growth until 2030 reaching 31 million tonnes lifted across Great Britain by that year.

There may, however, potentially be changes in the patterns of steel traffic during this period. UK producer Tata is gaining significant market share in Europe, and has announced significant investment at its Scottish plants at Dalzell and Clydebridge.

There is also a growing recognition in the petroleum sector that the inventory costs and implications of the UK pipeline network are beginning to increase the attractiveness of rail transportation. There are significant flows to/from the main Scottish refinery at Grangemouth and these flows are expected to stay relatively stable.

6.4 The current railway

In this section analysis is provided of the outputs of the "current railway". Where the Initial Industry Plan (IIP) refers to the current railway, it is examining a scenario that assumes committed changes to today's railway. In particularly it examines the outputs and costs of a railway that assumes the delivery of Network Rail's Control Period 4 (CP4, 2009-2014) enhancements programme.

Outputs

In 2010/11 some 89.9 million tonnes of freight was transported by rail in Great Britain, an increase of 3.1 per cent over 2009/10, requiring the operation of nearly 300,000 freight trains. Movement of freight amounted to 19.23 billion tonne-kilometres in 2010/11, a 0.89 per cent increase over the previous year. In 2009/10 (the latest year for which figures are available), the conveyance of freight on rail avoided the need for just over 6½ million lorry journeys.

For the most part, freight trains share tracks with passenger trains. With growth in both these sectors, some parts of the network are becoming increasingly congested, to the point where (in the absence of any interventions to increase capacity) decisions will need to be made as to how best to allocate capacity between competing claims by the various train operators.

The current freight railway is as described in Chapter 3 of the Freight Route Utilisation Strategy[40], enhanced by the following Scottish schemes which either have been or will be delivered during the course of CP4:

- capacity enhancements on the Grangemouth branch – delivered
- capacity enhancements at Kilmarnock – delivered

[40] Freight Route Utilisation Strategy, Network Rail, March 2007

- specific schemes to improve performance and capability at Newton-on-Ayr and Hunterston – delivered
- gauge clearance to W10 of the route from Doncaster to Carstairs (via the Edinburgh Suburban route).

The schemes described above are those which have a significant strategic impact. In addition to these, there have been a considerable number of localised schemes implemented across England, Scotland and Wales which have provided direct benefits to freight operations. These have used funds from sources other than the Strategic Freight Network.

Turning to performance outputs, the Network Rail freight minutes Control Period 4 (CP4) delay target has not been achieved in the first two years of CP4. Network Rail is working to get back on target including developing improvement plans with the freight operators.

On time arrivals, as measured by the Freight Performance Measure (a non regulated metric), has been steadily improving year on year since 2005/06, albeit with a slight dip in the third and fourth quarters of 2010/11. Around 74 per cent of freight trains are recorded as arriving at destination on time.

It should be noted that this statistic is not comparable with the public performance measure (PPM) used for monitoring the performance of passenger trains, primarily because the ability to achieve 'right-time' starts for freight trains is heavily influenced by parties and factors outside the control of the rail industry itself. Network Rail and the freight operators are developing alternatives to this measure for CP5.

Network Rail has achieved the Possession Disruption Index – Freight (PDI-F) target of no worsenment in the first two years of CP4 and is forecasting to continue to meet this target at the end of CP4. Network Rail and the freight operators agree that this measure has not been helpful in reflecting the actual impact on operators and customers at a local level. It is also the freight operators' view that a measure that requires no improvement has been unhelpful and sends out the wrong message when increased access to the network is vital in increasing market share and capacity. Network Rail and the freight operators are currently developing plans for CP5 using the agreed freight Joint Network Availability Plan as a base for deliverables during CP5.

6.5 Strategic options

In developing a preferred strategy for CP5, there is a range of policy options to be considered. From 'doing nothing' at one end of the spectrum, through making better use of existing assets, to undertaking significant investment at the other end of the spectrum, each option involves a decision about the extent to which rail should cater for the expected growth in demand for freight transport.

Do nothing

If no further initiatives were taken, beyond the currently committed plans, little or no further growth in the key freight markets could be accommodated on the rail network. Modal shift to rail would be halted, if not reversed, with adverse economic and environmental consequences.

Make best use

As acknowledged in the RVfM report, it is important that the industry jointly examines the extent to which the existing network is being efficiently exploited before considering expensive interventions to cater for increased demand.

Most rail freight operates over tracks that it shares with passenger services. Inevitably much of the freight needs to be transported to major population centres; whether this is to carry the goods that the population wish to consume, the construction materials needed for building or the waste which needs to be disposed of, this freight will compete for valuable paths on the network.

Similarly the transport of other vital commodities such as coal inevitably has to pass across the mixed use network as it moves from port and mines to power station.

As demand for both freight and passenger services grows, so do the pressures on the network. Making best and most efficient use of the network whilst accommodating growth entails a number of potential initiatives or trade offs as described below:

- **Maximise the length of trains so as to move a given volume of freight with the fewest possible number of paths**

  The industry's development of the Strategic Freight Network acknowledges the need to use network capacity efficiently by operating longer and/or heavier trains to accommodate demand (objectives I and VI of SFN).

  The established Scotland and West Coast Main Line Route Utilisation Strategies (RUSs) highlight the routes where track capacity is (or is likely to become) constrained. The RUSs emphasise that one of the first interventions, before adding capacity to the infrastructure itself, is to ensure that trains are running to their maximum practical lengths and trailing weights on the existing infrastructure – but without compromising their end to end journey times, or worsening performance. The intention is to progress towards the operation of 775 metre intermodal trains where it is economic and practical to do so, by way (for the most part) of an incremental stage of 640 metre given the characteristics and capabilities of most of the current locomotive fleets.

  Although generally an efficient way of increasing capacity, train lengthening is not always possible or cost free. It may require loops (particularly on single line sections) and sidings to be lengthened, or signal sections to be altered and can impact on level crossings. This can be especially challenging on the West Highland line, between Perth and Inverness and on the Far North line where weight limits can also be a constraint.

  There may be implications on the use of traction, such as the need for more powerful locomotives or for the double-heading of trains and implications with regard to the types of wagons used (restrictive coupling strengths). Longer term, the use of modern electric traction would enable faster acceleration of longer and heavier trains, helping efficient capacity utilisation.

  In looking at options to increase capacity for freight during CP5 and beyond, therefore, the industry will need to consider the use of longer and heavier trains, and to ensure that synergies are captured with the evolving programme of electrification. A further potential benefit of migrating towards a strategy of

electric traction could be the ability to increase maximum speeds, which in turn could also contribute to maximising the use of existing track capacity. However further research into the opportunities and risks associated with such a strategy is prudent, as there are also potential downside consequences such as the aerodynamic effects on passengers at stations, longer braking distances and greater wear-and-tear on track.

There may also be a case to explore the potential for running heavier wagons in parts of the bulk traffics sector. At present maximum wagon payloads are determined by maximum axle weights, which in turn are governed by the strength of underline structures such as bridges and track formation.

To accommodate increased wagon payloads, therefore, there is a choice between reinforcing underline structures to accommodate heavier axle-loads on the one hand, or designing wagons with more axles on the other. This may also be a subject warranting further research.

- **Gauge and intermodal wagon usage**

  Rail freight has benefited from a considerable amount of investment in recent years and it remains a core objective to extend the Strategic Freight Network further (objectives IV and V). Whilst the network of routes gauge cleared to carry 9'6" containers on standard wagons outlined within the SFN strategy is not yet complete, gauge clearance is considerably more extensive than at the beginning of CP4. Gauge-clearance schemes enable rail market share to be increased. The Port of Southampton recently announced that following the completion of a gauge-cleared route from the port in March 2011, rail market share has increased from 30 per cent to 36 per cent including significant long distance flows to Coatbridge (around 500 miles). This is prior to the completion of the gauge cleared route from Water Orton to Doncaster (an ongoing CP4 scheme) and despite the fact that not all sections of the route between Southampton and the West Coast Main Line have a gauge cleared diversionary option.

  If, in the 'current railway scenario' no further investment were to be made in gauge clearance, there would be a number of routes where operators could only move containers using less efficient low platform or well wagons, and a number of key routes would lack a gauge-cleared diversionary option. As a consequence rail operators would be less flexible and efficient in comparison with road operators, and the ability to accommodate growth (both exogenous and from market share) may be put at risk.

  However, it needs to be acknowledged that gauge clearance can be a costly intervention, and there will be a number of flows away from the core trunk routes where the use of low floor wagons will be a cost effective alternative. Therefore, when the standard wagon fleet becomes due for renewal, it will be sensible to consider whether a proportion of any replacement wagons could or should be designed as low floor vehicles if this is likely to generate a better business case than further gauge clearance on routes where such clearance is disproportionately costly. Wagon utilisation is balanced by freight operators across the network but there may be a case in some parts of Scotland, where volumes are relatively low, to invest in vehicles for particular flows to avoid significant gauge clearance works.

- **Extended hours of operation**

  This covers objectives III and VI of the SFN and relates to the operation of freight trains across more days of the week, and over more hours of the day - whilst at the same time ensuring that sufficient engineering access is maintained to provide a safe and reliable railway.

  Freight operators believe that extending operations from five to six days a week would increase their ability to carry freight by up to 20 per cent, with a further increase in prospect if a seven day a week service can be achieved. The latter is seen as particularly important in the domestic intermodal market.

  Extending operating hours requires a combination of a) more flexible track maintenance practices (such as greater use of single line working); b) the development (where justified by business cases) of appropriate diversionary routes offering comparable capability (gauge, route availability, etc) to the core route; and c) there could be a trade off between the cost of gauge clearing a diversionary route to W10/W12 to enable 9'6'' containers to be carried on flat bodied wagons, and the use of well or lowliner wagons (or even, potentially, a new design of wagon).

  To achieve more weekend services, changes to terminal and port opening hours would have to be co-ordinated and agreed amongst all relevant parties in the supply chain.

- **Flexible use of capacity**

  In line with objectives VI and IX of the SFN, as demand for both freight and passenger services grow, there will be an increasing need for the industry to:

    - be flexible with requirements to accommodate passenger timetables particularly during peak demand
    - continue the current practice of minimising operations during periods of peak passenger operation, on busy suburban routes
    - consider whether lightly used passenger services can be flexed to accommodate freight. Should a path taken by a lightly-used passenger train be given over to a potentially more economically productive freight train? Precedent for such an approach already exists.[41] On routes where the passenger demand is relatively small and/or of low farebox value, calculating the respective trade off values is a valid exercise, and may yield an alternative way to generate freight capacity
    - understand the freight Industry and rail industry value of the freight path (freight user) requirements (i.e. just-in-time (JIT) services, degree of flexibility to accommodate their production requirements etc)
    - give careful consideration to alternative routeings for freight trains in highly congested parts of the network where operators find it economic to do so

[41] In order to accommodate a weekday freight service to/from Aberdeen, a passenger service is flexed nearly 20 minutes off its standard hourly path. However, although the freight service only operates typically once a week, it can nevertheless operate on any day of the week. The passenger service therefore is advertised off pattern every day, although it could in theory run earlier on the other four days of the week when the freight service does not operate.

- consider whether there can safely be amendments to operating rules on routes that have infrastructure challenges (ie passing trains on Radio Electronic Token Block (RETB) lines).

- **Realigining capability where not needed**

  The freight operating companies currently have the right to bid for paths on any route on the national network within the published capability constraints. The RVfM report concludes that this has resulted in some lines being maintained to a capability for which there is no realistic short-term or medium-term prospect of need. The industry is therefore discussing a list of routes which could offer opportunities for savings in infrastructure maintenance and renewal costs if, for example, they could be converted for use only by lighter weight passenger vehicles.

  As part of this workstream, stakeholders will also seek to amend operating practices on those lines where there is a low volume of freight, with a view to optimising maintenance and renewal strategies to fit the level of traffic.

  The on going network planning process will be used to identify journey time savings on key routes where there is a positive industry business case to do so. One part of this will be to undertake to joint work to identify opportunities to reduce the current number of speed restrictions in place because of gauge or axle load restrictions with the aim of reducing the number of traffic flows which are dependent on exceptional load forms (RT3973s).

- **Strategic freight capacity**

  Both objective IX of the SFN, and the RVfM report, highlight the benefits of identifying strategic freight capacity, with a process managed at a national level.

  The growth of intermodal traffic from ports to UK centres is putting considerably more demand onto mainline arteries such as the East Coast Main Line (ECML), West Coast Main Line (WCML), Carstairs to Midcalder, Wishaw to Holytown and between Motherwell and Coatbridge. This highlights the need and value of identification and reservation of capacity on capacity constrained routes if demand is to be satisfied.

  In order to give confidence to the freight operators and their customers to invest in rolling stock, equipment and terminals, and thereby to enable modal shift, there is a need to identify capacity that is available on the rail network for freight. Identifying capacity on key routes will also aid the development of off-peak standard hour timetables that make the most efficient use of the capacity available.

  Alongside this the industry will develop tighter ‘use it or lose it’ criteria, in order to optimise the use of capacity and to facilitate competition.

  It is recognised that a national approach to capacity planning and timetabling is important to ensure a) that capacity of national importance is not surrendered in favour of capacity which meets only local needs and which may have a less strong business case; and b) that pathing is optimised to prevent excessive

looping or recessing as freight services traverse different areas of the country – this will help to keep rail freight competitive in terms of both cost[42] and journey time.

Invest for growth

There are strong strategic and environmental arguments for accommodating rail freight growth. The alternative would be to accept the consequences of millions more lorry miles each year on Britain's already congested road network.

The section above highlights the industry's aspiration to accommodate as much of the potential growth as possible by making the most effective use of the existing network. Nonetheless, analysis suggests that the full potential of growing the rail freight market would remain untapped unless further enhancements are made in order to cater for the demand identified in chapter 7 .

In the next section, the industry proposes a suite of interventions which stakeholders consider to offer a value-for-money strategy in CP5.

6.6 A value for money strategy

Rail freight is a success story. It is good for the Scottish economy and it is good for the environment. As the economy reverts to growth, and with the need to tackle the amount of carbon released into the atmosphere, the rail freight industry is both well placed and keen to play its role in helping to deliver that growth by catering for predicted demand in an environmentally friendly way.

At the same time, the rail industry as a whole must become more efficient and affordable, and offer genuine value for money to customer and taxpayer alike. To accommodate growth in rail freight, there will have to be a combination of measures: more effective use of the existing network (as described in section 7.5 in Chapter 7), coupled with targeted investments which demonstrate a robust business case.

In the light of this, the Strategic Freight Network Steering Group (SFNSG) has recommended that a fund be established for CP5 for England and Wales similar to that which has applied in CP4. It has identified four key investment schemes for which such funding could be used, one of which has direct benefit to Scotland:

- West Coast Main Line (North of Preston) capacity enhancements

  This scheme will provide the network capability to accommodate the anticipated growth in both freight and passenger traffic in CP5, over the largely two track section of the West Coast Main Line between Preston and Glasgow.

Wholly within Scotland, stakeholders have proposed the following schemes for CP5 which provide a benefit for rail freight:

- enhancements to improve capacity on the WCML – including enhancements in the Mossend area to accommodate longer trains

[42] Approximately 45 litres of fuel is used every time a diesel freight train is stopped and restarted; keeping freight trains moving saves fuel and reduces carbon outputs.

- bi-directional signalling to reduce planned/unplanned disruption (Law Junction to Carstairs during Motherwell South resignalling)
- further capacity improvements between Mossend and Stirling including an additional loop in the Greenhill area
- electrification of the route to Grangemouth
- electrification of the Edinburgh Suburban route
- capacity improvements between Aberdeen and Dundee
- various small projects at key nodal points to enhance the reliability and performance of the network for freight services.

Experience has shown that there is a need for flexibility within any funding allowance to cater for:

- unexpected changes in demand patterns or policy during the control period
- minor research and development projects which offer potential efficiency savings
- development of schemes for implementation in later control periods.

It is therefore suggested that a Scottish Freight Network Fund (SFN) is established in CP5 to enable small scale freight specific enhancements to be delivered such as those highlighted above. If such a fund is established appropriate governance would be required. It is proposed this would be similar to the cross-industry SFN steering group which currently exists for the England and Wales fund.

In putting forward this strategy, it is acknowledged that other stakeholders have a role to play in ensuring that growth can be delivered. These would include, for example, planning authorities and others whose input is needed, and on whom the industry depends, for plans to come to fruition. The domestic intermodal market, will not reach its full potential unless a viable proportion of the proposed inland terminals actually come on stream. The railway industry recognises that it does not have full control over the logistics chain, but that it occupies a pivotal position which strongly influences the behaviour of other parties.

Proposed freight performance metrics for CP5 are discussed in Chapter 8 of this IIP document.

7. Network strategies for Scotland

This chapter sets out the industry's strategies and plans that apply across the network as to how the industry will improve passengers access to, and the quality of, information, the stations passengers experience, the operation of the network as a system, and its component elements of rolling stock and infrastructure, and the industry employees that will deliver all of this.

7.1 Improving the customer experience

7.1.1 Customer Information Strategy

Customers rightly expect high quality information before, during and after their journey. The industry recognises that particularly during service disruption the timeliness and consistency of information provision can fail to meet this expectation. The industry's Customer Information Strategy seeks to address this. The strategy is based on delivering the industry's vision for information, developed by the Passenger Information Strategy Group (PISG):

"As an industry we will provide timely, relevant, accurate and consistent information – easily understandable and accessible wherever, whenever and however required – so that all customers can make informed choices about travel plans or assist others to do so."

The strategy will be realised by implementing major changes to systems, processes and staff behaviours.

Customer requirements for information

Customers require appropriate information at each stage of their travel including information in advance of travel, during the journey and after the journey. Information that customers need to plan their journeys should be available to them as far in advance as possible via all sources, including the internet, call centres, travel agents and railway stations. Customers wishing to reserve seats for their journeys, or to make advance purchase bookings, should be able to do so as far in advance as possible, based on the timetable being available 12 months in advance.

Where it is known in advance that journeys will be disrupted, information should be provided to customers proactively, so that they are in a position to re-plan. If a customer chooses to purchase a ticket from the station for travel on the same day, it is reasonable for them to be informed of any disruption and to be advised what alternative course of action might be appropriate. The principal requirement is that customers are provided with regular information on any delays or other incidents. Such information is communicated primarily by on board information systems or over the public address system, but it is also important that information communicated to passengers on board the train, or available to them, is consistent with, and as up to date as, what they may see on any mobile device.

Following the journey, the customer may have further information requirements, including onward journey information, refunds, compensation claims (if the train is delayed or another problem has occurred) or lost property. Requirements for this information will usually be for static information, but it needs to be available to the customer via all channels and across all media.

The approach

In order to meet these customer requirements a fundamental change to existing processes and systems is required. A new operating model is being developed that

establishes a clear structure to the provision of timetable information and the systems that underpin this information.

Staff will be trained to focus on customer requirements. This is relevant not only to frontline staff but all staff involved in the end to end process including train planners, control staff, incident response teams, station and train staff and their managers.

Benefits

Key benefits of the strategy will be:

- customer information that is personalised to the needs of each customer.
- all information consistent across all channels and all media
- front line staff will be better informed and more empathetic and responsive to customer needs
- information will reflect the latest controllers' decisions on amended train services
- real time information will be based on more accurate train location and predicted running data
- the ability to plan and book journeys earlier, potentially up to a year in advance
- improved timetable quality around the 6 monthly timetable change.

Funding

The delivery of the strategy and the target operating model will require significant funding. The current customer information issues reflect a history of underinvestment where customer information was largely treated as a by product of operational processes not requiring much major investment in itself.

There is much work to do in updating, replacing and interfacing operation and information systems, introducing cultural change and training programmes. The industry therefore believes that the total Great Britain package of changes required is likely to require funding support in the region of £200 million to include:

- enhanced detection and prediction of train movements to allow for more accurate and timely information to be shared with customers
- more information, and of a better quality, on trains through aligning their information sources with the industry's emerging "one consistent source of information"
- enhancing the industry's capabilities to communicate more information about the customer's journey to empower them to make decisions to fulfil their preferences for a better journey experience, e.g. provision of on train services or the availability of seats on a train
- equipping industry employees with the right tools and processes to communicate better to each other and to customers
- developing and initiating the necessary cultural changes within the industry to provide greater empathy with customers that will drive effective communication across the multitude of channels that customers want to utilise.

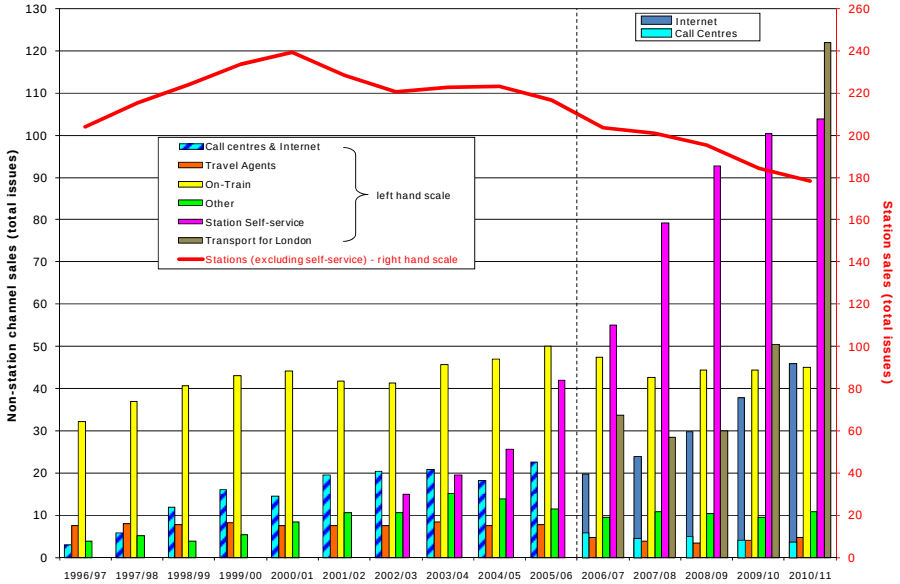
To make sure that the strategy is implemented successfully, the project and its funding should be delivered with cross industry oversight and governance.

7.1.2 Ticketing and retailing

Since privatisation, the ways in which passengers buy tickets has changed substantially, as shown by the chart below. The use of Ticket Vending Machines (TVMs) and of the internet has grown substantially. Smart Card ticketing technology is being trialled on the Edinburgh to Glasgow route over the past year. In contrast, sales at stations have declined significantly in absolute terms and very significantly in

relative terms. The overall cost of retailing and ticketing remains high (around £380 million per year for Great Britain) with station retailing being the principal cost driver.

Figure 27: Ticket issues by point of sale, excluding ticket reservations (millions), 1996/97 to 2010/11



Other technologies are in the process of being evaluated or trialled with significant potential in some cases include wider roll out of 'Print at home' tickets across the network and for a wider range of tickets, tickets to mobile phones and greater use of smartcards (EMV, ITSO, Oyster).

It is anticipated that these trends towards more automated methods of ticket purchase and provision will continue, making ticket purchasing easier for customers and reducing the cost of retailing. The latter will particularly be the case if train operators are allowed more freedom to make changes to the retailing of tickets through station booking offices, a high cost and declining sales channel. In this latter area initial estimates suggest that £60 million annual savings across Great Britain could be made.

In the short term there is a need to focus on developing emerging retail channels, such as SMART, where passengers and train operators continue to identify further improvements that can make them easier to use, demonstrated by the increase in take up of non traditional retailing methods.

7.1.3 Stations

A well designed, maintained and operated station supports and enhances the passenger experience of rail services, including the interchange with other modes, encouraging additional trips and supporting shift from other modes of transport. Many stations also provide a broader contribution to the communities in which they reside, supporting economic activity in the station catchment and accessibility to jobs, and cultural and community facilities and activities.

Passenger satisfaction with many features of stations is relatively low, reflecting the fact that the quality of facilities has not kept pace with improvements in the on train environment brought about though new and refurbished rolling stock. Some stations on the network are also likely to become a constraint to growth within the next two Control Periods, as noted in the Network Route Utilisation Strategy (RUS): Stations

published in 2011 including Edinburgh Waverley, Haymarket and Glasgow Queen Street.

Current and future initiatives

In the current control period the industry is undertaking a number of initiatives to improve stations in Scotland, including:

- the improvement of access to rail stations, which has remained a high-profile commitment of the industry. The Great Britain wide Access for All programme has funded the installation of lifts, ramps and footbridges at some stations and other enhancements and is now on-track for early delivery and will benefit in excess of 14 stations in Scotland across its three tiers of investment
- 27 Scottish stations will receive infrastructure changes and/or platform extensions to accommodate new or lengthened rolling stock
- investments to alleviate congestion at larger stations (such as Edinburgh Waverley, Haymarket and Glasgow Central)
- the development and growth of income from ancillary trading (such as at Aberdeen)
- the ability to seek and attract commercial investment in stations, such as the scheme to create a new retail and hotel development at Glasgow Queen Street station (planned for delivery in Control Period 5 (CP5)).

Despite the progress already made, the station portfolio remains a significant opportunity for improvement. The industry in Scotland therefore supports the continuation of these initiatives in CP5. The priorities for improving stations should be as follows:

- improving the contribution they make to passenger satisfaction and in particular the role stations have in providing information to passengers
- continuing to work toward a more accessible rail network for all passengers regardless of ability
- tackling identified capacity constraints to safely support rail growth
- working towards a more sustainable station estate by addressing legacy issues.

The industry continues to work with its funding partners to address accessibility and inclusivity of the network. Building on the success of the Access for All programme the Initial Industry Plan (IIP) includes funding for the continuation of a programme of investment to improve accessibility in CP5. The industry believes that a target of providing step free access to a further five per cent of stations, similar to that being achieved in Control Period 4 (CP4), represents a sustainable move toward a more accessible and inclusive network overall. This is likely to require a similar level of funding to that provided in CP4. This builds upon the clear evidence within the report into Access for All[43] commissioned by the Department for Transport (DfT) which indicates improved levels of satisfaction and more frequent use of rail services by disabled and non disabled users carrying luggage at these stations.

The Network RUS: Stations identified that some stations will become constraints to the growth and success of the network unless specific interventions are made to alleviate the congestion that is emerging at them. Whilst the RUS identified some lower cost techniques for management of congestion and crowding impacts it also identified a number of stations where investment was going to be required to increase capacity. The following stations were recommended for investigation and

[43] In CP4 the Access for All programme is owned and funded by the DfT for the whole of Great Britain

addressing by end of CP5 including Edinburgh Waverley, Haymarket and Glasgow Queen Street stations, all of which have appropriate investment schemes planned in CP4 and CP5 respectively.

Station stewardship

Network Rail and train operators are working with the Office of Rail Regulation (ORR), Transport Scotland and the DfT on reform of station leasing arrangements for new franchises. This will progressively see franchisees become wholly responsible for the management of station assets, with the introduction of 99 year fully repairing leases for stations, simplifying the management of the maintenance and enhancement of stations. Consolidating control of stations under a single entity will place the responsibility for decision making at stations with the party closest to the passenger, remove inefficiencies in the current dual management approach and enable improvements to be delivered more quickly.

The arrangement will need to be supplemented by further measures such as a transfer scheme to preserve residual value to support the financing of station renewals and enhancements. There may also be a need to adjust the Station Stewardship Measure, the relevant regulated output, which is based currently on the whole network portfolio, to better reflect the move towards discrete, franchise based station portfolios and the likely emphasis on delivering passenger facing improvements.

7.2 Systems issues

7.2.1 Operations Vision

A vision for future operation of the railway is being developed by the industry to support the long term vision for the railway described in Chapter 2. Initial industry discussions have identified key opportunities that would transform the way the railway is operated.

Network Rail has developed a 30 year operating strategy which reduces the cost of the railway through consolidation of operational control into two modern rail operating centres in Scotland and a further 14 in England and Wales. Through centralisation of roles to the new operating centres and co-location of Network Rail and train operating staff, processes can be streamlined which in addition to operating cost benefits will achieve performance and output benefits. This builds upon the benefits already realised through the creation of the integrated control centres.

The operating strategy focuses on the capability to manage the delivery of the day to day network in both normal and disrupted conditions. The management of disruption will be significantly enhanced through the introduction of modern control system technology, improving recovery plans and creating improved communication to the travelling public. Traffic management technology is also critical to increasing spans of control and holistic train regulating decisions, which will help to minimise disruption caused to some of the poorer performing train operators.

The efficiency benefits of the strategy are explained in more detail in Chapter 3 and its financial impact is included in the assessment of the IIP in Chapter 8.

7.2.2 Electrification

The industry published the Network RUS: Electrification Strategy[44] in 2009. This identified a programme of further network electrification that presents a major opportunity to reduce whole industry costs. Furthermore, electric trains, on average, emit 20 to 30 per cent less carbon than diesel trains, and their superior performance in terms of braking and accelerating can help reduce journey times. In addition, they provide more seats for passengers, making a greater contribution to increasing the overall capacity of the railway. Further electrification can also deliver greater operational flexibility to existing operators of electric trains.

Currently, only 23 per cent of the Scottish rail network is electrified and the Scottish Ministers Strategic Transport Projects Review (STPR) recommends further electrification of the Scottish rail network. Electrification would be a long term package of works, introduced over the next 20 years or so. The most cost effective method of delivering this would be through a rolling programme, co-ordinated with a high level rolling stock strategy. Both the STPR and the subsequent Network RUS: Electrification Strategy confirm that this intervention would provide a number of positive benefits including faster journey times and a reduction in emissions.

The detailed development of the first two phases of this strategy is under way, with initial implementation commencing in CP4. This IIP includes the following electrification schemes for delivery in CP5.

1. as part of the Edinburgh to Glasgow rail improvement programme phase 1 will electrify a total of 342 single track kilometres. This includes the Edinburgh to Glasgow (E&G) route via Falkirk High, together with associated routes. This phase of work will add another 13 per cent of electrification to the Scottish rail network
2. phase 2 includes electrification of the remaining diesel operated passenger lines in the central belt (Shotts, Whifflet, Paisley Canal, East Kilbride, Kilmarnock and Shields to High Street). This phase is currently being developed and is proposed for initial delivery during CP5 with completion in Control Period 6 (CP6).
3. in the longer term, the STPR includes extending the electrification to the wider Scottish rail network as far as Aberdeen and Inverness. The strategy is explained in more detail in Chapter 8.

7.2.3 Interoperability

The purpose of the Interoperability Directive is to allow the safe and unrestricted movement of trains to the required level of performance. It is intended to improve the competitiveness of the European Union (EU) railways, by allowing simple and consistent processes for placing trains and infrastructure assets into use and lead over time to a more standardised network. The directive applies to the entire EU railway network, and is supported by a series of Technical Specifications for Interoperability (TSIs) for both High Speed and Conventional rail. Currently, these specifications only cover the Trans European Network –Transport (TEN-T) routes, although work is underway to extend their scope into a set of specifications covering the entire European rail system.

The DfT is accountable for the adoption of these standards for the Great Britain rail network and has confirmed its commitment to achieving the overall objectives of the Directive, whilst avoiding economically unjustified implementation, and so minimising

[44] http://www.networkrail.co.uk/browse per cent20documents/rus per cent20documents/route per cent20utilisation per cent20strategies/network/working per cent20group per cent204 per cent20- per cent20electrification per cent20strategy/networkrus_electrification.pdf

cost burdens. The DfT's implementation methodology has the following core components:

- developing a business led migration, with coordinated implementation where necessary, promoting the best return on investment, and a migration of the network infrastructure towards a more homogenous set of routes
- outlining the approach to addressing these objectives and generating an implementation plan
- ongoing refinements to the plan based upon improved evidence and through further harmonisation of standards and equipment.

Once a Great Britain strategy has been determined DfT will confirm a national implementation plan for either an individual or group of standards. These plans are passed to the European Commission. The first formally notified plan covered the cab radio Global System for Mobile Communication Railway (GSM-R) programme and the cab signalling European Rail Traffic Management System (ERTMS) introduction – for which the Cambrian Pilot Project is the first element, see below. This was produced by the National ERTMS Programme team on behalf of the DfT.

Interoperability is most efficiently achieved or built into enhancements when a railway asset is at the design and build stages of its lifecycle. This is why the regulations are currently directed at new build and when major work is taking place. Whilst this approach may minimise the cost of achieving standardisation the timescale to achieve full compliance may be extensive.

It is expected that changes to interoperability scope and EU legislative requirements will increase the range and speed of adoption of technical standards as the rail system is renewed or upgraded, and new assets are built. Additional deadlines for the UK to meet TSI requirements (or other mandated standards through TEN-T legislation) on major routes are also anticipated.

The rail industry in Britain has been actively involved in the consideration of the TSIs and their application for some time. This has included:

- participation in representative groups engaged in drafting activity with the European Rail Agency, and lobbying of legislative elements of their management and application
- supporting UK representatives at European RISC meetings
- the assessment on the specification of new rolling stock
- issues concerning the application to network enhancements and infrastructure equipment/configuration strategies for routes.

The issues raised by this work are potentially complex, a view reinforced following detailed consideration of the content of the TSIs. In many cases the most appropriate way forward, for Britain or even for the EU as a whole, is not straightforward to determine.

It has been recognised that in some countries there are technical difficulties that would impact significantly on the ability of that country to comply with certain standards or parts of the standards. For example, in Britain the gauge of many tunnels and bridges prevents the blanket adoption of 'European Standard' Rolling Stock Gauge profiles. As a consequence a number of alternative solutions have been identified, known as Member State based specific cases. It should however be noted that it is not mandatory to use such specific cases.

Additionally, the directive provides for national exemptions in a limited range of circumstances, for example where there is a poor socio-economic business case for

compliance when upgrading the infrastructure. Where these circumstances exist exemptions can be sought from the need to implement an aspect of the TSIs.

There are some technical issues where there is an intent to produce a common standard, but this has not yet been achieved. These are known as Open Points. There are also, naturally, issues that may come up that have not been considered in detail and where a TSI is therefore silent. These are both addressed by the Notified National Rules (some of the measures in the current Group Standard suite) which also provide for the demonstration of compatibility with the legacy (non TSI conformant) infrastructure and vehicles.

Note that, unless already addressed by a Great Britain specific case, the intended industry approach in Britain is to adopt the TSIs in full – unless there is demonstrably no business case to do so. For these parts of the network an alternative approach may be proposed for each of the relevant TSI measures, and derogation sought from the European Commission.

The proposed hierarchy of route options is shown in the table below.

Table 28: Hierarchy of route options

	Rationale	Rolling stock	Infrastructure
Fully Compliant Route (no specific case used)	The default position – unless a cost/benefit appraisal indicates that there is not a business case to achieve compliance.	All authorised vehicles (i.e. which comply with the rolling stock TSI) can operate on the route.	Compliant with all aspects of the infrastructure TSIs. Compatible with existing rolling stock.
Compliant Route (utilising specific cases)	Where costs of achieving TSI compliance outweigh benefits delivered but specific cases are used.	All authorised vehicles can operate on the route provided that the relevant specific cases have been used. All existing rolling stock can operate on the route.	Infrastructure not fully compliant with all aspects of the TSIs, but specific cases used.
Partially Compliant Route	Progressive migration towards TSI compliance (or compliance utilising specific cases). Some TSIs not yet applied to the route, or some TSI measures not applied at specific locations (by derogation due to economic viability or network	All existing and newly authorised vehicles can operate on the route.	Infrastructure-based constraints apply, such as speed restrictions at certain locations.

	compatibility).		

It is proposed that an infrastructure specification be drawn up for all routes (taking into account rolling stock plans – see below) on the network together with an indicative timetable for compliance with the specification outlined in the above table. All future work on the route would be in line with this specification.

Network Rail is currently finalising a review of the TSIs that is designed to improve its understanding of the impact of the TSI across the network (including the derogation opportunities as a result of special conditions), compliance options and possible implementation timescales.

Work on the Network RUS: Passenger Rolling Stock Strategy, which is published in September 2011, provides an important input into these considerations. The strategy concentrates on the opportunities for efficiencies which arise when purchasing new rolling stock. It considers how planning the rolling stock and infrastructure together can help facilitate a situation where rolling stock which serves a particular market sector can go anywhere on the network it is required.

The RUS recommends that the industry and its funders consider the efficiencies which could result from procurement by reducing the variety of train types that are procured. It recognises that although the reduction in the number of different train types sounds an attractive proposition in theory, it only becomes attractive in practice if the train types match the needs of the market and can operate freely on all parts of the network where they are required. Initial work has suggested that the identification of possible families of trains for various segmentations of the network provide financial benefits that are considerably in excess of the gauge and other infrastructure changes required to deliver the necessary level of operational flexibility. Although further work is required to refine this strategy the identification of high level train specifications and the parts of the network these trains may operate over provides a framework against which interoperability specification and implementation strategies can be developed across the network, in terms of the three levels of compliance identified in the table above.

As work on the TSI option assessment described above progresses it is expected that further dialogue with DfT will take place and more definitive plans for implementing the TSIs can be developed. The outcome of these discussions will be reflected in the Srategic Business Plan (SBP) and in the Implementation Plans that will be produced for the UK on these sub-systems.

7.2.4 European Rail Traffic Management System

The European Rail Traffic Management System (ERTMS) has been successfully brought into operation on the Cambrian line between Shrewsbury and Aberystwyth and from Machynlleth to Pwllheli. This is a level 2 system which will stop the train automatically before coming into conflict with another train or exceeding a speed limit. The system in Wales includes some features which are as advanced as any in the world. The National ERTMS Programme team has reviewed the issues which arose during this installation and drawn a number of conclusions to use in future projects. Further reviews are in hand, both by an internal team and the ORR reporters.

Network Rail has sought to use technology which will deliver the lowest whole life costs. ERTMS level 2 does not require lineside signals and is cheaper to install than conventional resignalling. It is also planned to use an ERTMS platform to develop automatic train operation through the Thameslink core section. Contracts for the development for this have just been let.

Network Rail has now decided that ERTMS should be chosen as one of its recommended methods of resignalling. Significant work has been carried out to demonstrate that the capital costs and the ongoing operation and maintenance costs are cheaper than conventional resignalling. This has involved comparisons with costs elsewhere in the world. The majority of ERTMS installations carried out elsewhere so far are either on new routes or on key freight corridors, whereas retro-fitment on an existing route has been rare.

In order for ERTMS to operate successfully, the communications system of GSM-R needs to be upgraded so that it can handle larger quantities of data. This may involve changing GSM-R from a circuit switched network to packet switching on certain high train traffic routes.

It is understood that the new Intercity Express Programme (IEP), Crossrail and Thameslink trains – the bulk of those being supplied in the next few years – will be fitted with ERTMS from build. For other trains for domestic use only, it will be the buyer's choice whether new trains will be delivered equipped with ERTMS. It is envisaged that the degree of readiness for new trains will depend on the planned date for ERTMS use. For most existing cabs on routes where ERTMS is installed it will be necessary to retro fit the system. The interoperability requirement is that any manufacturers' version of on train equipment should be able to interface with any other manufacturers' version of infrastructure equipment. A suite of contractual tools are being developed to facilitate train fitment; it is likely that this will be via franchise bids and changes to contracts. The decision on the type of on train equipment to fit and how it is done needs to involve both vehicle owners and train operators. The plans for wider national rollout are being developed consistent with a targeted renewal policy and Network Rail's operational strategy and recognising the limitations of fleet fitment in terms of costs and timescales.

7.2.5 Carbon Reduction and Energy Management:

Scotland has adopted some of the most ambitious carbon reduction targets in the world and the industry is committed to playing its part in supporting their achievement. Rail is already a low carbon transport mode, offering significant savings over road and aviation for many types of passenger and freight journeys. The industry recognises that there is significant scope to reduce carbon emissions further. Electrification, combined with government plans to decarbonise electricity generation, will be key.

The industry has identified the key barriers to the railway becoming more energy efficient. These include:

- a poor understanding of energy/carbon saving potential and the financial viability of interventions, in part due to slow progress with traction electricity metering and a lack of robust measurement of energy use
- costs and benefits do not always sit within a single organisation, with cooperation and sharing mechanisms unclear or inefficient
- carbon and energy having inadequate consideration within the strategic and operational decision making processes

To tackle these barriers the industry is developing a carbon management framework.

Table 29: Industry Carbon Management Framework

This framework has been developed by industry and a detailed implementation plan is to be developed. This will unlock the industry's potential to deliver improvements beyond the base plan outlined in this document.

- energy efficiency, hence cost reductions, should be included in franchise contracts, alongside robust measurement and reporting
- an increase in the metering of traction energy by CP5 should be incentivised, through electric current for traction (EC4T), to ensure that operators pay for what they use and reap the benefits of efficiency savings
- Network Rail should be incentivised through appropriate financial mechanisms, to efficiently reduce electrification system losses efficiently, according to its relative ability to manage the risk
- whole life energy and cost savings should be included as criteria in investment decisions and project criteria, applied across organisational and franchise boundaries. This may require different project financing assessment models for long lifetime assets if the lifecycle carbon benefits are to be given proper weight in investment decisions
- a more robust approach to measuring and monitoring carbon emissions should be implemented, covering both traction and non-traction.

The implementation of this framework will help to increase transparency, align incentives, ensure responsibility for reducing carbon emissions is identified and attributed, as well as encourage a longer term view of cost and carbon. A detailed implementation plan is to be developed.

The implementation of on train metering solutions for electric rolling stock is a big enabler of greater energy efficiency. Currently most train operators pay for estimated electricity usage. Network Rail is using a new billing solution that uses operators' metered consumption (taking this option up so far are the train operators Virgin Trains and London Midland). At the current rate of installing meters on trains, the cost of fully introducing on train meters for all electric rolling stock is estimated to be around £5 million in CP4 and around £15 million in CP5, and there is a fund of approximately £8 million available to part fund installation programmes in CP4. For Scotland the total cost of metering is estimated to be around £1 million between now and end of CP5. All other things being equal installing meters on trains is likely to yield a 5 -10 per cent saving in traction electricity consumption from changes in driver behaviour. The current annual bill for traction electricity in Scotland is about £10 million, which indicates an annual industry saving of between £0.5 and £1 million. The industry's ambition is to meter as much of the fleet as possible by the end of CP5 to realise the potentially significant cost savings.

Supporting Energy Efficiency

The Carbon Management Framework will help incentivise the industry to efficiently manage its energy use. However a wide range of action needs to be identified, developed and implemented by the industry to deliver the associated benefits. As the owner and operator of railway infrastructure in Great Britain, in particular the electrical supply infrastructure for traction power, and signalling and control systems,

Network Rail recognises that it has a critical role to play in facilitating the delivery of energy efficiency.

Network Rail is seeking to develop its role in supporting efficient management and reporting of energy through: providing robust measurement systems for utility consumption, developing intelligent tools and processes for better analysis of usage; playing its part in delivering energy efficiency improvements; and offering wider energy purchasing services. It will also work with the industry to encourage innovations with the potential to play a critical role in how the industry generates and uses energy in the future.

The prospective implementation and outcome of these proposals will be reflected in the Strategic Business Plan.

7.3 Rolling stock

In Scotland, there are a number of small fleets of Diesel Multiple Units (DMU) and Electric Multiple Units (EMU), with some of these being ex British Rail vehicles, and the remainder having been introduced since privatisation in 1997. In addition to these fleets, ScotRail also operate a fleet of coaching stock for the night Sleeper services between Scotland and London.

Finally, the current franchisee operates two loco-hauled trainsets, on short term leases from DB Schenker, to supplement the peak capacity provision in the east of Scotland.

Table 30: ScotRail train fleet

Fleet	Number of vehicles per unit	Numbers of units	Date of introduction
DMU			
Class 156	2	48	1987 - 1989
Class 158	2	48	1989 - 1992
Class 170	3	59	1999 - 2005
EMU			
Class 314	3	16	1979
Class 318	3	21	1986
Class 320	3	22	1990
Class 334	3	40	1999 - 2002
Class 380/0	3	22	2010 - 2011
Class 380/1	4	16	2010 - 2011
Loco hauled			
MkIII Sleeper	1	53	
MkII	1	20	
Loco hauled day	6	2	

Scottish rolling stock has been procured over a number of years, usually either generic GB-wide vehicle designs or with minor changes to reflect Scottish requirements. The British Rail legacy fleet comprises:

- a small part of a much larger order for Great Britain (e.g. class 156 and class 158)
- a minor variant of previous orders for the wider network in GB (e.g. class 314, class 318, class 320).

Since privatisation, this has not changed significantly, as the procurement of the class 170 fleet over a period of years from 1999 to 2005 was part of an ongoing production line of these units built by Bombardier in Derby.

The EMU procurement has also been similar, with the class 334 built by Alstom being a development of other EMUs for Great Britain (e.g. class 458). The most recent deliveries of trains for Scotland - the class 380, has been a significant development of the Desiro fleet of EMUs in England.

The depot infrastructure that supports the fleet remains much as it was at privatisation, with one or two notable exceptions in Scotland. Each TOC has a number of trains in it's fleet to support the maintenance activities. A key element of efficiency going forward is to develop and understand the changes that are required to 'release' more of this rolling stock to be available for traffic purposes, or to require less rolling stock. The changes to the infrastructure are likely to include greater facilities in the maintenance depots, and expended facilities at our stabling points to enable minor repairs to be carried out, thus reducing the requirement for trains to go to the main depot for repair.

The cost of new trains has risen considerably in recent years, reflecting issues such as rapidly increasing commodity costs, higher specifications and the fall in the value of the pound, and these increases seem unlikely to be fully reversed soon although improvements in procurement approach can help partially mitigate them. Passenger rolling stock costs experienced by TOCs, including purchase, leasing and maintenance, are currently in the order of £1.8 billion per year. This represents around 15 per cent of the annual costs of operating the railway as a whole.

Whilst new build vehicles have typically cost between £0.8-1 million per vehicle on average between 1994 and 2007 (and lease prices reflect this), prices are reported now to be in the range of £1 - 2 million per vehicle, depending on specification, and financing costs have risen as well as a result of turbulence in the financial markets. Increases of this size inevitably affect the decision between life extension and new build.

The manufacturers represented by RIA suggest that up to 20 per cent of procurement costs could have been saved between 1988 and 2010 if there had been continuity of orders. In a commercial environment, there is inevitably tension between the manufacturers' aspirations of continuity of orders and procurers' aspirations to maintain competitive tension between suppliers, to reduce costs, itself leading to efficiencies. Nonetheless, the cost savings of continuity of production clearly need to be considered by procurers as part of this process.

Long term strategy

The industry has taken a long term view of future passenger rolling stock and the infrastructure it operates over to establish whether there is potential to plan the interface more effectively. The resulting strategy, The Network RUS Passenger Rolling Stock strategy, is published alongside this document.

Information provided by a number of train manufacturers through RIA, suggests that there are considerable economies of scale to be had from reducing the variety of different rolling stock designs. Based on this information, it is estimated that in the region of £75 million, or eight per cent, of the average procurement cost is spent on

non-recurring costs including research and development of bespoke rolling stock. To realise such cost savings the RUS strategy is based on the following key principles:

- move towards a whole industry whole life cost approach in which rolling stock and infrastructure are planned together;
- exploit the economies of scale in procurement wherever feasible;
- meet the needs of each market sector when ordering rolling stock;
- consider those infrastructure works needed to allow the rolling stock to be inter-operable within the market sector it serves; and
- consider the phasing of future rolling stock procurement and infrastructure planning, including the potential for extending the life of existing vehicles where, following market testing, this is the most economic option – particularly in relation to refranchising which will be a key instrument for procuring new vehicles.

Whilst a reduction in the number of train types is attractive in theory, it only becomes attractive in practice if the train types procured match the needs of the market and can operate freely on the network where they are required. With this in mind, the RUS Working Group considered the passenger and operational needs of the main market sectors and concluded that it is sensible to consider five broad categories of train:

- **Type 1 & Type 2:** long distance high speed with a tilt variant
- **Type 3:** interurban and outer suburban
- **Type 4:** regional and rural
- **Type 5:** inner suburban.

Where train designs within each broad type share common characteristics, such as length and height, they would potentially enable economies of scale to be obtained in the procurement process. Each category could be provided by two or more manufacturers to provide competition, since a significant means of securing value in rolling stock procurement is to encourage manufacturers to compete for orders.

The strategy identifies the infrastructure works that are required to enable inter-operability within a market sector. It looks at where trains of each sector might be expected to operate. Having identified the routes on which the rolling stock will operate, it considers what gauge, platform length, route availability and platform stepping distance issues would need to be considered to ensure inter-operability. It recommends that a gauge is developed which would enable inter-operability between routes, that is to enable trains which serve a particular market to go where required unimpeded by such infrastructure constraints. It takes the current procurement processes for the Intercity Express Programme (IEP), Thameslink and Crossrail as a starting point and concentrates on the remainder of the network.

Whole life and whole system approaches have a key role to play and the industry needs to work to find improved ways of implementing these; this is a key theme in the Network RUS: Passenger Rolling Stock Strategy. There are particularly important opportunities, for example, to:

- review train weight and lateral forces when trains are designed, so as to reduce spending on track renewal where this is the best whole system outcome
- plan the electrical needs of EMUs, to ensure that adequate electrical supply is available. This is often a very complex task, not least because of the need to plan grid reinforcement as well

- anticipate depot and stabling requirements early on, because these often drive service planning. The need for clear arrangements for funding depot and stabling is covered later on.

Provision of adequate rolling stock of a quantum and quality to suit market demands is a key part of the bidding and operation of a franchise, and franchise reform is potentially a significant way to realise the efficiencies identified in the RUS. This requires that the benefits of planning rolling stock and infrastructure together and the potential economies of scale in rolling stock procurement are considered at an early stage in refranchising. Similarly such benefits should be considered when planning major infrastructure enhancement programmes and in detailed plans for infrastructure asset management.

Control Period 5

In looking at rolling stock planning for Scotland, the industry needs to balance two factors:

- Scottish Ministers, through Transport Scotland, need to provide a clear strategic overview of the long term requirement for the industry
- acknowledge the need to provide Network Rail, manufacturers, suppliers and financiers with a good sense of the long term direction of the industry and possible scale of capital spend, to help guide their own business planning;
- develop an initial view of the allowances that might need to be made in the SOFAs to facilitate this, on the assumption that vehicles continue to be bought and life extended through ROSCOs or, in the case of new builds, similar private sector structures, and
- identify options that promote the normal competitive pressure on ROSCOs and others to offer the best possible terms for life extension, re-leasing or new build, as the case may be.

It is fundamental to securing value for money that train operators, rather than the public sector funders, wherever possible should be in the lead for procuring new trains as they have the commercial skills to buy trains through the procurement process that deliver passenger requirements and secure timely delivery. The precise number and type of vehicles bought, cascaded and refurbished in CP5 as a result of the HLOS should be determined by customer demand, the technical ability to extend rolling stock life at appropriate quality and commercial negotiations led by train operators. A key part of franchise reform should be to open the provision of rolling stock to the competitive tension of the franchising process, to negotiate the best balance between life extension, cascade and new build in each franchise area

As far as Scotland is concerned, the strategy of cascading of fleets, either within Scotland, or from other parts of Great Britain, and of re-engineering / refurbishment can often provide a more cost effective solution to many of the rolling stock requirements in the future than buying new trains.

Possible fleet numbers

A high level indication of fleet numbers is required for the railway network in Scotland for the purpose of:

- ensuring that sufficient allowance is made in the Statement of Funds Available (SoFA) to cover the cost involved (assuming that new builds and refurbishments continue to be financed through off balance sheet mechanisms)
- to alert manufacturers and financiers of the scale of spend that is being planned.

All existing Transport Scotland commitments are taken as given, which includes

- Edinburgh Glasgow Improvement Programme
- Borders Rail Link

To provide some guideline numbers to support the CP5 capacity options and to indicate the likely requirements related to early generation rolling stock, the industry has assumed that fleets are replaced when the reach the end of their technical lives, for simplicity assumed to be 30 years in the case of diesel and 35 years in the case of electric trains.

The choice between continuing with fleets beyond these lives, life extension, new build and cascade should be made through the franchising process, depending on the relative economics of the options. Although life extension and refurbishment can sometimes be a cost effective (with reported capital costs of approximately 5-20 per cent of new build), this needs to be set against other factors:

- technical life cannot be extended indefinitely
- obsolescence of key systems such as IT and control equipment (much of which on new trains is not necessarily designed to last 30-35 years)
- the opportunity that new build offers for maintenance and energy cost saving (particularly from being able to use more modern diesel engines, better transmissions, and modern electric motors/traction packages, the latter offering the opportunity to regenerate electricity which can offer 20 per cent savings on electricity costs)
- new trains can more easily be designed to accelerate faster than older fleets, an increasingly important factor given the push for better journey times and, on busy routes, to use fleets with homogenous technical characteristics in order to maximise capacity
- the opportunity that new build offers to develop better service patterns or fleet deployments as opposed to simply ‘like for like’ replacement. For example, new electric trains on the Birmingham and Manchester to Scotland services will release high-acceleration diesels for use elsewhere and provide more capacity
- the need to progressively equip the fleet with ERTMS equipment, it being cheaper to fit ERTMS when trains are being built than to retrofit it later;
- tightening environmental legislation for diesel engines (especially current EU emissions requirements)
- the need to make the existing fleet compatible with accessibility requirements PRM-TSI by 2020, which might tip the balance towards faster replacements of older rolling stock.

Having stated the above, the ROSCOs are developing a longer term strategy of options including significant refurbishment of fleets to ensure that they can be used for many more years than originally projected.

An example of this is the possible refurbishment of the class 314 fleet of trains currently in use in Scotland, which would enable a very cost effective way of providing the necessary peak hour capacity for many more years, at a much smaller cost than procuring a new fleet of vehicles that would only be used twice per day.

Electrification will remain a major catalyst for fleet replacement. The current commitment to electrify the Edinburgh – Glasgow – Dunblane and Alloa routes as part of the EGIP programme, will require an EMU fleet of approximately 46 three car units. This fleet is currently assumed to be procured as a new build, but there remains an option of securing EMUs cascaded and re-engineered from elsewhere in Great Britain, which may provide a more cost effective delivery route.

Whether the EMU procurement is provided by new build or cascade, this will, in turn, allow the cascade of the current DMU types to alternative routes, and will support further route enhancement initiatives (e.g. Borders rail link), as well as enabling a significant number of these vehicles to be withdrawn from service.

This cascade provides the ideal opportunity to ensure that the fleets that are retained are those best suited to the routes remaining, and are the most cost effective option.

7.3.7 Main Control Period 5 initiatives

Given all of the above, the industry expects the main CP5 fleet planning options that relate to Scotland to be:

- EMU provision for EGIP, either by new build or cascade from the wider Great Britain network, allowing for a significant reduction in the current DMU fleet in Scotland
- possible life extension of current EMU stock (class 314, class 318 and class 320) reaching the end of design life
- EMU procurement to support the proposed Glasgow suburban infill electrification, for which an option of procuring cascaded vehicles from England that are of similar build and are compatible with the existing EMU unit types in Scotland
- review of the provision of DMU rolling stock for the interurban routes in Scotland, i.e. Edinburgh and Glasgow to Aberdeen and Inverness, and this may be either by a sub order for Intercity Express Programme (IEP) vehicles, or by cascade of other DMU types released by the IEP in England.

7.3.4 Finance and depot provision

Recent experience bears out that lease finance terms are generally available which allow the substantial initial cost of trains to be amortised over reasonable periods of time. The lease finance market is a significant one and experience suggests that it is often very competitive. The industry assumes that new vehicles will continue to be financed by ROSCOs or similar third party financiers, rather than being paid for directly through Transport Scotland or through owner group balance sheets and that this is done through leases similar to today's structures, i.e. capital cost is charged over time and not back or front end loaded.

In relation to depot and stabling provision over the past ten years in Scotland there has been a significant net increase in the number of vehicles in operation on the network, but there has not been a commensurate expansion of stabling capacity, nor an improvement in the availability of facilities, particularly at overnight stabling locations. Modern trains are technically more complex although they generally require less frequent maintenance, and the lack of improved facilities at stabling locations has put a much greater focus on the maintenance depots on the network, and this has resulted in a less than optimum use of the fleet.

The December 2008, timetable enhancement required an additional 16 vehicles to be added to the fleet but no specific provision for stabling capacity was provided to support this. This resulted in several long distance, empty coaching stock moves each night for stabling and servicing at an additional cost of around £1 million per annum.

In addition to the large new facility at Bathgate, the franchisee has provided several minor enhancements to stabling capacity, including at Perth and Motherwell. This has had to be achieved within the financial restrictions imposed by the length of the

current franchise. This short term view does not ensure that the rail network in Scotland achieves best value for money.

For the future, it is essential that the industry has a much clearer position than it has achieved in the past. For CP5, the industry proposes the following:

- for the 'major projects', e.g. Edinburgh Glasgow Improvement Programme (EGIP) and Glasgow suburban electrification, new depot and stabling provision needs to be reviewed to ensure that the fleet can be supported in the most cost effective manner
- assess and make provision for enhanced facilities at depots to enable a greater percentage of each fleet to be available for traffic purposes
- in addition, there is a need to address depot funding even where new build is not in prospect.

Network Rail's expenditure plans currently include the cost of maintaining the current depot portfolio and capabilities on a minimum whole life cost basis. Revising the capability of depots to optimise them for the rolling stock they maintain can produce efficiency benefits as well as improved train reliability and presentation. The industry will explore the most cost effective way to maintain and enhance the capability of its depots including the most appropriate allocation of responsibilities and associated funding between Network Rail, train operators and train manufacturers and maintainers in managing the depot assets.

Changes to standards

The Industry assumes that Transport Scotland will continue to apply Rail Vehicle Accessibility (Interoperable Rail System) Regulation (RVAR) pragmatically. The regulation, which in principle implements the relevant TSI, also requires older vehicles (to which the TSI did not apply) to be made accessible to the same standard by 2020. It does, however, give DfT some flexibility in its application and this is now happening. The majority of pre-1998 vehicles (where the 2020 date has the main impact) have been assessed by DfT for compliance works.

This approach should be encouraged, as it is likely to provide a much more cost effective rolling stock strategy than assuming that all fleets need to be renewed as a result of this regulation. In addition, it is possible that continued pragmatic application of the regulation by Transport Scotland and the DfT will see these costs reduce further.

Nevertheless a substantial programme of, in particular, toilet refitment needs to be managed and financed during CP5. The lengths of current franchises are too short to be able to underwrite RVAR work (only two franchises currently extend beyond 2020) and a pragmatic way forward is needed to help phase the conversion work between now and 2020. Although there would be considerable savings from dropping RVAR altogether, refurbishment work is already starting on some fleets and has synergies with the overall programme of improving access for stations under 'Access for All'. In addition, it is possible that continued pragmatic application of the Regulation by Transport Scotland and the DfT will see these costs reduce further.

ERTMS fitment is assumed to continue in accordance with Network Rail's latest plan. The effect of this in CP5 is that only a limited number of old vehicles will be retro-fitted with ERTMS. Most new vehicles in CP5 are assumed to be ERTMS fitted from delivery.

It is assumed for the moment that there are no other changes in standards, eg. any requirement to fit controlled emission toilets (CET), further tightening of emissions requirements, changes to crashworthiness, less onerous specifications on rural lines, new safety requirements etc. that might force a faster rate of replacement than through natural life expiry. The proposed tram train project could come on stream in CP5, but would have very little impact on the national numbers presented here. The situation in respect of emissions from toilets is a concern of Scottish Environmental Agency (SEPA).

7.4 Network Rail's approach to asset management

Network Rail is one of the largest asset management organisations in Britain, with a diverse portfolio of assets. In Scotland this includes about 5,000 bridges and tunnels, around 340 stations and about 2,500 miles of track. The effective management of these assets requires a robust understanding of their behaviour and the most appropriate actions to mitigate asset degradation or failure. Network rail's asset management policy is based on a set of core principles:

- to prevent an increase in the overall risk to passengers, workers and members of the public from the degradation or failure of infrastructure and to reduce it where reasonably practicable
- to develop asset management strategies that define the most appropriate approach to maintenance, inspection and renewal necessary to deliver the required outputs for the minimum whole life, whole system cost
- to manage the infrastructure in a sustainable manner, minimising the consumption and wastage of natural resources as far as reasonably and economically practicable
- to optimise the trade off between efficiency of work through longer possessions with access to the network for the delivery of the timetable
- to consider the specific impact of climate on the network in Scotland and
- for all activity to be carried out in compliance with relevant legislative and statutory requirements.

Working with the independent reporter a comprehensive improvement programme is being implemented, and progress against this plan is shared with ORR. Key improvement areas include:

- asset planning has traditionally been by asset discipline, eg. signalling, and by function e.g. maintenance. The approaches taken in each area have generally been robust and systematic. However, the plans are less integrated than they could be and do not come together to link to the outputs required by our customers. To overcome these limitations Network Rail has moved to a route based approach to planning. The network has been divided into around 300 route sections of which 31 are in Scotland, each containing an average of 100 km of track with generally homogeneous traffic levels. Each section has its own detailed asset management plan
- asset information is critical to maintenance and renewal decision making. Currently, asset information is held in a number of systems supported by a range of data maintenance and assurance procedures. The strategy to address these limitations has both short term and long term components. The short term component is focussed on ensuring the availability of the asset information necessary to support today's business and as an input to the periodic review process for CP5. The second component involves a fundamental and comprehensive review of business processes described earlier in this plan, and the information required to support these. As part of this exercise Network Rail

is assessing the experiences of other companies who have successfully implemented such strategies on a similar scale
- the implementation of an asset management regime presents organisations with additional challenges that require new knowledge, abilities and behaviours. Network Rail is using the Institute of Asset Management's competency framework to identify competence requirements, assess gaps and implement training and development programmes
- benchmarking is a key component of Network Rail's asset management strategy. A number of companies have attained best practice in some key asset management areas. Network Rail is eager to learn from such organisations
- Network Rail's asset policies specify the inspection, maintenance and renewal interventions for each asset discipline, and a key initiative in this improvement plan has been a thorough review of these policies.

At present the asset management activity, expenditure and delivered outputs derived from the application of these policies is based primarily on forecasts from top down models. A major piece of work scheduled by Network Rail for completion prior to the publication of the Strategic Business Plan (SBP) will be to produce route based plans for CP5. These plans will be built up by bringing together the asset management policies and a detailed understanding of route assets and their maintenance and performance history. The 300 or so route sections described above provide the building block for this analysis. Initial Network and Route Specification information is published alongside this document.

One of the most significant implications of this work will be to improve the alignment between actual asset management costs and the broader value (to train operators and others) of delivering different levels of asset reliability, and hence train service reliability. An improved understanding of leverage opportunities (ie. where the value of improved reliability is disproportionately better than the cost of delivering it) is an important part of the industry's strategy for improving value for money. The route asset management plans provide the platform for this improved understanding and devolution provides the process by which Network Rail and train operators can work together to improve value for money and deliver sustainable performance.

7.4.1 Weather resilience

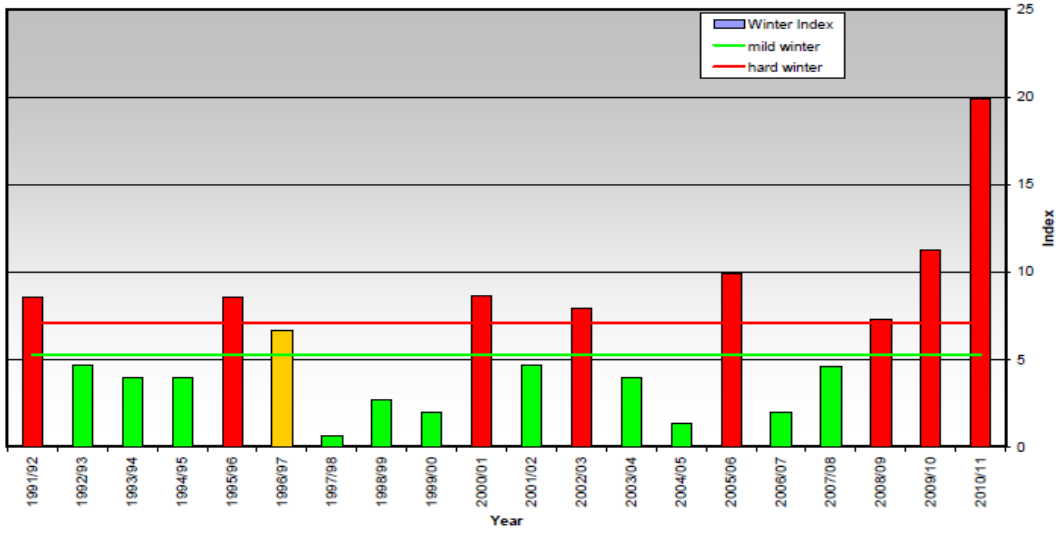
As with rail networks throughout the world the operation of Britain's rail network can be affected by adverse weather conditions. This includes issues such as, ice, snow, heavy rain, lightning and high winds which can all lead to asset system failure or degraded operation. At the other extreme, periods of drought can lead to embankment deterioration and high temperatures increase the risk of track buckling: both of which may result in the requirement to impose temporary speed restrictions. In addition in Autumn the impact of leaf fall can be significant.

Over recent years the industry's efforts to improve the resilience of the network, through timetable planning, service recovery and better infrastructure reliability have delivered significant improvements in train service reliability. Analysis indicates that under most weather conditions (i.e. where temperatures are between around 0^{o}C and 24^{o}C, and where wind speeds or rainfall is not excessive) the network has become increasingly reliable, with a high probability of Public Performance Measure (PPM) reaching 92 per cent by the end of CP4. During these weather conditions instances when this level of reliability is not achieved are usually due to one off incidents that have caused significant disruption such as heavy rain causing flooding or high winds affecting overhead lines. However, on the relatively small numbers of days per year when the weather conditions are outside of these parameters

infrastructure reliability deteriorates, with a corresponding impact on train service reliability.

The winters of 2009/10 and 2010/11 provide examples of this after several years of relatively benign winters, see figure below.

Figure 31: Great Britain Winter Index 20 year trend (days below -3°C)



Low temperatures over an extended period, particularly in Scotland, and much higher levels of snowfall than seasonal norms resulted in significant disruption on the network and a number of days when it was not possible to deliver the working timetable. This caused considerable disruption and inconvenience to rail passengers and freight customers. Disruption was not limited to the rail network, with roads and airports also suffering major loss of service which continued for several weeks in both winters. Significant disruption was also experienced on rail networks across Europe, including a number of countries for whom extensive snowfall and extended periods of below zero temperatures are experienced on a regular basis.

Although some service disruption during such extreme weather conditions is perhaps inevitable, the level of disruption experienced by some rail users warranted further consideration of the factors that led to this and the exploration of opportunities to reduce the future impact by improving the weather resilience of the network.

Network Rail has had extensive discussions with European rail operators, particularly those such as Sweden and Finland who have experience of operating during severe adverse weather conditions. The discussions have proved fruitful and have helped inform a number of initiatives currently underway or recently implemented.

Part of this work has been addressing infrastructure/component design to improve reliability during periods of extreme weather conditions. In effect this is identifying opportunities to expand the reliability window; the range of weather conditions where Network Rail has high expectations of being able to deliver committed levels of service reliability. Initiatives progressed or being progressed include:

- re-design of points heating
- deployment of “anti-icing” materials on trains and fixed infrastructure
- fitting of weather protection covers to more vulnerable equipment
- assessment of all bridges, coastal and estuarine defences, and earthworks for vulnerability to water (e.g. scour, water pressure)
- improved de-icing techniques, improvements to the design of mobile plant

- the use of heat reflective paint to reduce disruption during hot weather
- opportunities to improve heat resilience of non track assets
- improving management systems and reporting for hot weather preparations and risk management.

As it is impossible to eradicate completely infrastructure failure or degraded performance during periods of extreme weather, Network Rail has also progressed a series of initiatives that are designed to minimise the impact of infrastructure failure on service performance. These include:

- improved cross-industry response to identify appropriate levels of service and improve coordination of all activities during periods of expected disruption
- nomination of a single person to lead local cross-industry responses during periods of adverse weather
- creating best practice hot weather guides for use by front line teams; and
- helping maintain workforce productivity during very demanding conditions, including improved personal protection equipment, better shelter and improved availability of provisions.

Expenditure associated with the implementation of these initiatives is included in the industry's current expenditure forecasts for CP5.

Network Rail is also undertaking a more strategic review of the system. At present there is no clear understanding across the industry of the existing operating capability of the railway – the range of conditions under which there would be a high probability of being able to deliver the working timetable. Network Rail is addressing this by:

- reviewing weather patterns to gain an improved understanding of the likelihood of weather conditions being experienced under which service disruption might be expected
- reviewing past performance during adverse weather and the key causes of service disruption; and
- examining component and system specifications to understand better their potential resilience.

As part of this initiative Network Rail has explored a number of options to improve both the resilience of the infrastructure (by changes to design or installation specifications) and its ability to mitigate the impact on service disruption during periods of degraded infrastructure operation. A primary aim of this work is to identify opportunities to make a step change in the resilience of the network and to discuss the affordability of these options with funders.

Snow and ice form the major challenge to the delivery of the working timetable during the winter. Following extensive discussions with European rail infrastructure managers and a review of infrastructure failure modes in Britain during such adverse conditions has identified a number of opportunities, including

- the installation of approximately 4,000 heavy duty switch heaters
- the purchase of an additional 24 winter trains with snow ploughs, hot air blowers and steam lances
- fitting points heater insulation to 18,000 point ends
- fitting covers to protect cranks on back drives to all points operating equipment with point machines
- the installation of 2,000 weather stations to provide early warning of adverse weather conditions, giving us real time information in order to make better informed operational decisions.

Network Rail believes that these initiatives would deliver a step change improvement in the resilience of the network during severe winter conditions and provide a network that should enable a full (or near full) service to operate reliably in all but the more extreme weather conditions. The current assessment would indicate that the cost of these infrastructure changes is £300 million to £350 million across Great Britain. Further work is underway to improve the industry's understanding of the change in system resilience that would be delivered by these initiatives and to improve significantly the understanding of the likely costs and benefits.

It should be recognised, however, that the effective operation of rail services is affected by a complex series of internal and external factors. For example, the robustness of the electricity grid and the ability of rail staff (e.g. maintenance teams, train drivers, station staff) to reach their work locations where they rely on the road network may also have an impact on service reliability. Further work is required to understand these issues more fully and ensure that effective system solutions are identified, valued and costed.

In addition Network Rail is considering the benefits that could be realised by the construction of a purpose built climate chamber in which full size points, overhead lines and train carriages can be subject to research as a complete systems rather than individual components in different weather conditions. The cost of this is likely to be in the region of £10 to £20 million. Due to the extensive programme for environmental testing required, it is considered more economical to build new test facilities, which would give Network Rail an improved ability to develop a more reliable and resilient network. It is expected that income would be generated through offering use of this facility to suppliers to verify their products.

7.4.2 Climate change adaptation

Weather resilience issues will be exacerbated by climate change. Although it is difficult to predict the precise changes with any certainty, there is sufficient evidence to suggest that there will be an increase in the range of weather related factors that the system will need to be able to respond to. Ongoing research suggests that, while the general consequence of climate change is an increase in average UK temperatures, weather variability is such that the UK will still experience cold winter conditions and changing rainfall patterns. Indeed, it is entirely possible that the UK may experience cold winters more regularly than it has done in recent years. This is particularly applicable to Scotland as weather extremes tend to be more pronounced season on season when compared with England and Wales. The challenge for the industry, as for all organisations with assets that are vulnerable to weather issues, is to develop cost effective strategies to accommodate climate change and implement these strategies in a timely and efficient manner to avoid an unacceptable drop in overall system reliability or undeliverable downstream mitigation strategies. This requires the industry players to work more closely together to ensure that assets in use in Scotland are optimised for prevailing weather conditions in Scotland.

The focus for the IIP has been on initiatives that need to be implemented in CP5. For the majority of assets their relatively short life (in climate change terms) means that no additional investment in CP5 is required to address the issue of climate change. However, for some of the civils assets (in particular bridges) work carried out on the infrastructure during CP4 will be expected to accommodate climate change over a 30 to 40 year period. As a consequence of this work Network Rail has identified that £70

million of additional expenditure is required during CP5 to accommodate climate change.

While the industry is planning against a core set of scenarios, the scientific understanding of climate change is evolving rapidly. The developing position is that, on a global basis, carbon emissions are increasing faster than the extreme scenarios used as the basis for established likely climate change outcomes, such as those promulgated under UKCIP09 which inform government policy and planning. This means that any projections must be probabilistic and therefore subject to change within the CP5 period, which in turn may require reassessment of what Network Rail considers to be reasonable levels of planning and preparation for the consequences of climate change.

7.4.3 Sustainability of Network Rail's production process

Network Rail has identified six key impact areas round which to drive substantial sustainability improvements in CP5 and beyond. These are waste, carbon, land use, biodiversity and ecology, diversity, accessibility and climate change adaptation. Detailed strategies and plans will be reflected in the Strategic Business Plan.

To facilitate and embed the delivery of improvements with clear accountabilities, Network Rail has identified five key enablers. For CP5 Network Rail plans to:

- implement a sustainability data collection management and reporting system
- develop and publish a strategy for Sustainable Design, Construction, Operation, Maintenance and Decommissioning (DCOD)
- integrate sustainability considerations into our procurement processes
- develop and deliver a business wide framework for education, engagement and behaviour change on sustainability issues; and
- engage with internal and external stakeholders on industry wide and global sustainability issues.

7.5 Employee Strategy

7.5.1 Investing in people

In an industry that employs over 92,000 people with over 7,500 in Scotland and spends a third of its costs on staff, it is as important to have a plan for improving and enhancing the skills of its staff as it is to have a plan for upgrading infrastructure and rolling stock. The Rail Value for Money (RVfM) study examined a range of issues relating to people including the need for training and development. Amongst the study's comments and recommendations were:

- a greater use of technology to deliver training, reduce training time, minimise the need for in-situ learning and improve efficiency
- a fundamental review of training techniques and the time needed to train specific work groups
- the true benefit of effective training is a better equipped, more flexible and productive workforce
- graduate development should be co-ordinated across the industry and a core introduction course should be developed to provide a wider overview of the business requirements of the industry's various sectors and to establish the desired industry cultures and networks from the beginning of future managers' rail careers
- the industry's employers should continue to encourage a more flexible and diverse workforce.

The industry is already considering a number of training and development opportunities and sees the RVfM study as a catalyst for improvement.

The link between a high competence in asset management and good overall business performance is universally recognised. Reflecting this understanding Network Rail has made a commitment that by the end of the current control period (March 2014) it will have developed capabilities in asset management that are demonstrably comparable with best practice elsewhere in Britain. Over the following five years Network Rail is committed to improving its capabilities further, so that it can provide the benchmark against which organisations throughout the world assess their own asset management capabilities.

7.5.2 Industry leadership development

At a senior level, there are opportunities for the industry to leverage the existing academic programs already facilitated by Network Rail. This would allow the industry to share economies of scale, improve the perspective of its each company's own courses, and develop cultures through learning to accommodate wider industry participation in activities.

Network Rail's University of Warwick delivered leadership program could be easily adapted to deliver shared learning and development for middle and senior managers from the across the industry. Setting accredited course activities around joint activities would further encourage alliances across the industry.

Post modular assignments could include inter organisational contrasts and comparisons, encouraging participants to research the interfaces between companies and identify opportunities for improved collaborative working.

7.5.3 Engineering

At an engineering technical level, the industry has, quite recently, moved to fill the skills gap. The creation of NSARE (National Skills Academy for Railway Engineering) shows a recognition by over 60 companies of the importance of attracting the right people into the industry and ensuring that the right people are being brought on to fill highly skilled technical roles in the future.

NSARE commenced work in 2011, but there remain other area of activity where greater coordination would be desirable to achieved efficient cost delivery of training, where new graduate recruits could be given an industry wide perspective before their horizons are drawn within their own companies, and where the future leaders of the industry could be introduced into collaborative learning and development environments to create the culture change the industry is seeking to promote.

7.5.4 Technical Training

There are opportunities in the provision of technical training for the supplier community and in the area of industry leadership development. Greater use could be made of Network Rail's national training facilities for supplier community training.

Network Rail is already engaged in the development of a small number of new technical/vocational centres and consolidated larger Workforce Development Centres (supported by satellite facilities) to unite a range of technical training activities and provide facilities to support 'higher technical' project management and engineering training.

These Workforce Development Centres are anticipated to become ‘hubs’ of development activity, and believe that they would offer suitable environments to offer workforce technical training to the supplier community at efficient levels.

7.5.5 Graduate training

The industry recognises the benefits that will be derived from graduates sharing common training experiences, having a better understanding of the individual parts of the industry and obtaining an appreciation of the benefits of closer working.

The introduction of collaborative development and training activities within the industry will help achieve the desire of cross-industry focus on increased co-operation and alliancing between Network Rail, train operators and their delivery partners and provide the industry with staff able to exploit new technologies.

8. Assessment of investment choices

8.1 Enhancement cost estimates

The Initial Industry Plan (IIP) includes a portfolio of enhancements designed to achieve specific outcomes in a cost effective way. The portfolio has been informed by the programme of Route Utilisation Strategies (RUSs) and their relevant stakeholder management groups, route-based discussions through the Route Investment Review Group (RIRG) and bilateral discussions between Network Rail and train operators.

Aside from the committed schemes in the base plan, for example the Edinburgh to Glasgow Improvement Programme (EGIP), the interventions proposed are primarily in GRIP[45] stages 1 and 2 of development. The overall scope of specific interventions will continue to evolve as discussions continue with train operators and with funders. The publication of the High Level Output Specification (HLOS) is a key milestone in being able to firm up the overall portfolio of schemes and develop more robust cost estimates for individual projects.

The IIP includes a range as to the possible costs of the individual projects and the overall portfolio reflecting a range of risks and opportunities. These include:

- uncertainty of outputs: Agreement with customers and funders of firm outputs is iterative as operational assessments and economic appraisals are refined through the development process
- scope definition: Selection of a preferred single option usually occurs at GRIP stage 3. For the purpose of developing a forecast for the IIP Network Rail has selected a most likely scope of works for schemes in GRIP stage 2 but this will need to be validated in due course through the option selection process
- optimism bias: There is well accepted research that reveals a systemic optimism bias in estimating the cost of projects compared to their outturn costs. A review specifically of Network Rail's projects revealed that the degree of bias can be sensitive to the type of project and asset mix. There is therefore a choice to be made as to the level of risk to be included in the overall project estimate and at early GRIP stages this is a qualitative judgement
- efficiency opportunities: As with other elements of cost forecasting in the IIP consideration needs to be given to the potential efficiencies that could be delivered including the impact of initiatives such as our efficient infrastructure delivery proposals, the impact of devolution, alliancing and the impact of our plans to encourage greater contestability of project delivery
- portfolio risk benefits: There are risks that are low probability but high impact that can materially impact of the estimate of any single project but when delivering a portfolio of projects this risk can be spread across the portfolio such that costing the projects as a portfolio is less than the sum of the individual projects
- other portfolio benefits: Potential sources of efficiency include the benefits of delivering a portfolio of projects providing economies of scale in the market place and synergies in how projects are packaged.

Given the early stages of development of the proposed interventions it is not possible to be precise about the impact of each of these factors. Network Rail has provided a range as to the funding required at both a project and a portfolio level. This range

[45] Governance for Railway Investment Projects (GRIP) describes how Network Rail manages and controls projects that enhance or renew the national rail network.

takes into account the level of development and therefore the range of uncertainty in the individual project estimates and the risks and opportunities across the entire portfolio. At a portfolio level the range around the projects estimates is summarised below along the expenditure forecasts for the committed projects, which are more robust reflecting the maturity of the projects, and also the provision for funds being sought.

Table 32: Control Period 5 expenditure forecast

	Control Period 5 (CP5) expenditure forecast (£million 2011/12 prices)
Committed programme (Includes EGIP Infrastructure and Electrification)	396
Proposed interventions (For full details see the supporting Enhancements document.)	490 – 542
Funds includes Strategic Freight Network, level crossings, Network Rail Discretionary Fund, Scottish Small Projects Fund, Scottish stations fund	157
Total	**1,043 – 1,095**

A breakdown of the forecasts by individual projects and funds is set out in the supporting document, Definition of Proposed Control Period 5 (CP5) Enhancements, which also includes a statement of scope and outputs for each intervention.

The industry recognises that the overall expenditure implied by these proposed interventions is significant and the industry must demonstrate the value for money and affordability of the individual interventions and the overall portfolio.

Network Rail has set itself the ambition to deliver a major output change on the network without the need for significant infrastructure investment. It is examining opportunities to do this through improved utilisation of the infrastructure, involving the potential replanning of the timetable on key routes. Examination of such opportunities is intended to reduce the funding sought in CP5. Specific examples of where such an opportunity presents itself will be included in the Strategic Business Plan.

8.2 Context and strategic intent

In the third quarter of 2009-10 the Scottish economy returned to growth after five consecutive quarters of contraction marking Scotland's exit from recession. As a result of the Great Britain recession there is an urgent need to repair the UK's fiscal position and to stimulate private sector growth in the economy.

The current level of support for the rail industry in Scotland, while delivering substantial benefits to the wider economy, users and society, is very high – around £700m in 2009/10. Given the challenges facing government finances, the industry must demonstrate that continued expenditure gives value for money and contributes to sustainable economic growth.

In this context, there is now significant focus on challenging the efficiency of all aspects of public spending, including transport. Network Rail argued in "*Prioritising Investment to Support our Economy*[46]" that delivering efficiency is about more than simply challenging "what things cost." It is also about challenging "what is bought in the first place", and demonstrating these are the choices which generate the greatest economic value. In the current context, it was argued economic value should be measured primarily in jobs, productivity growth, and tax revenues.

The IIP addresses both of these fundamental aspects of efficiency, through (a) delivering the current railway at the lowest whole industry, whole life, whole network cost, and (b) identifying further investment choices for CP5 which focus on the outputs which generate the greatest economic value.

Taking this into account, the strategic intent of the IIP is to deliver better outcomes in the following areas:

- invest to reduce safety risk
- invest to reduce operating costs and promote network efficiency
- invest to support and stimulate sustainable economic growth
- invest to meet the needs of rail users, both passengers and freight.

The plan also identifies further investment choices (aligned with the outcomes) which take advantage of 'once in a generation' opportunities within CP5, for example, where network capability can be enhanced efficiently in conjunction with the renewal of life-expired assets.

8.3 Approach to delivering better outcomes

In most cases the IIP specifies investment choices to deliver the outcomes targeted by the plan. For example, the plan identifies a package of well targeted investments which increase passenger capacity and support economic growth in our cities.

The industry proposes that some outcomes are best achieved by an investment fund approach, whereby investment expenditure in CP5 is allocated and ring fenced to deliver as yet unspecified schemes. This approach has several benefits, including:

- providing industry with the flexibility and agility to respond to tactical opportunities as and when they arise
- delivering outcomes efficiently by leveraging private sector and third party investment
- providing a focus on small to medium sized schemes. The Eddington Transport Study[47] highlighted that economic returns from smaller schemes are typically greater than for larger schemes, measured by wider benefit cost ratios. This conclusion is supported by analysis of the Small Projects Fund (SPF) expenditure over Control Periods 3 and 4 respectively, which found that the funds achieved returns consistent with a benefit cost ratio[48] of almost 3.5. Some of the schemes funded through SPF returned a financially positive business case.

[46] Network Rail, September 2010
[47] "The Eddington Transport Study: The Case for Action", December 2006
[48] Socio-economic benefit cost ratio

Governance arrangements must warrant funds that are well targeted and administered efficiently, whilst at the same time providing industry with sufficient freedom to specify and deliver the outputs.

8.4 The case for investing in better outcomes

8.4.1 Investing to reduce safety risk

The IIP proposes a £42 million fund for CP5 to improve safety at level crossings, recognising the level of stakeholder concern over accidents and investigation, and the need to continually improve safety.

The objective is to deliver the following outcomes by the end of CP5:

- a reduction in level crossing risk by a minimum of 50 per cent
- a reduced number of incidents and accidents
- reduce the number of Automatic Open Crossings Locally Monitored (AOCL's) in accordance with the recent Rail Accident and Investigation Bureau (RAIB) report
- improved stakeholder confidence
- improved awareness of level crossing safety risk.

This will be delivered by adopting a more interventionist approach to reducing risk and improving safety, focussing on closures, enforcement and innovation. We also plan a more collaborative approach between Network Rail and operators, including joint assessments and inspections, or sharing responsibilities where this best improves safety.

Programme development is still in the early stages, and therefore a fund approach is deemed the most appropriate way to deliver the outcomes.

8.4.2 Investing to reduce operating costs and promote network efficiency

Regardless of economic circumstances, investing to reduce longer term costs (whilst maintaining the same level of train service output) must represent 'business as usual' activity in an efficient railway. The current need to repair the UK's fiscal position merely serves to emphasis the necessity to achieve this. The Scottish Government's finances are under similar pressure and rail needs to play its part in contributing to their targets.

Further network electrification

The Strategic Transport Project Review (STPR) recommended a rolling programme of further electrification to electrify a large part of the Scottish rail network such that the electrified percentage of the Scottish network would by the end of CP5, rise from the current 23 per cent to 42 per cent on completion of EGIP and central Scotland in-fill electrification. This figure would rise further when all phases of the electrification programme are complete to 62 per cent. The Network RUS: Electrification Strategy endorsed these proposals and confirmed that further network electrification presents a major opportunity to reduce whole industry operating costs. Relative to diesel powered services, electric trains are typically cheaper to lease and maintain, are more fuel efficient, have greater availability rates, and are more reliable in service.

Further electrification of the network will also deliver better outcomes consistent with the strategic intent of the IIP. This includes lower carbon emissions (a benefit which will increase as the generation grid is decarbonised), and economic benefits arising from capacity, journey time and connectivity improvements.

Electrification is delivered most efficiently as a rolling programme, minimising capital costs by avoiding the peaks and troughs of past investments. Phase 1 of this programme encompasses the routes included within EGIP which are being developed now for delivery between 2013 and 2016, An opportunity exists in Control Period 5 to electrify further parts of the network in accordance with the STPR proposals efficiently by building upon this. Further network electrification should also be co-ordinated with a rolling stock strategy which ensures an economic use is identified for displaced vehicles which are not life expired.

The IIP proposes investment totalling £187 million in CP5, extending the network electrification programme (at 25kv AC) to deliver, or begin to deliver electrification of the routes within Phase 2 as follows:

- the Paisley Canal line
- the Rutherglen to Coatbridge (R&C) route (including Whifflet)
- the City Union line between Shields Junction and High Street.
- the Shotts route between Holytown Junction and Midcalder Junction
- the Muirhouse to Barrhead section on the Glasgow Barrhead Kilmarnock ((GBK) route)
- the route from Busby Junction to East Kilbride.

These routes comprise the majority of Phase 2 of the electrification proposed in the STPR which allocated a capital grant cost of between £250 million to £500 million for the implementation of Phase 2 Electrification. It is anticipated that the remaining routes in Phase 2 of the STPR electrification programme would be completed in Control Period 6 (CP6). As a scheme it was seen as meeting the strategic needs of reducing emissions, reducing operating costs, and improving the rail product. The business case for these investments will be developed reflecting the developed capital costs, a detailed understanding of the changes in operating costs and an appraisal of the changes in passenger benefits. It is recognised that completing the whole package would permit greater opportunities for efficiencies through fleet utilisation.

Investing in Network efficiency

The industry is currently developing a longer term rolling stock strategy including depot/stabling and servicing facilities.

As an early deliverable of this the IIP proposes an £11 million investment in CP5 at Motherwell which could enable industry to make more efficient use of rolling stock and other operational resources,. This would reduce driver hours and empty coaching stock moves and contribute towards better resource utilisation.

8.4.3 Financial Implications

Table 33: Investment choices that reduce operating costs and promote network efficiency

	Control Period 5 Expenditure £million	*Anticipated Final Cost £million*
Further network electrification	***168 - 184***	***207 - 226***
Investing in rolling stock efficiency	***8 – 10***	***9 – 11***
Total	***177 - 194***	***216 - 237***

8.4.4 Investing to support & stimulate sustainable economic growth

Rail passenger demand in Scotland has grown by almost 38 per cent since 2000/01 and now delivers 74 million annual passenger journeys. The demand for rail freight grew by around 70 per cent between the mid 1990s and 2006, before softening during the recession.

Some of this growth is simply a reflection of longer term economic expansion and population growth, whilst some has been stimulated by investing in industry outputs. Over this period growth has also been supported by underlying structural changes in the economy, employment and travel markets favouring rail. The strength of these underlying trends was most evident during the recession when national passenger demand (measured by passenger km) continued to grow, albeit at a reduced rate, despite national economic output contracting by over five per cent[49].

These favourable, underlying structural trends are set to continue, and coupled with a return to longer-term trend rates of growth in the economy will drive further growth in both passenger and freight demand. Growth is forecast in almost all of rail's markets. In particular on the key networks identified by the Eddington Transport Study as being crucial in supporting the economy, namely:

- urban areas and their catchments
- key interurban corridors
- connections to international gateways, both passenger and freight.

Rail is ideally and best placed to respond to this growth, as economic and environmental priorities and trends in the market play to rail's core strength, that is moving large volumes of goods and passengers over long distances, and between and into city centres.

Eddington rightly identified that congestion on key networks has a substantial effect on economic performance, and that addressing this should be a priority, first by getting the best out of the existing infrastructure, and then, if necessary, by investment.

[49] Scotland GVA statistics

Choosing to invest in the rail capacity to accommodate longer term growth does not imply a policy of "predict and provide." Despite different origins, this term is now commonly associated with an approach whereby extra resource led capacity is the default solution to growth. This is not the case in the planning of rail services. Existing processes, including the RUSs or the need to submit best value franchise bids, collectively incentivise industry to explore the entire range of solutions, of which resource led investment is generally the last to be considered.

Indeed, the longer term forecast growth in demand for passenger rail services is a natural consequence of national and regional planning decisions already taken. The STPR published in 2009 by Scottish Ministers sets out the vision of the Scottish Government over the next 20 years. The document reviews the need to invest and maintain the existing network, how to increase current capacity and new infrastructure projects to enhance the network. Rail projects being developed to deliver this which would require investment funding in CP5 include rail improvements between Aberdeen and Inverness, the Highland Mainline and West Coast Main Line rail freight improvements.

New and emerging technology may enable the rail industry to accommodate demand in different and better ways in the future, for example, through the use of smart ticketing. These new solutions will naturally be considered by industry as part of the existing planning process.

Despite rail being best and ideally placed to respond to economic and environmental priorities and trends in the market, Network Rail argued in "*Prioritising investment to support our economy*[50]" that in the current fiscal position, the case for rail must highlight the contribution it makes to the 'real' economy. In this context, this should be measured in jobs, productivity growth and tax revenues.

Network Rail argued that this type of assessment could complement the existing welfare based appraisal process, and where this has been done it is difficult to escape the conclusion that the true value of rail on the 'real economy' is not fully reflected in current appraisal methods. There is now further evidence within the UK to support this conclusion:

- the inclusion of "wider economic benefits" in the appraisal of the Northern Hub and Merseyside Long Term Rail Planning strategies increased the benefit cost ratios from 3.2 to 4.1, and 2.2 to 2.6 (respectively), an increase of 20 per cent to 30 per cent in the overall value of benefits
- research[51] undertaken for Network Rail into the Merseyside Long Term Rail Planning Strategy concluded that the consequence of choosing not to invest in sufficient capacity to accommodate future rail demand would be to forgo local economic activity valued at £1.8 billion (Present Value over 60 years, in 2002 prices), along with the loss of 30 per cent of the forecast increase in employment over 30 years, over 6,000 jobs. Although these figures do not wholly represent the net national impact (as some suppressed economic activity may simply be displaced elsewhere) the effectiveness of the £200 million strategy (also Present Value, 2002 prices) is clear.

[50] Network Rail, September 2010
[51] "Removing the constraints on economic growth in Merseyside - Economic Analysis of the Merseyside Long Term Rail Planning Strategy" KPMG May 2011

These conclusions can be applied to the Scottish context to cover rail journey time and connectivity improvements, and demonstrate the substantial contribution to economic growth which well targeted investment in rail outputs can generate.

Investment in station capacity is also important, given their role in enhancing the experience of passengers thereby encouraging modal shift. Station investment also provides an ideal opportunity to further develop commercial and retail activities in an efficient manner, activities which have been growing robustly defying the difficult trading environment on the high street. Between January and March 2011, like-for-like retail sales at Network Rail's major stations grew by over five per cent, compared to a one per cent decline on the high street as reported by the British Retail Consortium.

The sector strategies (chapters 4 to 6 of the IIP) outline a series of investment choices for funders which support and stimulate economic growth by:

- providing improvements to journey times and connectivity
- addressing existing congestion on key rail networks, responding to the market by providing sufficient capacity to accommodate anticipated growth.

The following choices have been identified and developed through the industry's long term planning process, including the RUSs, and they represent established strategies for delivering the outcomes. They also deliver on Scottish Ministers priorities as identified in the Strategic Transport Projects Review (STPR). The IIP contains further choices of local importance, identified through the RUS process. These choices require no capital investment in network capability, and should be considered for funding through the ongoing process of franchise specification and letting.

Rail Service enhancements between Aberdeen and Inverness

The Aberdeen to Inverness upgrade will provide a step change in the rail service offered between the two cities. This will improve access to the communities of the North East to travel by fast and efficient rail services to the major regional centre and beyond to the central belt. The scheme will also increase the capacity for commuters in to Aberdeen and Inverness.

This programme of works will be delivered in phases; each phase of the works will include earthworks alterations, track improvements and drainage installation. The phased approach to implementing the project will result in incremental journey time improvements to the current journey time of approximately 2 hours 20 minutes. This will eventually deliver a Journey time of two hours between Aberdeen and Inverness. The route is characterised by a large number of bridges and structures and these will require to be altered, upgraded or reconstructed.

Phase 1 The first phase is to examine the infrastructure and timetable options to achieve an hourly end to end service between Aberdeen and Inverness

Phase 2 Provision of a half hourly service between Inverness and Elgin. This could include the provision of a station at Dalcross

Phase 3 Provision of a half hourly service between Aberdeen and Inverurie. This could include the provision of a station at Kintore

Phase 4 Journey time improvement to 2 hours or better between Aberdeen and Inverness.

The business case for the scheme was developed for the STPR. A Scottish Transport Appraisal Guidance (STAG) appraisal of the scheme showed a benefit to cost ratio (BCR) that was greater than 0.75 for Phase One. The scheme was noted

as delivering substantial economic and accessibility benefits beyond the monetised benefits. Network Rail is working with industry and funders to deliver the scheme in a value for money manner.

Highland Mainline (Phase 2)

The upgrade of the Highland Main Line will increase the number of passenger and freight paths between Inverness and Perth, as well as reducing the end to end journey times. This will provide better access for the communities of Northern Scotland to employment and business opportunities in central Scotland.

The Highland Mainline programme of works will be delivered in phases with the first phase completing in Control Period 4 (CP4) delivering journey time improvements. Phase 2 would allow an hourly service in each direction between Inverness and Perth with an average journey time of two hours making rail a more attractive alternative for passengers as well as improving freight paths.

The business case for the scheme was developed for the STPR. The Benefit Cost Ratio (BCR) was between 0.75 and 1.25 for Phase one. Since the completion of the BCR the scope of work has changed and the industry will work with Transport Scotland to implement the outcomes in a value for money manner.

Scotland traction power scheme

The scheme facilitates the replacement of the rolling stock on the East Coast Main line between Edinburgh and Berwick-upon-Tweed. The new rolling stock delivered as part of the Intercity Express Programme (IEP) is anticipated to provide faster journeys and additional capacity between Scotland and England and Wales. The scheme is being developed as part of the Route Asset Strategy process. At present the identified works are in the following packages Berwick-upon-Tweed to Edinburgh (traction reinforcement).

Portobello Junction redoubling to improve capacity

The single lead Portobello Junction was identified in the first Scotland Route Utilisation Strategy (RUS) as a key constraint on this part of the network which would impact on future growth on the East Coast Main Line (ECML). Redoubling the junction will address the constraint.

This project will progress at a grade double junction through Portobello with an increased line speed. EGIP includes options to locate a new stabling facility in the Portobello / Millerhill area which would add more train movements to this already congested area.

The business case from the first Scotland RUS will be revised to incorporate changes driven by EGIP and other service changes.

Small Projects Fund

The Small Projects Fund is primarily aimed at schemes that will result in an increase in the capacity or capability of the network in Scotland. The IIP proposes a £30 million package for CP5 to make small enhancements to the rail network. The enhancements will, where feasible, take advantage of renewal led opportunities to minimise costs and disruption. The project fund would be used to make more efficient use of operational resources, by investing in turnback facilities, linespeed increases and other schemes to improve the operation of the railway. Other

enhancements could target improved reliability, reduction in congestion, faster journey times and improved performance.

A fund approach is considered the best way to take advantage of opportunities as they present themselves.

Table 34: Investment choices that support & stimulate sustainable economic growth (£million 2011-12 prices)

	Control Period 5 expenditure £million	***Anticipated final cost £million***
Aberdeen Inverness	***189 - 198***	***193 - 202***
Highland Mainline	***31 - 37***	***32 - 37***
Portobello Junction	***16 - 19***	***16 - 19***
Traction Power Upgrade	***23 - 27***	***23 - 27***
Small Projects Fund	***30***	***30***
Total	***289 - 312***	***293 - 316***

8.4.5 Investing to meet the needs of freight users

Demand for rail freight services grew strongly over the last decade, driven principally by continued globalisation of trade and containerisation of imports. Demand softened during the recession reflecting the decrease in trade across the world's economy, although intermodal traffic continued to grow virtually throughout.

A return to longer term trend rates of growth in the economy is now forecast to drive significant further growth in the market. These factors, along with a consistent focus and investment by freight operators to make sure that their markets are served reliably and effectively, are reflected in industry's current long term forecasts, which suggest that rail freight traffic will double over 25 years.

As much of this growth relates to container traffic entering the UK via the deep sea ports, the real choice is not whether to provide for this growth, but how best to provide – rail, or road? The underlying trends in the market play to rail's core strengths, that is, moving large volumes of goods efficiently over long distances, often from the UK's deep sea ports. Perhaps more significantly, providing sufficient rail capacity to accommodate this longer term growth will avoid the impacts associated with road haulage, principally increasing road congestion and environmental pollution.

To respond to growth in the market, chapter 6 identifies a number of investment choices for CP5 to deliver a network better suited to the needs of freight users. These choices have been developed through industry workstreams and the RUS process, and there is strong stakeholder support for their implementation.

Scottish Freight Network

The IIP proposes a fund available to undertake small scale freight enhancements that would result in increased capacity or capability of the Scottish freight Network. It is recognised that enhancements can often be achieved in the most cost effective manner by combining with renewals and other opportunities. Likewise the dynamic nature of the freight market means that flexibility is required when making enhancement decisions. Therefore a fund based approach is considered the most efficient way to support the development of the freight network.

Table 35: Investment choices to meet the needs of Freight users (£million 2011-12 prices)

	Control Period 5 expenditure £million
Scottish Freight Network	***50***

8.4.6 Investing to meet the needs of passengers

The latest rail passenger satisfaction survey shows that nationally 84 per cent of passengers are satisfied with their journey overall[52]. In Planning Ahead 2010 the train operators and Network Rail stated a longer term ambition to deliver a railway in which at least 90 per cent of passengers are satisfied. Along with further improvements to the fundamental aspects of the rail service (that is, a safe, quick and reliable journey, with a comfortable seat for all but the shortest of trips), delivering better customer service will help the industry to achieve this ambition. The IIP identifies a number of investment choices for Control Period 5 to start delivering this longer term ambition.

Better stations, accessibility and improved passenger information

The IIP proposes a Scottish Station fund of £25 million for CP5 which in addition to station improvements will also deliver accessibility programmes and the Customer Information Strategy as set out in chapter 7.

Whilst passengers' expectations for train service information is being met to a reasonable degree under normal circumstances, it is recognised that the timeliness and consistency of information provided during service disruption falls short of both passengers' expectations, and the level of customer service we aspire to provide. This became apparent during the recent series of severe winters, and is reinforced by Passenger Focus[53] research which highlights that availability and accuracy of information, especially during periods of service disruption, is ranked highly by passengers as a priority for improvement.

A small proportion of rail users, between one per cent and two per cent, have a reduced level of mobility. At stations which offer step free access through the station to trains this percentage is far higher, four per cent, demonstrating the significant

[52] Passenger Focus "*National Passenger Survey*" (Spring 2011)
[53] Passenger Focus "Passengers' priorities for improvements in rail services" (August 2010)

difference to accessibility which investment in obstacle free access can make to some passengers.

Investment in station accessibility typically delivers high socio economic returns; a review of station accessibility investment during the early years of Control Period 4 (CP4) suggests returns consistent with a benefit cost ratio[54] greater than three.

Enhancements and modifications at stations can be best achieved in conjunctions with other renewals or enhancement activity. At this stage it is proposed that this be best dealt with as a fund to enable integration with the plans of the new franchisee and regional transport partnerships.

Table 36: Expenditure on choices to meet the needs of passengers (£million 2011-12 prices)

	Control Period 5 expenditure £million
Station improvement fund (Scotland)	***25***

8.4.7 Renewal led opportunities

The IIP identifies a number of additional investment choices (aligned with the strategic intent of the plan) for which the opportunity to make them at reasonable cost arises during Control Period 5 in conjunction with planned renewal of life-expired assets. Completing the works at the same time as renewals reduces costs and disruption to passengers. This could be "once in a generation" opportunity to complete the works at minimal cost.

Carstairs linespeed improvements

The objective of this enhancement is to take advantage of the Motherwell South Resignalling scheme and the planned switch and crossing renewals to improve the journey time between Carstairs South Junction and Carstairs East Junction and between Carstairs North Junction and Carstairs East Junction. By undertaking the enhancement at the same time as the renewals significant cost savings can be achieved. Improved journeys would be delivered for services operating between Edinburgh and the West Coast Main Line and between Glasgow and the East Coast Main line. A business case for the works is currently being developed.

Motherwell Area enhancements

The Motherwell North and South resignalling provides the opportunity for the deployment of a number of enhancements to the operation of the railways around Motherwell. They include a reduction of headways on the Shotts line which will increase capacity and potentially deliver journey time improvements. This will help meet the strategic need for faster end to end journey times. The resignalling will also present the opportunity for the deployment of bi-directional signalling allowing better access to the network for train operators. This is essential for improving the train product, allowing better utilisation of rolling stock and reducing industry costs. A

54 WebTAG socio-economic appraisal benefit cost ratio

business case for the enhancement opportunities is being developed with train operating companies over the next few months.

Yoker IECC recontrol and associated enhancements

Recontrol of Yoker IECC[55] to the West of Scotland signalling centre offers the opportunity to deliver enhancements to the network that would otherwise be unaffordable. Options currently being investigated include turnback signals which will deliver increased network flexibility. Sidings in the Milngavie and Helensburgh areas are also being considered, providing additional attach / detach opportunities. These would deliver improved use of resources with longer trains operating only in the peak times, a reduction in rolling stock mileage and improved network availability as there will be a reduced requirement to run empty coaching stock. If appropriate these could be delivered as stand alone projects in advance of the renewal work. As these are relatively minor alterations funding could be from the Small Projects Fund and this plan does not include any specific funding for this proposal.

Table **37: Expenditure on "once in a generation" choices (£million 2011-12 prices)**

	Control Period 5 expenditure £million	***Anticipated final cost £million***
Carstairs linespeed improvements	***45 - 54***	***45 - 54***
Motherwell Area Resignalling	***15 - 17***	***17 - 19***
Total	***59-71***	***62-74***

8.5 Outputs delivered by the plan

This chapter summarises the outputs delivered by the IIP in Scotland. This covers both the outputs delivered by the current railway baseline, plus the incremental outputs associated with the choices and options to deliver better outcomes in areas such as safety, efficiency, economic growth, rail-user satisfaction and carbon during Control Period 5.

[55] Integrated Electronic Control Centre (IECC)

8.5.1 Safety

The improvement in safety delivered by the plan is illustrated below in tables 39 to 41.

Table 38 – Assessment of public safety (GB network)

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Fatality weighted index – Public (base plan)	54.7	54.4	54.0	53.7	53.3	53.0
Fatality weighted index – Public (base plan plus options)	54.7	53.9	53.1	52.3	51.5	50.7

Table 39 – Assessment of passenger safety (GB network)

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Fatality weighted index – Passenger (base plan)	48.1	48.1	48.0	48.0	47.9	47.9
Fatality weighted index – Passenger (base plan plus options)	48.1	47.9	47.7	47.5	47.3	47.1

Table 40 – Assessment of workforce safety (GB network)

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Fatality weighted index – Workforce (base plan)	24.2	24.1	24.0	23.9	23.8	23.7
Fatality weighted index – Workforce (base plan plus options)	24.2	24.1	24.0	23.8	23.7	23.6

The main drivers of the continuing improvement in safety risk include station investment, lower risk arising from the development and implementation of new technologies for level crossings where reasonably practicable, improvements delivered by a better safety culture, and improvements to engineering access and electrical isolation arrangements reducing risk to infrastructure workers.

The options and choices for funders identified by the plan reduce safety risk further, reflecting anticipated benefits from the level crossing safety fund, and other investments which result in the replacement of infrastructure and rolling stock with modern equivalents which are often safer than older equipment.

8.5.2

Punctuality and reliability of train services

The improvement in passenger and freight train service performance delivered by the plan is illustrated in tables 42 to 43.

Table 41 – Assessment of ScotRail passenger performance levels

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Public Performance Measure (PPM) (base plan)	92%	92%	92%	92%	92%	92%
Public Performance Measure (PPM) (base plan plus options)	92%	92%	92%	92%	92%	92%

Table 42 – Assessment of freight performance levels[56]

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Total freight delay minutes per 100 freight train km (base plan)	2.94	2.96	2.87	2.80	2.68	2.64
Total freight delay minutes per 100 freight train km (base plan plus options)	2.94	2.97	2.87	2.80	2.69	2.65

It is anticipated that by the end of CP4, ScotRail will be delivering a Public Performance Measure (PPM) of 92 per cent consistently on a Moving Annual Average basis. Based on recent passenger research, while punctuality is important its impact declines when performance is generally good. It is thus difficult to make a business case to invest additional money on performance given the profile of the route to move beyond the 92 per cent PPM. It has been assumed therefore that the industry will continue to deliver a PPM of 92 per cent throughout CP5, with the biggest focus on reducing the number of occasions when the network is severely disrupted.

Conversely, performance on Anglo Scottish routes lags behind ScotRail performance at present. Current plans anticipate this recovering by the end of CP4. Further information on this is contained within the Performance Supporting Document.

The performance trajectories also reflect perceived risks to performance, albeit small, arising from the additional enhancement works required to deliver the investment choices and options identified by the plan.

8.5.3 Passenger capacity

The overall level of peak capacity and train loadings delivered by the plan has been assessed for central Scotland and the regional cities. This assessment covers passenger arrivals during the weekday morning peak period between 07:00 and 10:00, including a separate assessment of the busiest peak hour between 08:00 and 09:00.

The assessment identifies the capacity provided by the current railway baseline, plus the incremental capacity delivered by the choices and options identified by the plan. The level of capacity has been assessed using the total number of seats provided.

[56] As freight performance is measured at a Great Britain level, no specific Scotland delay minutes are available

One of the consequences of the flexible 'turn up and go' nature of rail services (as opposed to 'airline style' services where a seat must always be reserved in advance) is that uniform 100 per cent load factors are unachievable.

Whilst the strategies proposed by industry to accommodate the anticipated increase in demand are developed at a detailed level of planning (often by considering loads on individual train services), the overall level of output presented in the IIP has been aggregated across the largest two cities. The use of average load factors across large areas can mask incidences of crowding.

Table 43 - Three hour weekday morning peak load factors delivered by the plan (07:00 to 10:00)

	Current railway			Current railway including additional choices and options identified in the plan		Change in average seated load factor delivered by choices and options
City Region	Forecast end Control Period 5 passengers	End Control Period 5 seated capacity	Forecast end Control Period 5 average seated load factor	End Control Period 5 seated capacity	Forecast end Control Period 5 average seated load factor	
Edinburgh	19,000	23,000	79.2%	23,000	79.2%	0
Glasgow	49,000	59,000	83.2%	61,000	80.5%	2.7%

Table 44 - One hour weekday morning peak load factors delivered by the plan (08:00 to 09:00)

	Current railway			Current railway including additional choices and options identified in the plan		Change in average load factor delivered by choices and options
City Region	Forecast end Control Period 5 passengers	End Control Period 5 capacity	Forecast end Control Period 5 average load Factor	End Control Period 5 capacity	Forecast end Control Period 5 average load factor	
Edinburgh	10,000	10,000	99.7%	10,000	99.7%	0%
Glasgow	24,000	25,000	96.0%	26,000	92.3%	3.7%

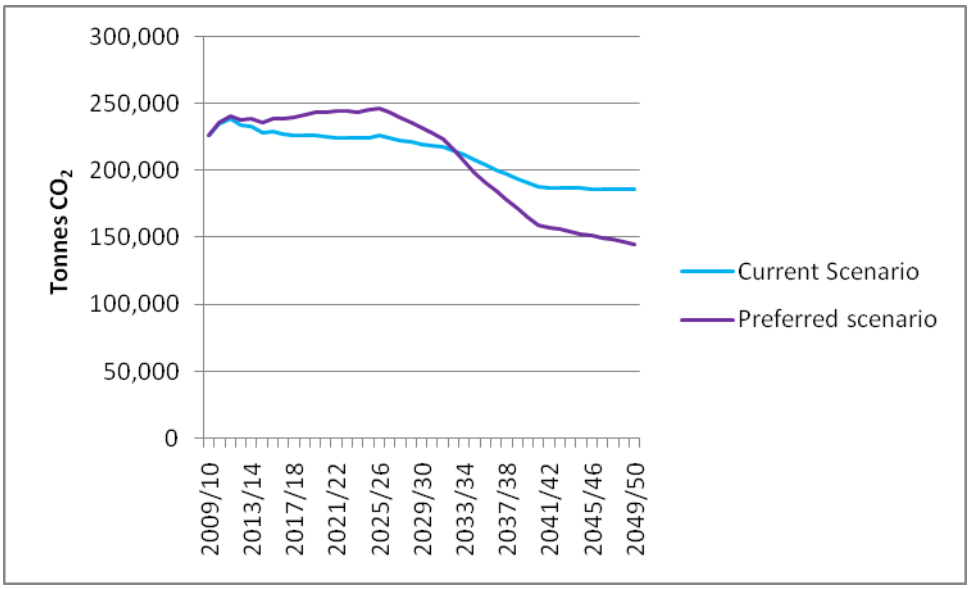
The options and choices identified by the plan deliver targeted increases in capacity, relieving current incidences of crowding and providing capacity to accommodate the growth in demand anticipated in the RUS work.

Overall, across Scotland's largest two cities the plan delivers a 14 per cent additional increase in peak capacity by the end of Control Period 5 relative to the planned capacity at end of CP4 level of service, seating for over 10,000 passengers. Roundly 80 per cent of this extra capacity is delivered by EGIP, and associated changes to the Stirling and Cumbernauld services, whilst the rest is delivered by the choices and options identified by the plan. The other increases are delivered by Central Scotland in-fill electrification and changes to the Argyle line services.

8.5.4 Carbon

The figure 46 below illustrates the expected long term trajectory in traction carbon emissions from rail services, where the range of investment options and longer term strategies proposed in this IIP are delivered.

Figure 45 – Current and Preferred railway traction carbon emissions 2009/10 - 2049/50



In the short term, investment in providing additional capacity will increase carbon emissions compared to today's railway. However the additional electrification options proposed through EGIP in CP5 and Phase 2 which goes beyond CP5, alongside the decarbonisation of electricity generation, will lay the critical foundations for the very low carbon railway required in future.

With this investment the industry could achieve cost effective reductions in carbon emissions of 36 per cent by 2050, from 2009/10 level. Beyond this, additional investment will likely be necessary. The industry will continue to prioritise the identification and delivery of further improvements in carbon and energy efficiency, for example in seeking to develop and deploy alternatives to self powered, diesel rolling stock. These will be further incentivised through the implementation of the Industry Carbon Management Framework.

8.6 Affordability of the plan

Chapters 2 and 3 of the IIP describe how the industry plans to deliver the outputs of the current railway more efficiently in response to economic priorities and the challenge to reduce costs, resulting in a much reduced level of underlying[57] taxpayer support by the end of Control Period 5.

Support for the current railway in Scotland is forecast to fall from £698 million in 2014-15 to £624 million by the end of Control Period 5 in 2018-19 for the value for money reflecting delivery of the efficient railway identified by the RVfM study and

[57] "'Underlying' support refers to the difference between whole industry costs and income. The actual value of support provided by funders at any point in time may differ due to the nature of adjustments and risk sharing contracted through individual Franchise Agreements

continued growth in passenger and freight demand. This is equivalent to a reduction in support from 23 pence per passenger km in 2014-15, to 17 pence per passenger km. These figures exclude the train operating costs and revenue from Anglo Scottish operators, including any future High Speed 2 services. The impact of Borders Railway on revenues and costs is likewise excluded from the analysis.

These figures assume achievement of the 'low' end efficiency savings identified by the RVfM study. Delivery of additional efficiencies consistent with the 'high' RVfM efficiency scenario would significantly reduce the level of subsidy.

Table 46 – Forecast support for the railway in Scotland (2011-12 prices)

	2014-15	2015-16	2016-17	2017-18	2018-19 (End CP5)
Base Plan 'low' efficiency (£million)	699	683	688	658	627
per passenger km (£)	0.23	0.22	0.20	0.19	0.17
Base Plan 'high' efficiency (£million)	678	647	634	587	542
per passenger km (£)	0.22	0.20	0.19	0.17	0.15

The impact of the investment choices identified by the IIP for CP5 on overall industry affordability is assessed in Table 34. This assessment assumes that:

- the choices identified by the IIP are all delivered in full
- investment continues throughout Control Periods 6, 7 and 8 to provide sufficient capacity to accommodate longer term growth in the market. The assessment includes an estimate of the longer term operational costs and revenues associated with this policy, along with assumed capital investment of £100 million per year in Control Periods 6, 7 and 8
- the assessment assumes delivery of the 'low' efficiency scenario identified by the RVfM study's "should cost" analysis.

Table 47 – Anticipated support for the railway plus additional options and choices identified by the plan to deliver better outcomes in Scotland (2011-12 prices)

	2014-15	2015-16	2016-17	2017-18	2018-19 (End CP5)
Base Plan (£million)	699	683	688	658	627
Base Plan plus options (£million)	702	691	706	689	662
Difference (£million)	4	8	18	31	35

Relative to the base plan, the additional support required by the choices and options identified by the plan to deliver better outcomes in areas such as safety, economic growth, carbon and efficiency is £35 million in the final year of Control Period 5, although the economic and social value generated for Scotland by the additional investment is clearly not reflected in the assessment of industry affordability.

Additional support rising to £81 million by the end of Control Period 8 is required to reflect not only the investment choices for Control Period 5 identified in this plan, but continuing investment to accommodate the anticipated growth in demand.

The principal determinants support, both in the short and longer term, are income growth and efficiency. The impact on affordability of the investment choices is small in relative terms in the short run, the value of Network Rail's net debt will increase (Table 48). This reflects the way in which rail projects are typically financed, and also the fact that the plan identifies a mix of investment choices delivering lower net operating costs (such as further network electrification), and increasing net operating costs in pursuit of wider economic and social benefits to UK plc. The driver for the differential in debt is the continuing investment to meet capacity.

Table 48: Network Rail's net debt in Scotland (£million 2011-12 prices)

	2014-15	2015-16	2016-17	2017-18	2018-19 (End CP5)
Base Plan	2,915	2,999	3,060	2,996	2,872
Base Plan plus options	2,986	3,179	3,384	3,439	3,429

8.7 Deliverability of the plan

The investment work, to be delivered by Network Rail across Great Britain, forecast to be required in CP5 has been assessed for deliverability. The assessment has covered the control period spend and profile for each asset and enhancements and compared it to the plan for delivery in CP4. (The assessment has been carried out for the totality of the capital investment forecast. Overall there is a slight increase (less than five per cent) in total investment from CP4 to CP5). The largest areas of growth are in signalling and electrification works. Key deliverability risks have been identified, along with associated mitigating actions. Key areas to be developed and understood are around access to the network and management of critical signalling resource. Generally, there is not considered to be a problem in putting the mitigating actions into effect. There are no significant overall deliverability concerns with the capex forecast. The use of future alliances and partnerships will also assist in robust delivery.

8.8 Risks and uncertainty

The IIP describes the assumptions used in developing the industry's plans, all of which are subject to a degree of uncertainty which may impact on outcomes. This section describes the key areas of risk and uncertainty.

Cost Efficiencies

It has been assumed that the industry will at least achieve the minimum efficiency levels set out in the RVfM Study. There are risks to the industry's ability to achieve these savings in the following areas:

Input prices

Plans have been developed on the basis of the current forecasts of input prices, particularly workforce and materials costs. If real wage increases or global commodity prices vary significantly from current forecasts than this will impact on the net levels of efficiency to be achieved.

Industry and regulatory reform

It is expected that the competitive process of franchise letting will release efficiencies in terms of delivering best value to the government within the context of the

franchising framework. The delivery of further efficiencies by train operators is contingent on franchise reform, particularly in the areas of sharing risk and reward, franchise duration and the level of specification, all of which impact on the ability to invest to reduce costs, and to improve efficiencies.

Business and operating environment

Significant train operator efficiencies are assumed to be delivered through the application of modern operating methods and the use of new technologies. There will be a need to mitigate against industrial relations risks which may come about as these proposals are developed.

Passenger Revenue

Passenger revenue forecasts are based on current forecasts of Gross Domestic Product (GDP) and employment distribution, and the relationships between these wider economic factors and the demand for rail. There are uncertainties in any economic forecast which may result in demand being different from that forecast. There are other external factors which, if they arise, would have a significant impact on the demand for rail, for example changes to wider transport policy.

9. Next steps

The Initial Industry Plan (IIP) has been developed in order to meet the needs of funders, in particular to support economic growth, and address the key drivers of customer satisfaction. The key outputs the industry believes it should focus on in Control Period 5 (CP5) are:

- maintaining high levels of safety and reducing risk at level crossings. The IIP sets out proposals to achieve reduce safety risk by 50 per cent in CP5
- maintain 92 per cent Public Performance Measure (PPM) by the end of CP5
- delivering value for money and affordable enhancements in rolling stock and infrastructure capacity to support economic growth
- addressing key drivers of user satisfaction including improved passenger information, the station environment and accessibility
- striking the right balance between when users wish to operate services and when the infrastructure needs to be maintained
- improving the carbon efficiency of the railway. The IIP is forecasting a reduction in CO_2 emission of 28 per cent by the end of CP5.

9.1 Developing the High Level Output Specification

The industry does not believe all outputs should necessarily be specified in the High Level Output Specification (HLOS). Certainly any outputs that are critical to achieving the desired outcomes need to be monitored and plans developed to improve them.

9.1.1 Passenger satisfaction

Passenger satisfaction is a key outcome that should be measured, and the industry recognises that action plans for improvement must be developed. However, there are key factors that influence satisfaction which are beyond the industry's control such as fares policy, for example, which impact on price and the perceived value for money of the service. The relationship between action and outcome is complex and this makes forecasting and costing improvements in user satisfaction difficult to do with certainty. The industry is recommending that passenger satisfaction is monitored and used to track the impact of its actions but not included in the HLOS as a specific target.

9.1.2 Freight user satisfaction

The complexity of the different logistics chains involved in the various rail freight markets, together with the more directly commercial and competitive customer interface which freight train operators have, render it difficult to construct a specific customer satisfaction metric akin to the survey type measures used in the passenger railway. As a proxy, therefore, it is proposed that, once the suite of existing performance metrics are enhanced, these and other output metrics can be used as an indicator of customer satisfaction.

Rail freight is a competitive market and all rail customers have choice – both of rail freight provider or of other modes of transport. In the end customers can – and occasionally do – exercise that choice if the rail freight industry does not deliver the service or product they require. Competition therefore provides incentives on freight operators to maintain and improve customer satisfaction.

9.1.3 Safety

Rail continues to be one of the safest forms of transport and Britain's railways compare very favourably against the rest of Europe. As stated in the European Safety Directive, the overarching safety requirement for European railways is to maintain safety and improve it where reasonably practicable. The individual organisations within the rail industry manage their businesses to meet this aim.

The industry's legal and statutory obligations provide organisations with a clear safety objective. The industry believes that it is therefore unnecessary to specify in the HLOS a general safety output as was the case in CP4.

However the IIP has set out a proposal for additional funding to go beyond its statutory obligations in reducing risks at level crossing and is seeking explicit specification and funding for this in the HLOSs and Statement of Funds Available (SoFA).

9.1.4 Reliability outputs

Reliability outputs should be a key HLOS output measure. Good performance allows the industry to deliver its promised service offer to its customers. Performance is the most important driver of customer satisfaction and poor performance potentially imports cost into our plans in order to mitigate it.

National Task Force has discussed the strengths and weaknesses of the current PPM and possible alternatives, based on the metric:

- driving performance improvement in the areas which have the biggest impact on rail usage, revenue and satisfaction
- being easy to understand by the public, stakeholders, funders and the industry
- being possible to measure with current systems
- being a true indicator of the experience of passengers using the train service

PPM's strengths are that it is easy to understand and is already being used and the systems support it. It does, with the supplement of the Cancellation and Significant Lateness (CaSL) measure, focus the industry on driving performance improvements but clearly does not capture the complete passenger experience. For example, it does not measure punctuality at intermediate stations nor measure a "right time" railway.

However analysis provided to National Task Force demonstrated a strong correlation between very different performance metrics, improvements in PPM have resulted in the average lateness of our passengers falling. The analysis also indicated that improving PPM has improved "right time" (as per the published passenger timetable) and to improve PPM the industry has focused on initiatives which remove small but consistent delays. Delivering right time is recognised as critical, particularly in a congested and complex railway where the knock on impact is significant.

In summary National Task Force concluded that:

- PPM is a train-based measure and a good indicator of "passenger performance"
- passenger PPM is impossible to measure accurately
- alternative metrics weighted by passenger or station stops result in similar levels of reported performance
- industry is already incentivised to focus on passenger lateness by the performance regime in track access contracts
- all measures are open to challenge that it isn't reflective of any single journey experience.

Industry therefore recommends that PPM should be retained along with CaSL as the key measure of poor performance.

The industry recognises that there is a separate and important discussion about the level of disaggregated (e.g. by station, service group, time of day, even by train) performance data that should be published.

For freight services, Network Rail and its customers are reviewing the appropriateness of the current measure and will be developing proposals for inclusion in the Strategic Business Plan (SBP)

9.1.5 Capacity

The first HLOS specified capacity outputs in a number of ways. Firstly, by specifying project outputs, for example in terms of the outputs design and build of the Airdrie to Bathgate route. Secondly in terms of funds with specific objectives, for example the Small Project Fund. Thirdly by expressing output metrics, these were underpinned by specimen schemes identified through the Route Utilisation Strategies.

Funders specifying outputs, rather than focusing on inputs, allows the industry flexibility to develop the most cost effective way of delivering the required capacity and to explore options such as the combination of timetable change, rolling stock and infrastructure interventions. It also allows flexibility to adjust the plans to changing circumstances, including being able to adjust the plans in light of the outcome of the franchise re-letting process.

The industry will work Transport Scotland to explore alternative options for specifying capacity. A key issue will be the level of disaggregation at which capacity outputs could be specified. The industry will share with Transport Scotland its underlying route based analysis of demand and capacity analysis that supports the IIP to inform these discussions.

9.1.6 Availability

The key objective for the industry is to strike the right balance between the provision of services and access to maintain the network, in order to maximise industry value and revenue. This requires train operators and Network rail to develop access strategies that make clear the priorities in terms of key passenger, freight flows and maintaining the network to examine the trade off between delivering the timetable and providing access to the network to maintain, renew and enhance in an efficient way.

The Possession Disruption Indices (PDIs) for passenger and freight, whilst providing a useful network measure of changes in access and availability, have a number of weaknesses. These include not being widely understood, and being difficult to disaggregate. It is proposed that alternative measures be looked at for CP5.

A cross-industry working group comprising representatives from Network Rail, Association of Train Operating Companies (ATOC), Passenger Focus, freight operators, long distance operators, regional operators and commuter operators will be established. This group will develop alternative measures and make recommendations on those to be adopted in CP5.

A staged approach will be taken to assess what measures will be adopted for CP5. This will identify the attributes of a good measure; test the existing measures against those attributes; make recommendations for amending existing measures and create new ones; and finally agree those to be taken forward.

The suites of measures for CP5 will be agreed before the end of 2011/12 in order that they may be used to gather baseline information in 2012/13 and 2013/14 to provide early indication of the trends going into CP5.

Once the measures have been established, targets for CP5 can be developed in light of the Route Network Availability Strategies.

9.1.7 Journey time

One of the key competitive advantages of the rail industry is its ability to provide fast journeys for both passengers and freight users. The National Passenger Survey highlights that there is general satisfaction amongst current users with journey times, but the industry recognises that to attract new business all aspects of its service offer should be kept under review. The significant improvements in volume and market share achieved on the West Coast Main Line since the completion of the upgrade demonstrate that improving journey times significantly results in more traffic using the network.

Britain's rail network is increasingly busy, and is generally mixed-traffic, resulting in a mix of train types, speeds and stopping patterns. In some cases more capacity can be delivered through ensuring that the timetable is optimised over particularly congested route sections.

Improving journey times therefore depends upon a set of complex relationships between infrastructure capability, the performance of rolling stock and the demand for train services on the network. The complexity of timetabling long-distance passenger and freight services means that local changes may not be easily integrated across the whole system, although with a steady base timetable there is more potential to implement changes that reflect developments in service specification and network characteristics that generate benefits for users.

Particularly for passengers, the time spent on the train is not the only component of journey time, and there will be a trade off between frequency, which reduces waiting times, and faster journey times which may reduce the total capacity of a route. Faster journeys between principal stations may require changes to stopping patterns elsewhere, which may not be commercially or operationally feasible.
The industry does not recommend that a specific measure of journey time change be developed or included as a target in the next HLOS process, given its complexity and the requirement to optimise the use of the network.

During the coming years, there will be opportunities to review and where possible improve journey times. Some of the key drivers will be:

- further electrification, which provides more consistent traction performance as well as improved acceleration and deceleration
- introduction of new rolling stock and the cascade of better-performing modern trains across the network
- upgrades to infrastructure, including signalling renewals, new track capacity and potential improvements to route alignment and geometry
- changes to train service specification, mainly but not exclusively through the franchising process, resulting in greater optimisation of performance and journey time outputs.

The industry will take advantage of opportunities to improve journey times where possible, as one of the main drivers of growth and customer satisfaction. As the issues are complex, and individual operators' aspirations need to be assessed in the

light of the rights of other access holders, journey time opportunities will be part of the route planning process, recognising that defining the correct outcome will not necessarily be a mechanistic process, to reflect the diversity of both the rail network and the markets that it serves.

9.1.8 Carbon

The industry recommends that carbon reduction is not subject to an HLOS or regulatory output metric in CP5. There is a risk that any such metric would have the potential for perverse outcomes through the related impacts on meeting other targets with important social and economic benefits, particularly in the wider context of potential transport-wide carbon savings brought about through modal shift. However, this means that we need to commit firmly to developing and implementing non-regulated mechanisms for reducing industry carbon emissions in a manner that supports, in as effective a manner as possible, national carbon reduction targets.

The industry believes that the best way forward is to commit to developing and implementing a robust and comprehensive Industry Carbon Management Framework outlined in this IIP as part of its planning for CP5.

9.2 Consistency between the High Level Output Statement and franchise outputs

Clarity of purpose, alignment of objectives and common incentives have been identified as key enablers to the industry delivering a better value for money and more affordable railway. Consistency of outputs between those specified in the HLOS, the periodic review process more generally, and the franchising process will support a common set of objectives between train operators and Network Rail. Greater consistency of the specification between the two processes will facilitate train operators and Network Rail developing joint improvement plans across a range of outputs, aimed at delivering a common set of system outputs as well as individual organisational obligations. This requires consistency in terms of the outcomes and outputs specified, the metrics used to measure the outputs and the levels of output sought. To achieve this, greater alignment is required between the outputs procured through the franchising and periodic review processes. A key difficulty in achieving consistency between Network Rail's outputs and individual franchise commitments as franchises are re let, is the different timings of when outputs are specified between the periodic review process and the individual franchise re-lettings, and the different planning horizons of the two processes. To achieve this consistency requires a more transparent, collaborative and iterative framework within which Network Rail's output obligations and the output obligations of individual franchises and the franchises as a whole, can be continuously reviewed for consistency and with capability to flex outputs to maintain alignment.

9.3 Local Outputs

The IIP includes a range of options that can contribute to sustainable economic development and the needs of users at a national, regional and local level. The IIP thus provides a menu of choices not only to inform the development of the HLOSs but also for other public funders as well as possible private funders with more specific regional or local goals.

9.4 Reform

The IIP makes clear that delivering improved value for money requires significant change to how Network Rail and train operators work together and the framework within which they operate. The franchise and regulatory frameworks must provide the

appropriate freedoms and incentives for the industry to deliver better value for money through a more mature commercial relationship based on a stronger sense of trust and common purpose. The industry, particularly through Rail Delivery Group (RDG), will continue its discussions with funders and the Office of Rail Regulation (ORR) to change the regulatory and franchising frameworks to facilitate this closer working.

9.5 Improving value for money

The RDG is developing its future work plan, focusing on the key cross industry issues to be addressed to deliver improved services to rail users and value for money to the taxpayer. Ultimately the outcome of RDG's activities will be reflected in the future cost savings delivered by Network Rail and train operators.

Network Rail will continue to develop it efficiency plans and reflect progress in its Strategic Business Plan. Through the process of progressive assurance towards the SBP, Network Rail will continue its engagement with ORR on the development of its plans for CP5 and beyond. Network Rail and train operators will continue to explore opportunities to develop deeper partnerships through alliancing.

The programme of franchise re letting will provide the opportunity for funders to capture further efficiencies but reform to the franchising framework is required to deliver further efficiency savings beyond those captured in the current franchising process. Set out below is the replacement programme for the current franchises between now and the end of CP5:

Year	Franchises
2012	Intercity West Coast
2013	Intercity East Coast
2014	ScotRail
	TransPennine
2015	Cross Country

The industry looks forward to engaging with Transport Scotland (TS) and the Department for Transport (DfT) on the development of the franchising framework and the individual specifications in order to deliver a better value for money railway.

9.6 Developing the Strategic Business Plan

Network Rail will publish its Strategic Business Plan in January 2013. This will set out how Network Rail intends to deliver the outputs specified in the HLOSs in a cost effective and sustainable way. Network Rail will work with train operators on a bilateral basis and through established industry groups such as National Task Force to develop the required forecasts of whole system outputs and to develop the strategies to deliver these outputs.

The SBP will reflect the impact of devolution on Network Rail's plans. The SBP will include forecasts of outputs and expenditure at both a network and operating route level including route based asset management plans.

9.7 How you can contribute

Network Rail, Association of Train Operating Companies, Rail Freight Operating Association and the Rail Industry Association welcome feedback on the contents of this publication.

Feedback can be submitted electronically to Network Rail at the following address:

planningahead@networkrail.co.uk