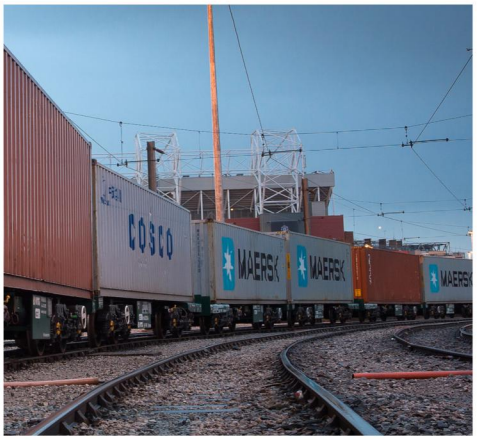
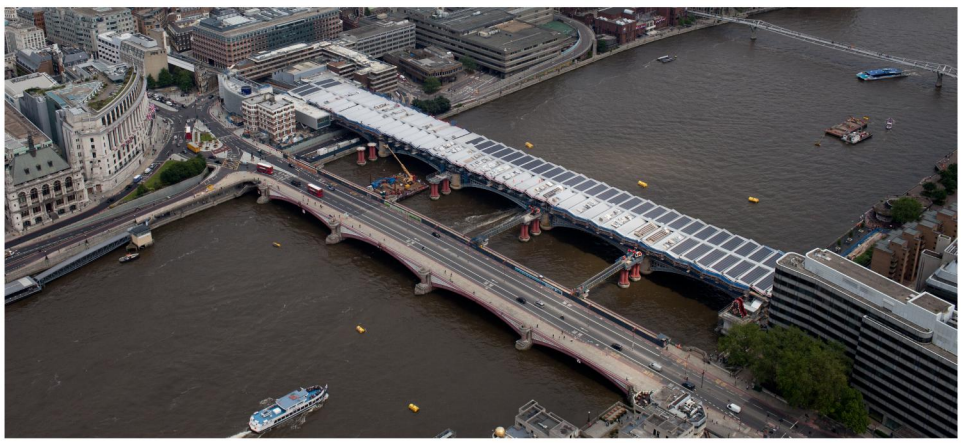


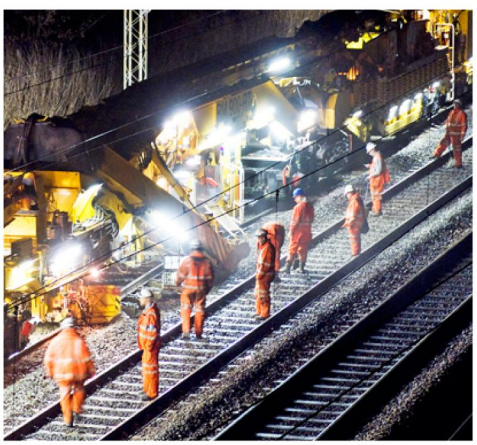


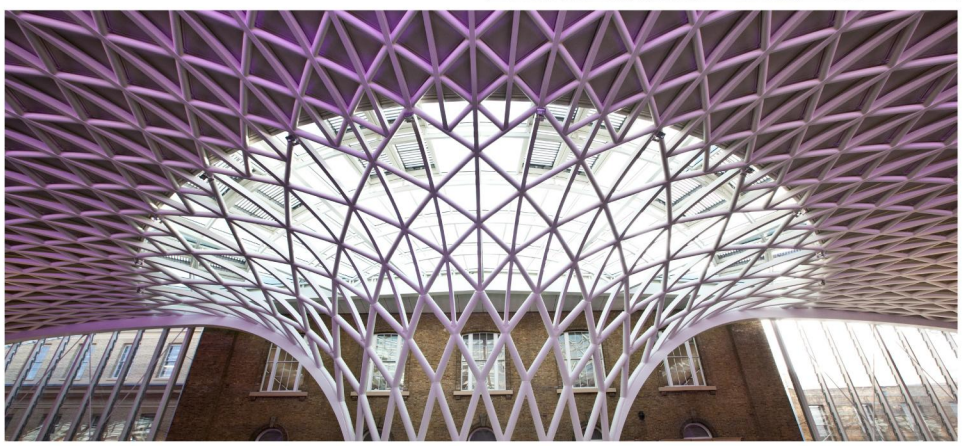
Industry Strategic Business Plan

England and Wales

Industry's response to the High Level Output Specification for CP5

January 2013





RFOA
Rail Freight Operators' Association

Railway Industry Association

Train Operators Working Together ATOC

NetworkRail

Contents

Foreword

The industry has delivered unprecedented growth, at record levels of performance and safety. The key challenge for the industry is to continue this success whilst delivering better value for money. The franchising process is currently under review and, whatever the outcome of this review, the industry must demonstrate its ability to meet the challenges ahead in partnership with a common purpose. That will require leadership and a clear vision.

The Rail Delivery Group (RDG) is the industry's vehicle for meeting the challenges of leadership. RDG has formalised the Planning Oversight Group as the industry's senior planning body. The work of Planning Oversight Group has created consensus as to the long term vision for the railway.

This vision places the railway at the centre of a transport system that drives economic growth, moving people and goods in a safe and sustainable way. The effectiveness of rail was recognised in the Command Paper and High Level Output Specification (HLOS) both published last year, with a commitment from the Government to continued significant investment in the railway.

This Industry Strategic Business Plan (SBP) sets out the industry's plans for Control Period 5 (CP5) to make progress towards this vision, delivering the outputs specified by the Government in the HLOS. To deliver this plan successfully the industry needs action and reform to the environment within which it operates:

- The re-franchising programme must be re-started as soon as possible and the franchising framework must be reformed to provide the industry with the flexibility and freedom to deliver better value for money to customers and funders
- The regulatory framework must be simplified and flexible to facilitate a range of different partnerships between Network Rail and its customers
- The franchising and regulatory frameworks must seek consistent outcomes and provide aligned incentives

These changes will allow the industry to drive better value for money. They will allow the industry to make explicit value for money trade offs about the balance between capacity, performance and cost. They will allow Network Rail, train operators and the supply chain to find more innovative ways to deliver greater efficiencies and revenue growth than the individual organisations are currently committed to.

The outcomes of the periodic review and the franchising programme will be critical in setting the agenda for the rail industry in CP5 and create an opportunity for significant change. The industry has all the building blocks in place - vision, leadership, plans and partnerships - to meet the challenges ahead. It now needs the Government and the Office of Rail Regulation (ORR) to provide the right environment to support it in meeting these challenges and delivering this plan.

Tim O'Toole
Chair, Rail Delivery Group

Executive Summary

The rail industry is a success story, carrying high numbers of passengers and goods at record levels of safety and performance and delivering improved value for money.

Further improving value for money while continuing to grow and to satisfy customers is one of the industry's biggest challenges. The industry has developed a vision and strategy for the railway aimed at achieving this. There are key enablers and actions required from all parties in the industry to facilitate this:

- Franchising has been at the heart of the growth of the industry and the franchising programme needs to re-commence quickly with a clear process that provides incentives for train operators to deliver enhanced value
- The regulatory framework for CP5 needs to enable and support Network Rail in working with train operators to make the right decisions at a local level and strike the right balance between cost, capacity and performance
- Regulatory and franchised outputs and incentives must be aligned in order to allow Network Rail and train operators to explore new ways of working to the benefit of customers and taxpayers
- The industry, with leadership from RDG, needs to continue to find greater efficiencies beyond those that individual organisations are already committed to delivering

The industry has a track record of delivery and is confident it can continue to deliver even greater value for money with these enablers in place.

A track record of delivery

Britain's railway plays an essential role in supporting and creating economic growth by enabling the safe, fast and efficient movement of passengers and goods into and between major economic centres and international gateways. The railway today also makes a significant contribution towards the social and environmental welfare of the country, linking people and communities across the country in an environmentally sustainable way.

This has placed it at the centre of the Government's vision for a dynamic, sustainable, transport system that drives economic growth and competitiveness. The Government's strategy for the railways, published in the March 2012 Command Paper, sets out how rail is central to a transport system that supports economic growth, facilitating business, commuting and leisure journeys and provides a greener transport option than road and aviation.

The publication in July 2012 of the HLOS and Statement of Funds Available (SoFA) committed significant investment in CP5 to deliver this strategy. This plan is the industry's response to the HLOS.

This vote of confidence in rail by the Government builds on an impressive track record:

- one of the safest railways in Europe, significantly safer than road and comparable with air transport
- double the number of people carried since 1994/95. In 2011/12 there were 1.4 billion passenger journeys. Over one billion of these journeys were made by commuters and business travellers and this passenger growth has directly supported the UK economy
- increased freight tonnes moved by 62 per cent since 1994/95 with intermodal traffic increasing by 78 per cent over the past ten years, despite the recession
- consistently high levels of punctuality and reliability – last year 91.6 per cent of passenger services were run punctually, an increase of more than 10 per cent since 2001/02
- a network which is increasingly 'open for business', allowing more services to be operated when passengers and freight customers require them
- a reduction in Government support to the rail industry of nearly half in real terms since 2006/07
- high levels of passenger satisfaction (currently at 83 per cent).

A long term vision for rail and the industry's plans for CP5

Consistent with the Government's transport strategy, the industry's ambition is to increase rail's contribution to Great Britain's economic, social and environmental welfare. Rail is best placed to respond to growth, as economic and environmental trends in the market play to rail's core strength of moving large volumes of goods and passengers over long distances, and between and into city centres and international gateways.

The Initial Industry Plan (IIP), published in September 2011, set out what the industry aspires to achieve in areas such as performance, capacity and customer satisfaction by 2035, in line with the above ambition. This Industry SBP focuses on what the industry plans to do in CP5 to move towards those long term ambitions and in particular to deliver the outputs specified by Government in its HLOS (see Table 2).

The industry's approach during CP5 incorporates the following key features:

- a strong emphasis on the need to deliver better industry value for money, building on recent progress made by the industry, through continued efficiency gains by Network Rail and potential further contributions from train operators
- a major programme of network improvements worth £11 billion (including electrification) which, together with a 15 per cent increase in the size of the passenger rolling stock fleet, will increase capacity for passengers and freight users, as well as sustaining high levels of safety and performance
- other industry-wide strategies, for example, on station improvements and customer information which can further improve customer satisfaction; on sustainability, to support other interventions to reduce environmental impact; and to stimulate more innovation on a whole-industry basis in developing technical solutions to rail's challenges in CP5 and beyond
- a series of six ring-fenced investment funds with an aggregate value of nearly £1.2 billion over CP5, dedicated to support a range of outcomes and industry wide strategies, such as a £206 million fund to support the development of a Strategic Freight Network.

Delivering better value for money

Delivering a better value railway for customers and funders is one of the industry's biggest challenges. In 2011/12, the rail industry in England and Wales received £3.8 billion of support from the taxpayer, a figure which funders and the industry acknowledge to be too high in the longer term despite the value that rail delivers to the economy, its users, and society as a whole. This is projected to fall to less than £3 billion in 2019 (in 2012/13 prices).

The industry is taking responsibility for its future through RDG, which brings together senior leaders of the rail industry. RDG has initiated a number of working groups to examine opportunities to deliver efficiencies across the industry including asset, programme and supply chain management, contractual and regulatory reform, train utilisation, and technology, innovation and working practices. A work stream to examine the opportunities to reduce the costs of major projects through greater industry engagement in the development and delivery of enhancement schemes has also recently been started.

The initial findings of these working groups have informed the development of both this Industry SBP and Network Rail's SBP, as well as the forecasts of efficiency included in these plans. Network Rail has set out its commitment to deliver 18 per cent efficiency by the end of CP5. The RDG work provides Network Rail with greater confidence it can deliver this level of efficiency and the potential to go beyond it. RDG will continue to develop a more comprehensive assessment of the possible efficiencies to inform industry plans for CP5.

The RDG working groups have also identified opportunities to improve the efficiency of delivering train services. The potential delivery of these will require reform of the franchising and regulatory framework as part of an early re-commencement of the franchising programme. The longer these enablers are delayed, the smaller the opportunity will be for train operators to deliver efficiencies in CP5 beyond those committed within existing franchise agreements.

Achieving the HLOS capacity outputs

The industry's plans will deliver 20 per cent more seats into central London during the weekday morning peak by the end of CP5. Across the other cities covered by the HLOS, this plan will deliver 32 per cent more seats during peak hours.

Key strategies to achieve the capacity outputs are summarised below:

Table 1: Key strategies for London and other cities during CP5

London	Other cities
Committed schemes including Thameslink, Crossrail infrastructure, Intercity Express Programme, Great Western electrification **Train lengthening** including 11-car Pendolinos and Essex Thameside lengthening **Investing in capacity enabling infrastructure** on the Great Eastern and West Anglia routes, Midland Main Line electrification, Redhill platform zero, Uckfield Line train lengthening, Waterloo to Reading train lengthening and enabling power supplies	**Birmingham:** Electrification of Walsall to Rugeley **Bristol:** Introduction of Super Express Trains, Great Western electrification, Greater Bristol capacity programme (track remodeling of Bristol Temple Meads and four tracking Filton) **Cardiff:** Valleys lines electrification and electrification of the main line **Leeds:** Longer suburban services including platform lengthening, Leeds, Huddersfield and Bradford enhancements, north Trans-Pennine electrification, Northern Hub **Leicester:** Inter-urban lengthening, and delivery of extra capacity following electrification of the Midland Main Line **Liverpool:** Northern Hub, north west electrification **Manchester:** Northern Hub, north west and north Trans-Pennine electrification **Newcastle:** Introduction of Super Express Trains, north Trans-Pennine electrification **Nottingham:** Suburban lengthening, delivery of extra capacity following electrification of the Midland Main Line **Sheffield:** Suburban train lengthening and delivery of extra capacity following electrification of the Midland Main Line, Northern Hub

To deliver all of these improvements further investment will be required in the size and capability of the national fleet of passenger rolling stock with associated depots and stabling facilities. In part, this will be delivered through existing rolling stock procurement programmes including the Intercity Express Programme (IEP), Crossrail, and Thameslink (along with the release of cascadable fleets of existing vehicles). Franchising provides the opportunity for delivery of the remaining stock required to meet the HLOS requirements. We believe that the best value for money approach is for the industry, rather than the Government, to take the lead on procuring rolling stock. The highly commercial nature of the franchising process creates a strong incentive to reduce the number of new types of train in use on the network, reducing cost in the long run.

Meeting the HLOS performance outputs

Performance is at historically high levels across the network. The HLOS requires the industry to develop a plan to deliver 92.5 per cent Public Performance Measure (PPM) and 2.2 per cent Cancellations and Significant Lateness (CaSL) by the end of CP5. Analysis has shown that levels of performance would be expected to continue to improve further in CP5, based on the improvements and investment in recent years, more efficient working practices and building reliability into infrastructure and fleet assets.

Forecasting the precise level of performance to the end of CP5 and then delivering it poses considerable challenges to the industry. The likelihood of more congestion on parts of the

network, the operational impacts of delivering major engineering projects and introducing new fleets, together with the prospect of a busy period of re-franchising, all need to be factored in.

The starting point for the industry has therefore been to develop a scenario-based approach to planning for the delivery of performance. This plan is expected to deliver within a range of 91 to 93 per cent PPM by the end of CP5. The HLOS target falls within this range and it has been viewed as an objective to be planned for. The industry will also prepare a National Performance Improvement Programme (for commencement in CP5) to improve confidence in delivering the HLOS outputs.

Continuing to deliver a safe railway

This plan has been prepared in line with the HLOS requirement that the industry continues to improve its record on passenger and worker safety through the application of the 'so far as reasonably practicable' approach. We expect the programme of network and rolling stock investments underpinning this plan to reduce the risk per passenger journey by around 9 per cent over CP5. Investment in track worker safe access equipment, improved traction power isolations and plant safety will reduce workforce risk. A ring-fenced fund will also help enable a reduction of risk at level crossings by 8 per cent by the end of CP5.

Promoting a low carbon railway

There has been good progress in implementing the industry's carbon management framework outlined in the IIP and a carbon accounting system is now being developed. Further electrification is the key element of a low-carbon railway, but there are also opportunities for the industry itself to make carbon and associated cost savings, potentially leading to a 37 per cent reduction in per passenger kilometre CO_2 emissions, and an 11 per cent reduction in net freight tonne kilometre CO_2 emissions. The industry also takes its wider sustainability responsibilities seriously and is developing recommendations for further embedding the industry Sustainable Development Principles, as set out in the HLOS.

Table 2: Vision for Rail in Great Britain

Industry today
A railway today that: • is one of the safest in Europe • has customer satisfaction at 83 per cent • is running more trains with 14 per cent more passenger train kilometres than 2003/04 and a 62 per cent increase in freight moved since privatisation • has the highest ever levels of performance • has seen Government support nearly halved in real terms since 2006/07
By 2019
A railway by the end of CP5 that: • continues to be one of the safest in Europe, reducing risk at level crossings by 8 per cent • delivers 20 per cent more seats into central London during peak hours, and 32 per cent into large regional cities (moving 225 million more passengers every year) • maintains record levels of performance, with expected PPM of 92.5 per cent • delivers continuing improvements in customer satisfaction • delivers a step change in connectivity between regional centres e.g. six fast trains per hour and up to a ten minute reduction in journey time between Manchester and Leeds • transforms the nature of the rail network, with over 3,000 kilometres more electrified lines and the completion of major enhancements to the network including Birmingham New Street, the Intercity Express Programme, Thameslink, Crossrail, Reading, and Edinburgh Glasgow Improvements Programme • delivers up to 4,150 new build train vehicles (2,500 already announced) • contributes to a lower carbon economy, reducing CO_2 per passenger kilometre by 37 per cent • removes the equivalent of one million lorry journeys off the road per year with freight tonne kilometres forecast to increase by 22 per cent • is more efficient with overall industry subsidy reducing from 7.0 pence per passenger kilometre to between 4.7 pence and 5.3 pence per passenger kilometre
The longer term
By 2035 the industry aspires to deliver: • levels of reliability and safety that are among the best in the world • passenger satisfaction of at least 90 per cent • capacity to accommodate twice as many passengers as today, including capacity provided by HS2 • further improvements in the product offer for freight customers • a financially sustainable railway through further efficiency and revenue generation • a greater reduction in CO_2 emissions

1. Context

The industry set out its proposals for CP5 and the longer term in its Initial Industry Plan (IIP) published in September 2011. The IIP was a key input to the Periodic Review process that will set Network Rail's outputs and funding for CP5, and informed both the ORR's Advice to Ministers and the subsequent publication of the Government HLOS in July 2012.

This Industry SBP for England and Wales sets out the industry's response to the HLOS, updating the IIP and setting out how the industry will continue to develop and work together to deliver the outcomes required by customers and funders in CP5 and the longer term.

1.1 Developments since the Initial Industry Plan

There have been a number of key developments in the wider industry framework that underpin the planning within this document:

1.1.1 The Command Paper

The Government's strategy for the railways, published in the March 2012 Command Paper, sets out how rail is central to a transport system that supports economic growth. Rail facilitates business, commuting and leisure journeys, and provides a greener transport option than road and aviation, whilst relieving congestion on the road network.

The Command Paper, informed by the Rail Value for Money (VfM) Study, clearly called for the industry to reduce its costs. It also endorsed the approach of evolutionary change, with the RDG taking a leadership role. At the same time consultations were launched on future fares policy and localism, which will inform the direction of future Government specification.

1.1.2 Franchising policy

As this Industry SBP was being prepared, two reviews of rail passenger franchising were underway, sponsored by the Secretary of State, following the cancellation of the Intercity West Coast competition and the pause of three current bidding processes. The review of wider franchising policy being led by Richard Brown will report to Ministers very soon and its recommendations will inform the future design and procurement process for rail passenger services in England and Wales.

1.1.3 Rail Delivery Group

At the time of the IIP publication, the Rail Delivery Group (RDG) had just been established as part of the industry's response to the VfM Study. Participation in the RDG is expected to be formalised through a license requirement across the industry. It is addressing the key opportunities for improving efficiency and value for money across the industry, and its work is summarised in this Industry SBP. The RDG is providing industry leadership and a forum to engage with wider partners and stakeholders, as well as identifying the best way forward for the rail industry, and will continue to tackle major cross-industry issues.

1.1.4 RSSB (Rail Safety and Standards Board)

In July 2012 RSSB initiated a strategic review. RSSB supports the industry by managing many cross industry activities, such as interface standards, safety monitoring and analysis, cross industry research and development, facilitating the Technical Strategy Leadership Group (TSLG) and hosting the new Enabling Innovation Team. In view of the many changes in the industry RSSB wants to ensure that the company meets the challenges of CP5 and beyond. The review is currently defining, with RSSB members and stakeholders, how the purpose of the company is best expressed for the next decade, what functions it will fulfil in CP5 and how the industry can work more effectively to realise its full potential.

1.1.5 Alliancing

Continuing progress is being made with the establishment of alliances between train operators and Network Rail. The first "deep alliance" was established between Network Rail's Wessex Route and South West Trains in May 2012, and other alliances are delivering change across the network. Early indications are that the model is already delivering efficiencies and closer alignment between industry parties, and that there will be continuing evolution to reflect experience and new opportunities.

1.1.6 Industry planning

The industry's commitment to working together to ensure that planning for both infrastructure and operations are co-ordinated to deliver best value is fundamental in responding to the HLOS and wider requirements from the market. Network Rail has set out its future approach to its statutory responsibility for leading industry planning. Building on the successful completion of the Route Utilisation Strategies, the new Long Term Planning Framework will ensure that industry plans are updated to reflect new challenges and opportunities. The industry CP5 Group has also continued to review, and challenge, future plans and has been an important forum that has assisted in the development of this Industry SBP.

1.2 Key challenges

There are a number of key challenges ahead:

1.2.1 Improving value for money and efficiency

Delivering better value for money is the biggest challenge facing the rail industry. This will be achieved by delivering greater economic value, generating more revenue and improving efficiency. This applies across the spectrum of railway activities, including the delivery of more frequent and faster services, the economic and financial returns from investment in new infrastructure and rolling stock and opportunities to invest to reduce the future cost of the railway through enhanced productivity.

Achieving greater value for money and efficiencies requires operators, Network Rail and the wider industry to work together with a clear focus on achieving these goals and an agreed strategy for doing so. The industry, led by RDG, is developing a range of initiatives to achieve this including improving the productivity of access arrangements and current operations, the specification and delivery of projects, reform of the contractual and regulatory framework (to generate greater revenue and reduce costs), the opportunity to invest to improve productivity, and investment in research and development for longer term benefits.

The delivery of greater value for money requires support from the Government and other stakeholders. This will include reform to the franchising and regulatory framework to align incentives and provide the freedom for the industry to make the right choices between outputs and costs to deliver better value for money to the farepayer and taxpayer.

1.2.2 Improving customer satisfaction

The industry has achieved high levels of customer satisfaction but recognises maintaining and driving further improvements in satisfaction will require the industry to address a number of key drivers of satisfaction including:

- maintaining high levels of performance, reducing the gap in the performance between different services, and providing sufficient on-train capacity for rising passenger demand
- enhancing aspects of the journey experience including the provision of customer information, especially during disruptions
- improving value for money by improving unit cost efficiencies and making the railway more affordable to funders to support the government's ambition to move away from above inflation fare rises

1.2.3 Maintaining high levels of performance

Over the last decade, rail's delivery of performance has improved. The challenge for CP5 and beyond is to sustain this trend and to improve consistency across the network – while at the same time ensuring that major projects are delivered effectively. The industry works together through the National Task Force to address performance issues, and this Industry SBP reflects a considerable amount of analysis and discussion from across the rail industry. It is recognised that there are significant challenges surrounding the delivery of timetabled services on a network that is busier than ever, and this plan sets out the key issues that the industry will take forward, recognising the increasing volumes of both passenger and freight traffic as well as the major programme of improvements across the network.

1.2.4 Balanced access strategies

The rail network needs to be open for business to generate revenue. At the same time, the infrastructure must be maintained, renewed and enhanced as efficiently as possible. The level of access is a key determinant of the volume and cost of work that can be delivered. Strategies must be agreed between Network Rail and train operators providing services for increasing levels of passenger journeys and freight volumes, striking the correct balance between these requirements. This is an issue being tackled by RDG.

At this stage of planning it is only possible to undertake a high level assessment of the volume and scope of work required. This will be refined as more detailed work banks are defined. This assessment shows a significant increase in the expected annual volumes of access required to deliver CP5 plans for years 1-3 of the control period with reductions seen in the later years compared to CP4 volumes. Network Rail and the wider industry will examine opportunities to smooth this workload and obtain best value from suppliers, recognising that the understanding of the options and constraints is route specific. The further development of Route Network Availability Strategies will be critical in determining a better understanding.

Where maintenance, renewal or enhancement activity is required on Anglo Scottish routes, it is the overall intent that at least one of those routes should be made available to timetabled services, for scheduled sleeper, passenger, and freight services between Edinburgh or Glasgow and London without the need for change. On certain dates (particularly public holidays) the volume of work may make this difficult to achieve.

1.2.5 Improving sustainability

Rail delivers significant sustainability benefits for the country. It offers low-carbon passenger and freight transport that connects people to opportunities and businesses to their markets. Yet challenges remain if rail is to maintain and enhance its sustainability credentials. Other sectors are not standing still and rail needs continuously to improve; much also still needs to be done to develop a whole-life, whole-industry approach to sustainability.

In overall response to this challenge, the industry has developed ten Sustainable Development Principles, spanning the social, environment and economic elements of sustainability. Work has begun to encourage industry players to embed these principles more firmly within their actions and decisions (see 5.2.12).

Alongside the principles, action is also needed to address individual elements of sustainability. In the case of environmental impact, for example, rail has an important contribution to make as part of the wider national effort to mitigate climate change. This plan sets out how the industry can do this by initiatives to reduce its carbon emissions (see 4.6). Regarding another area of environmental impact, the industry's work on mitigating noise pollution has been transferred to the Network Rail Track Asset Management Plan.

1.2.6 Managing trade-offs

A key theme throughout this Industry SBP is the need to take informed decisions that deliver the best outcome for passengers, freight users and funders. Financial, physical and

operational resources are finite, and the challenge is to get the right balance of outputs. The rail network serves a large number of different markets, and has different constraints and opportunities.

The Command Paper identified industry maturity as an overarching theme, and the industry recognises that at times trade-offs will need to be made. Parts of the network are increasingly congested, and the significant improvements in capacity set out in this plan are being delivered whilst continuing to provide train services. It may be more important, for example, to maintain the total capacity of commuter services during major enhancement works, even if that means a slight reduction in operational resilience. In taking the industry forward through the major changes ahead, there will be choices to be made – and these will need to be managed transparently. Many trade-offs must be addressed locally, using the knowledge and skills of Network Rail and operators to deliver the best outcome. A consistent approach to ensuring that the needs of users are met will provide assurance that the best combination of capacity, performance and journey time are provided.

1.2.7 Understanding the impact of the High Level Output Specification

The publication of the HLOS gave the industry clarity on outputs required. Alongside the completion of major enhancements, including Thameslink and Crossrail, its commitment to further capacity increases around major cities, electrification of the Great Western Main Line (GWML) and Midland Main Line (MML), the extension of electrification and the Electric Spine provides a commitment from funders to the railway greater than at any time for generations.

The industry has worked closely with funders to bring forward proposals as to how these outputs can be delivered, looking to co-ordinate and align with renewals, rolling stock availability and other projects. Inevitably, some proposals are more developed than others, and the priority between now and the publication of Network Rail's Delivery Plan in March 2014 will be to provide increased certainty and clarity. There is a large volume of ongoing cross-industry work to deliver the HLOS requirements effectively and to identify opportunities where further improvements to efficiency and value for money can be delivered.

1.2.8 Understanding the impact of a high speed rail network

The 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 north-south capacity between major economic centres including London, Birmingham, Manchester, and Leeds. It is assumed that the first phase of High Speed 2 (HS2) from London to the West Midlands will start construction during CP5 with the line open for operation in 2026 and that trains to the North West and Scotland will use the first section of HS2 and then run onto the existing network from that time. It is also assumed that the second phase to Manchester and Leeds would not be operational until the early 2030s.

Given the early stage of development of these proposals the financial and economic impact of the high speed line proposals are not reflected in the forecasts of future outputs, revenues and costs for the current network.

1.2.9 Delivering the plan

This Industry SBP sets out a significant programme of enhancements. The scale of the change is very large, and in order to meet the challenge the industry, its suppliers and partners need to have visibility and certainty over the outputs required. Network Rail has to deliver further efficiencies in its core business while driving forward major projects. The process of franchising passenger train operators is also designed to secure value for money; freight and open access passenger operators operate in a competitive market. The industry, including its suppliers, is working together to ensure that the contents of this Industry SBP are deliverable. The RDG, supported by robust and mature cross-industry planning activities, is best placed to ensure that, as delivery of CP5 plans takes place, issues and potential conflicts are identified, and resolved within the industry.

2 Understanding our markets and customers

2.1 Introduction

This section sets out the markets within which rail operates and provides a context for the outputs the industry plans to deliver in CP5. It covers the four significant rail markets of London and the South East, long distance, the regional railway and freight.

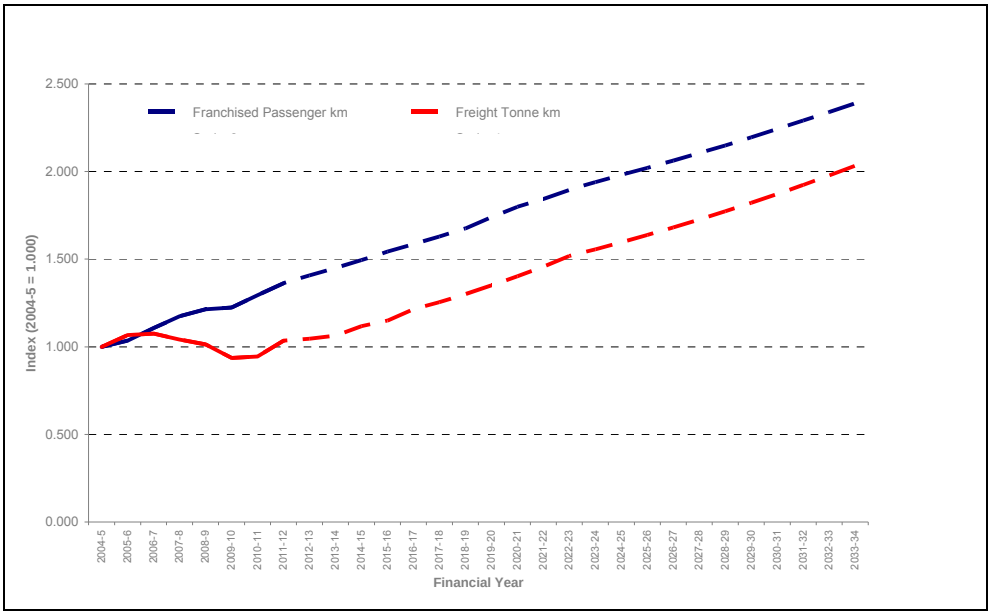
2.2 The national context

The railway makes a significant contribution to the economic, social and environmental welfare of Britain. Rail moves large volumes of people and goods safely, quickly and efficiently in an environmentally sustainable manner, between urban areas, their catchments, and key international gateways. There are 1.4 billion passenger journeys made on Britain's railway every year as well as over 250,000 freight train movements.

Investing in rail services can strengthen access to labour markets and the rail industry is a significant employer in its own right, providing direct employment for tens of thousands of people, plus numerous other jobs in the supply chain. The strong economic case for rail was recognised in the Command Paper. On a social level, the railway provides important connections for people across the country to essential services, employment and leisure opportunities.

The rail industry's ambition is to promote better outcomes, in part through accommodating the anticipated growth in demand for rail services. Longer term growth is forecast in almost all rail's markets, particularly on the core networks identified by the Eddington transport study as being crucial in supporting the economy. Rail is ideally and best placed to respond to this growth, as economic and environmental priorities align with rail's core strengths.

Figure 1: Long term growth in passenger and freight sectors



2.3 London and the South East

London and the South East is the largest sector within the rail industry in England and Wales. The sector accounts for 70 per cent of all rail journeys and almost half of national passenger income. Approximately 50 per cent of passenger vehicle miles in England and Wales are operated by franchised operators within the sector, resourced by 60 per cent of the national rolling stock fleet. The franchised operators in the sector cover 40 per cent of the total network in England and Wales, serving over 900 stations.

Rail has a critical role in the provision of transport across the central London commuter market, delivering almost half of the public transport share in the morning peak. National Rail currently delivers 575,000 passengers into central London every weekday morning. Most of these, 85 per cent, are travelling to their normal place of work with a large proportion of the remainder travelling on employer's business. Historically, the market has grown in line with central London employment. With the exception of Crossrail and Thameslink, rail share is unlikely to increase significantly in the long term as there are few journey opportunities realistically transferable from other modes. Growth is still forecast, largely driven by an expansion in central London employment and wider population trends. The strategy for this sector is based upon annual rail demand growth of 1.3 per cent in the peak. Higher rates of commuting into central London are expected from parts of the South East outside Greater London, balanced by relatively low growth from within the Greater London area.

Central London is served by a number of main lines, and the spatial distribution of growth will be influenced by the pattern of housing and population development, concentrated in areas including Milton Keynes, Northamptonshire, Cambridgeshire, the Thames Gateway and Ashford. A further determinant of the pattern of growth will be location related decisions taken by employers in response to improvements in the transport network like Crossrail.

Over half of the market (in terms of passenger kilometres) in London and the South East relates to off-peak travel, or commuting into regional centres. This market has historically grown more robustly relative to the central London commuter market, hence the sector as a whole grew on average at 4 per cent per year since the mid 1990s.

In summary, this sector represents a significant operation and unsurprisingly the net cost of the sector has a significant bearing on the overall cost of the industry to the taxpayer. This cost is, in part, determined by the size of the sector's resource base (including rolling stock), which in turn is strongly determined by the central London commuter market. For some operators, half of all peak demand is concentrated on the busiest high peak hour, and on average, the level of demand on the fringes of the peak is less than a quarter of that at the busiest times. To varying degrees, the costs associated with the peak can be (and are) reduced by intelligent timetable planning, including the 'bouncing back' of trains enabling them to resource several inwards journeys. These resources required to deliver the peak are then used by operators in the sector to serve off peak markets at marginal cost.

2.4 Long Distance

The National Travel Survey highlights that long distance trips account for just two per cent of all journeys made across all modes of transport, yet they account for 30 per cent of the total distance travelled. They therefore make a significant contribution to the provision of transport in Britain. Approximately 150 million long distance journeys are made by rail. Given both railway and economic geography, this market is centred on London. More than one in five of all long distance trips start or finish in the capital, and for long distance commuting the proportion is almost one in three.

The Long Distance rail sector serves passengers travelling for a diverse range of reasons, including leisure (e.g. tourism, visiting friends and relatives), interurban business travel and longer distance commuting. Within the sector, over 60 per cent of all passengers are making trips over 50 miles in length, however the sector also provides valuable capacity for shorter distance markets, such as the commuter markets between Reading and central London, or between Coventry and Birmingham. This diversity presents challenges in balancing market needs, for example in providing stopping patterns which address the commuter market, whilst 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 Long Distance sector plays an important role supporting economic growth. It provides fast, frequent connections between London and the regions, delivering benefits to both users and non-users. It also provides a more carbon efficient alternative to road and air travel for longer distance journeys.

Since the 1990s passenger demand in the Long Distance sector has grown robustly at an average rate of over 3 per cent per year. This growth has been driven by:

- the link between income and the propensity to travel long distances, combined with wider economic expansion
- train service improvements delivering more punctual, faster, and more frequent services between large cities utilising modern rolling stock
- increasing road congestion and the rising cost of motoring
- an increase in the cost of air travel, congestion at airports, and security related issues
- structural changes in travel patterns increasing the volume of longer distance commuting

Demand growth in the sector was particularly strong between 2004/05 and 2007/08, during which passenger kilometres grew by 25 per cent. Demand in the market continued to grow throughout the recession, albeit at a lower rate, before returning to higher rates of growth in 2010/11 with a 6 per cent increase in demand. Growth is expected to continue, driven by economic expansion and a continuation of the favourable, underlying structural changes in the economy and travel markets. Further investment in the sector, including the IEP, will stimulate further growth in the market.

2.5 Urban centres and the regional railway

The Regional sector serves a number of different markets, each with different strategic objectives. Over the last decade there has been substantial growth in the demand for rail commuter services into most regional cities. Annual demand growth during peak periods of up to 4 per cent has been typical for cities such as Manchester, Leeds, Birmingham, Bristol and Cardiff. This growth is linked to the further concentration of employment and economic development in regional city centres, and changes in employment and travel markets favouring rail. Even though overall employment levels have grown at a lesser rate, there has been a concentration of new jobs in cities as a result of expansion in the service sector. The ability of rail to accommodate this growth into city centres is essential to the desired outcome of supporting sustainable economic development outside London.

The Regional sector also provides many interurban journey opportunities which are not provided by the Long Distance sector (e.g. Leeds to Nottingham, Cardiff to Birmingham and Cardiff to Portsmouth via Bristol). In conjunction with local services, interurban services offer a realistic alternative mode of travel to relieve road congestion in and around many larger towns and cities. The sector also provides local and rural rail services, often on 'branch lines', which have also seen robust growth over the last decade. Most of these enable local connections from longer distance services, greatly increasing the overall range of destinations accessible from key cities. The urban commuter rail markets away from London have experienced strong demand growth over the last decade. Even with this recent growth rail's market share is still relatively low (5 per cent on average) with most employees commuting by car. Rail's share in certain places is as high as 30 per cent, reflecting the changing nature of employment in large cities and a trend towards longer distance commuting. This suggests that further growth can be sustained over the longer term.

The desire for improvement in journey times varies significantly between the markets served by the sector. Shorter distance commuters tend to value service frequency over journey time, however there is a potential to provide more attractive journey times on medium distance interurban flows. For example, some key flows in the north of England have relatively uncompetitive journey times compared with road travel, especially in the off peak.

2.6 Freight

The rail freight industry delivers significant economic and environmental benefits to the British economy. Each year it directly contributes approximately £900 million to national output (of which about a third is attributable to profits and wages). When indirect effects are taken into account, this rises to around £5,900 million and the support of 67,000 jobs. Its strategic importance to the national economy is significant. It is vital to electricity generation, the

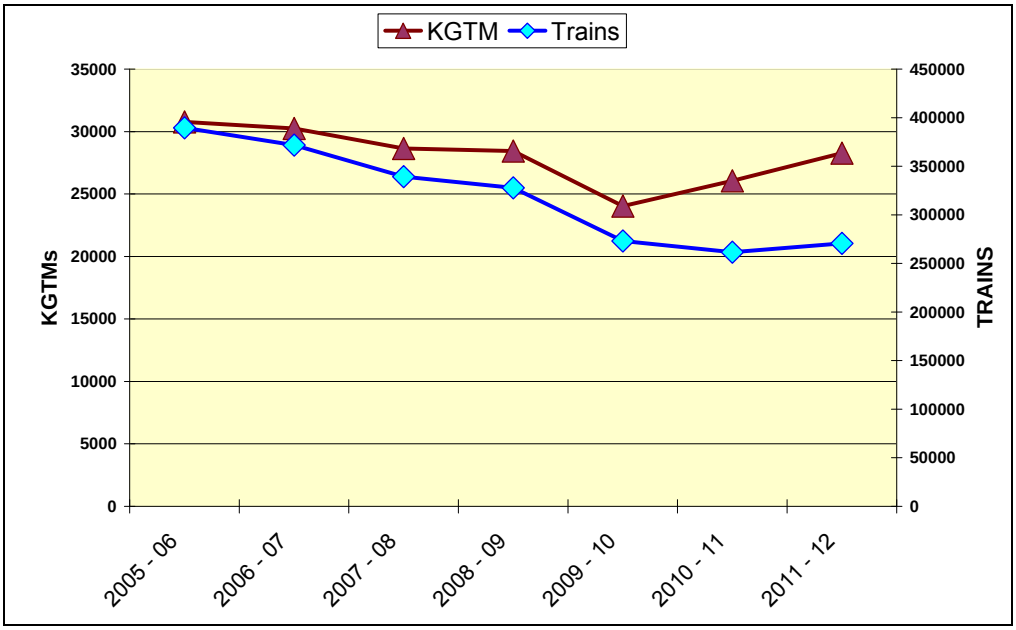
construction industry, and the transport of imported and exported goods. Other key sectors include petro-chemicals, metals and the movement of nuclear waste.

In carrying goods that would otherwise have been transported by road, the rail freight industry also contributes significantly to reducing road congestion and road accidents. Rail freight produces 76 per cent less carbon than road freight and, consequently plays a significant role towards meeting environmental targets.

The HLOS recognises the contribution that rail freight makes to wider economic growth and its environmental benefits. It identifies a series of committed and named schemes which it links to freight growth, along with a ring fenced fund of £200 million to fund improvements identified by the industry. This will help make best use of the existing network and, by increasing the network's freight capability, will encourage continued private sector investment.

The rail freight industry has already achieved considerable efficiencies. The VfM Study stated that staff per freight train kilometre has reduced by 36 per cent since 1998/9. One key element of this has been the drive to increase the loading of each train service operated, through yield management and by operating longer trains which make more efficient use of the rail network. This reduces unit costs for operators, making them more competitive with road. The investments in the Strategic Freight Network and by operators, ports and terminals in rolling stock and terminals will continue this trend through CP5. The graph below shows productivity improvement between number of trains and tonne miles in recent years.

Figure 2: Freight productivity from 2005/06 to 2011/12



The Government and industry are aligned with the objective of promoting a Strategic Freight Network (SFN). This is 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'. The objectives of the SFN were developed collaboratively by all the key parties in the rail freight industry. They are underpinned by demand forecasts for 2019 and 2030. Using 2011/12 actual data as a base and the assumptions in these forecasts, expected traffic levels for CP5 have been developed. The forecasts will be refined to reflect market developments, including the projected impact of any changes in access charges and the evolving position in the energy sector. The power generation market is changing, particularly with regards to the proportion of power stations that are expected to cease burning coal. The SFN Group will work within the industry's long term planning process to understand the opportunities which may arise to carry biomass and to understand the enhancements required to transport it.

3 A more efficient industry

The industry acknowledges one of its biggest challenges is to continue improving value for money whilst maintaining the current level of service. A key element of this is to find new efficiencies that can only be unlocked by parties working together collaboratively. Alignment of objectives and incentives is critical to delivering efficiencies beyond those already committed. The creation of RDG is a key enabler to achieving this.

3.1 Rail Delivery Group (RDG)

RDG brings together leaders from the principal passenger owning groups, the largest freight operators and Network Rail. Initiatives are being explored primarily through its subject-specific working groups. Each of these groups is led by a member of RDG and includes senior managers from across the industry.

3.1.1 Asset, programme and supply chain management

The management of assets and investment programmes and the role of the supply-chain are all critical to the success of the rail industry. RDG believes that significant savings are available, in particular through greater coordination of planning, together with aligned incentives. To tackle specific areas RDG has established groups looking at:

- Access planning
- Route based workbank planning
- Network optimisation
- Cost of contingency
- Scope and accountability for major projects

The groups have been estimating potential efficiencies by assessing the impact nationwide of a range of case studies. There needs to be care to avoid double-counting savings between work streams or between the working group and Network Rail's own work for its SBP. Work to date, excluding major projects where work is just beginning, suggests a range of savings of between £430 million and £1,130 million across CP5.

3.1.2 Contractual and regulatory reform

The industry's contractual relationships and the nature of regulation are critical to the future of the industry. This working group is taking a cross-industry view on the role of the regulator, the ability of the industry to embrace change and the effect of the contractual matrix on efficiency.

3.1.3 Passenger train utilisation

RDG's working group demonstrated the analysis in the VfM Study in this area was flawed. There are, however, opportunities to improve rolling stock utilisation through a mixture of demand management, matching service specification to demand and targeted investment. Implementing these will require close co-operation with the Government, which specifies much of what the railway has to deliver in these areas.

3.1.4 Technology, innovation and working practices

The advent of new technology in areas such as signalling, communications, retailing and training means that railways around the world are introducing innovations that change the way in which people work. The IIP highlighted work undertaken by the VfM Study, which focused on the impact of technology on areas such as train and station operations, retail and training. Whilst implementation of changes in these areas is a matter for individual operators RDG will continue to explore how technology can create a better railway for passenger, freight shipper and taxpayer.

3.1.5 Franchising

RDG is working to bring together the industry's views on franchising recognising that this has been at the heart of the growth of the railway. Recent developments in this area have created uncertainty. The Members of RDG produced a common position on franchising for the independent review led by Richard Brown:

- Restart the franchising process with a robust programme
- Wherever possible seek a private sector solution
- Improve the governance, competence, capability, empowerment and leadership of the DfT in contract procurement and management
- Ensure transparent prequalification and bid evaluation processes
- Introduce an appropriate sharing of revenue risk driven by the size, length and nature of the franchise (such as, revising the GDP risk mechanism)
- Ensure there is clarity on the capital structure
- Better allocation of franchise risk and reward
- Maintain a mix of franchise size, type and specification
- Introduce flexibility of specification (including more scope to change services) during the life of the franchise
- Recognise there is no 'optimal franchise length' in isolation and that specific circumstances may require a different approach
- Implement and use residual value mechanisms

3.1.6 Formalisation

To enable the RDG to fulfil its leadership role and to maintain involvement at a time of commercial and political change the RDG, with support from the Government, decided to formalise the Group as a company limited by guarantee. By formalising, the RDG will establish a better defined relationship with, and give guidance to, cross-industry groups such as Planning Oversight Group, National Task Force and Technical Strategy Leadership Group. It will also allow it to develop relationships with other industry bodies such as RSSB and enhance its communications with the industry, funders and other stakeholders.

Ownership of the Industry SBP by RDG means that the industry's plans are endorsed and supported by the leaders of the companies and organisations that will be expected to bring the plans to fruition.

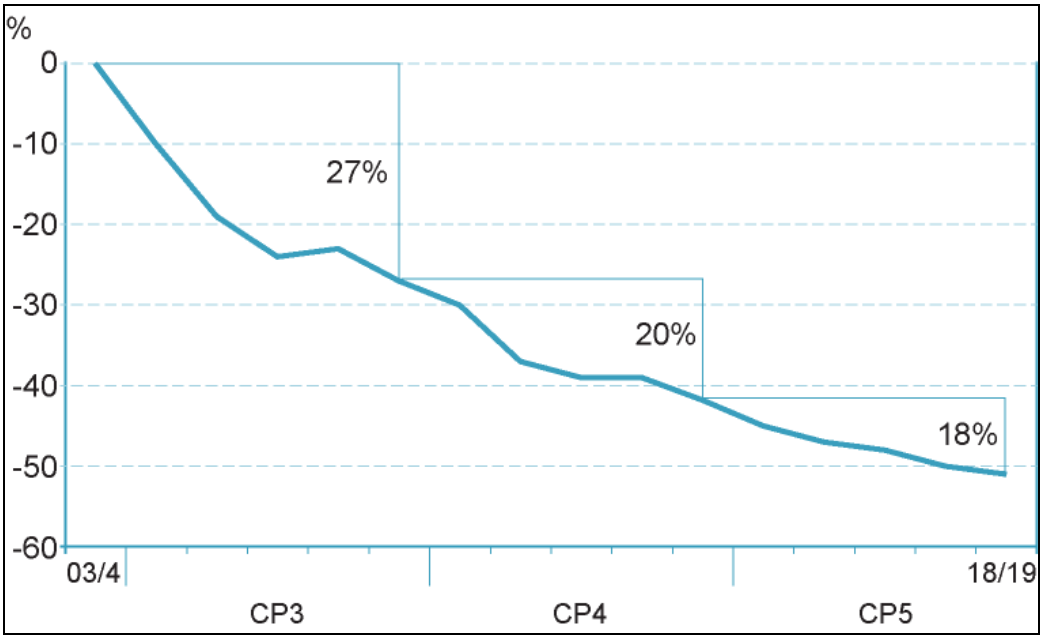
3.2 Network Rail's efficiency plans

In Network Rail's SBP it confirmed its commitment to deliver 18 per cent headline efficiency over CP5. This includes savings of 2 per cent from lower activity volumes that are embedded in plans as a result of improved asset policies. The pace of change over the next control period is key in determining whether this challenging level of efficiency can be achieved.

These savings build on the efficiencies of over 40 per cent achieved during the last two control periods. Network Rail has undertaken a comprehensive benchmarking programme to inform its view of the opportunities. The key initiatives set out in Network Rail's SBP to deliver efficiencies in CP5 include:

- **Renewals** – a saving of £1.5 billion will be made by implementing more cost effective asset policies, improved scheduling of work, more effective contractual relationships, standardisation of processes and multi-skilling of staff
- **Maintenance** – annual savings of £120 million will be delivered through standardisation, greater mechanisation, increased risk-based maintenance enabled by improved asset information and multi-skilling leading to rationalisation of staff
- **Operations** – reduction of cost through a programme of consolidation towards 14 operating centres, delivering annual savings of £60 million
- **Support functions** – annual savings of £100 million delivered through better utilisation of resources.

Figure 3: Network Rail efficiency in CP3, CP4 and CP5



Network Rail is undertaking substantial cultural and structural change to meet the needs of its customers and drive efficiency and value for money. A range of programmes are underway:

- **Alliancing** – working more closely with train operating companies and suppliers to align behaviours through shared incentives and objectives
- **Devolution** – devolving decision making and management accountability to route level to focus efforts on continuous improvement
- **The Quadrant at Milton Keynes** – the national centre brings together staff to support the devolved business and allow more efficient delivery of outputs
- **DIME** – a new structure to deliver capital projects that will deliver savings through internal re-organisation and competition
- **ORBIS** – generational improvement in the management of asset information to facilitate many of the maintenance and renewal savings planned

The efficiencies included in Network Rail's SBP require the support and collaboration of its industry partners. RDG will be key to enabling some of these efficiencies including the benefits of alliancing with train operators.

Network Rail has been involved in the work undertaken by RDG to examine the opportunities to reduce the cost of the railway. Further work is required to understand more precisely the level of savings that could be unlocked through the opportunities being examined by the RDG work streams and to understand the degree to which these opportunities could help go beyond the level of efficiency already committed to within Network Rail's SBP. This work will be developed during 2013 and will be reflected in Network Rail's Delivery Plan for CP5.

3.3 Train operator efficiencies

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. Within the constraints of the structural, commercial and policy framework for rail, bidders demonstrate value against specifications set out by the tendering authority.

Train operator costs per passenger kilometre (excluding access charges) have fallen since privatisation and have declined in real terms since 2005/06. In addition, train utilisation

(average loading calculated as passenger kilometres per train kilometre) has risen by 24 per cent since privatisation. Benchmarking indicates train operator costs per train kilometre are slightly lower than those of comparator railways in other European countries.

Designing future franchises to optimise efficiency is one of the challenges for the Government, recognising there is a strong public interest element to train service provision. Addressing issues that provide assurance to funders, stakeholders and passengers, while enabling flexible and creative evolution of service provision is a key challenge. Train operators have demonstrated they have a track record in expanding their businesses and ensuring that costs are managed appropriately.

The IIP set out ways in which train operators contribute to industry value for money and the RDG working groups have developed these opportunities further. The potential delivery of these efficiencies will require reform of the franchising framework as part of an early re-commencement of the franchising programme. The longer these enablers are delayed, the smaller the opportunity will be for train operators to deliver efficiencies beyond those already committed within existing franchise agreements.

3.4 Industry subsidy

In 2011/12 the rail industry in England and Wales received £3.8 billion of support from the taxpayer. The VfM Study challenged the industry to reduce unit costs from 2009/10 levels by around 20 to 30 per cent by the end of CP5, without reducing outputs.

Figure 4 illustrates the anticipated level of support for the industry over CP4 and CP5. This shows a declining level of support, with subsidy in 2018/19 anticipated to be within the range of £2.6 billion to £2.9 billion (in 2012/13 prices). This is equivalent to 3.9 pence to 4.4 pence per passenger kilometre, a significant reduction on the 7.4 pence per passenger kilometre received in 2011/12 (England and Wales). It is anticipated that 80 per cent of overall costs will be met by income by the end of CP5.

The lower end of this range reflects Network Rail's SBP. It also assumes delivery of the VfM Study "should cost" low efficiencies for train operators, although the timing of these has been lagged by an additional year reflecting the pause in the programme of re-franchising. The higher end of the range assumes that only half of the VfM Study low efficiencies for train operators are realised by the end of CP5.

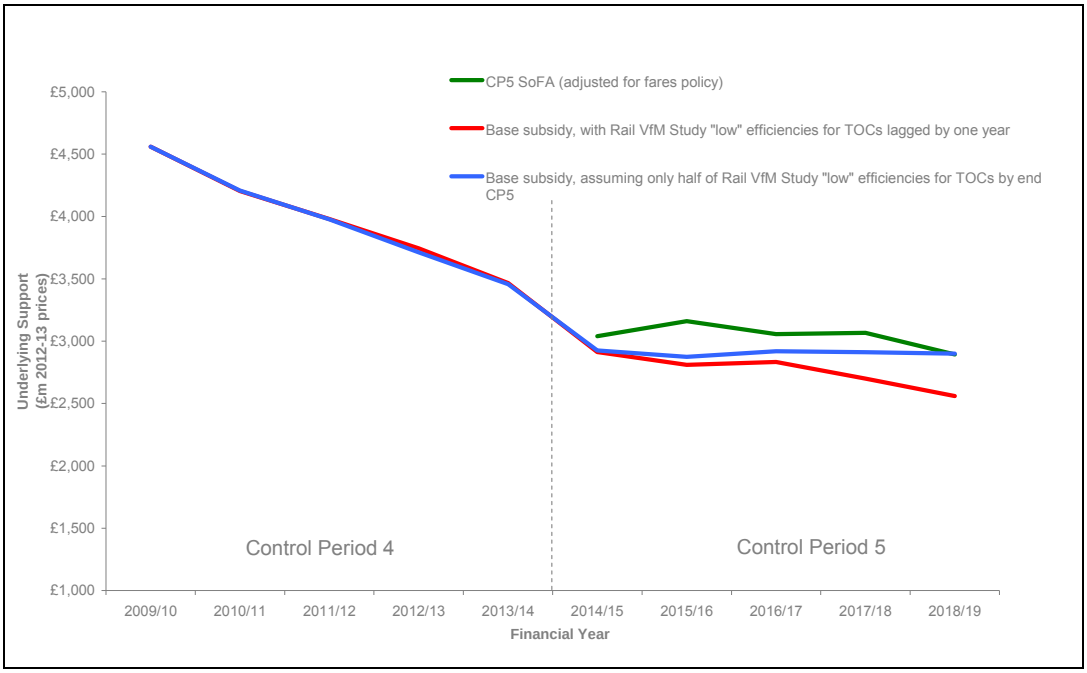
Figure 4 also illustrates the Government's SoFA for CP5. This includes an additional allowance to fund the recent announcement limiting the increase in regulated fares to RPI+1 per cent in 2013 and 2014.

Delivering this level of support will require positive action from the industry, and from the Government and regulators to facilitate fundamental change to franchising and regulatory frameworks. It is also important that the programme of re-franchising is re-started promptly.

Figure 5 illustrates the underlying affordability of the three sectors of the rail industry in England and Wales over CP4 and CP5. This has been assessed assuming a simple 'allocation' of infrastructure costs to sectors using the existing mechanism to allocate Fixed Track Access Charges. This does not highlight common cost dependencies (for example, where train services from different sectors rely upon the same section of track)

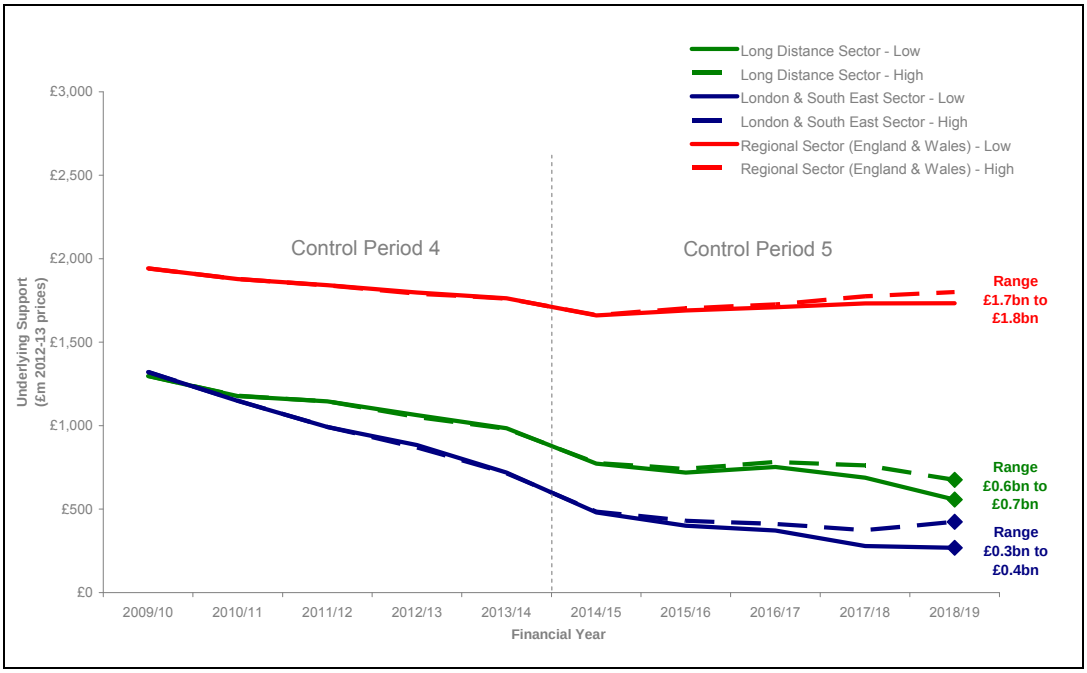
In terms of overall recovery of allocated costs, the Long Distance and London and South East sectors start from a relatively high base. By the end of CP5 it is anticipated that these sectors will recover 87 per cent and 95 per cent of their allocated costs, reducing support to just 2.3 pence and 0.8 pence per passenger kilometre (respectively). By the end of CP5 it is anticipated the Regional sector will require overall support of £1.7 billion (or 17 pence per passenger kilometre) and that the sector's level of cost recovery will have improved to approximately 40 per cent.

Figure 4: Anticipated 'underlying' support for the rail industry, England and Wales



These projections reflect underlying support for the industry in England and Wales, that is, the simple difference between whole industry costs and income. In practice, the actual level of subsidy will be determined by funders' policy decisions (including the trade off between the future level of fares, investment and outputs) and franchise bids, which themselves will be influenced by franchising and regulatory policy. Not all rail outputs are specified and procured through the Periodic Review and franchising processes, and in this context the net cost of HS2's proposals for a new north-south high speed line is not reflected in the projection.

Figure 5: Anticipated 'underlying' support, by sector



4 Outputs to be delivered in CP5

4.1 Introduction

This section summarises the key outputs to be delivered by the industry in response to the HLOS in terms of safety, performance, capacity and carbon. It also addresses the issue of managing trade-offs.

4.2 Safety

Rail continues to be one of the safest forms of transport and Britain's railways compare very favourably with the rest of Europe. Since the beginning of CP3, and against a background of increasing rail usage, industry initiatives have brought about improvements in the safety of both passengers and the workforce from train accidents and personal accidents.

The HLOS is based on average growth during CP5 of 16 per cent in passenger demand and 22 per cent in freight. In response to this demand, investment in improvements to capacity, journey time and other modernisation schemes will result in the replacement of infrastructure and rolling stock with modern equivalents, which are at least as safe as, and often safer than, older equipment. Following the production of the HLOS, the impact of the proposed projects on the safety risk forecasts was updated from the forecasts in the IIP. The risk per passenger journey is predicted to fall by around 9 per cent over CP5.

The HLOS provided £67 million of ring fenced funding to reduce risk at level crossings. Network Rail has developed a plan using these funds that will reduce risk at level crossings by 8 per cent by the end of CP5.

The industry will continue to review the overall safety risk profile and trends to identify, evaluate and implement risk reduction measures. More information is available within the supporting documentation on safety.

4.3 Performance

The HLOS requires the industry to develop a plan to deliver 92.5 per cent punctuality as measured by the Public Performance Measure (PPM) and 2.2 per cent Cancellations and Significant Lateness (CaSL) by the end of CP5.

Analysis has shown that base levels of performance would be expected to continue to improve further in CP5 from the assumed CP4 exit point, based on the improvements and investment in recent years, including building reliability into infrastructure and fleet assets. However, the effect of predicted increases in passenger and freight volumes, together with the need to deliver a significant investment programme needs to be fully understood. Traffic is forecast to continue growing and the "hot spots" on the network will get more congested. Passenger train kilometres are predicted to grow by 7 per cent in CP5 and freight train kilometres by 16 per cent.

The industry has developed a plan to deliver the HLOS performance outputs, but reflecting uncertainties in forecasting the precise level of performance, the plan is expected to deliver within a range of 91 to 93 per cent PPM by the end of CP5. The focus will be on minimising the risk to performance of delivering enhancements and making optimal choices for the benefit of passengers and freight users. The approach to developing the performance plan has been to establish a PPM range for which we have a 90 per cent confidence level in delivering.

There have been a number of significant achievements in CP4, and the introduction of some innovative technology. Continued improvements in rolling stock reliability, widespread deployment of Remote Condition Monitoring, conductor rail heating, better seasonal preparation, contingency planning and more focus on performance as an output, have taken the industry forward. In fact, the number of trains passing PPM has continued on an upward trend through CP4 and this will continue in CP5.

The infrastructure schemes specified in the HLOS are welcomed and several are intended to alleviate key areas of congestion. However, to deliver these schemes there will be substantial disruption through CP5, with a peak in years two and three.

As well as the infrastructure improvements taking place, most of the passenger railway will be re-franchised before the end of CP5. This will enable funders to re-define the outputs that they wish to buy. Operators should be given greater freedom, subject to meeting their franchise commitments, to find the best commercial balance between outputs. These opportunities will lead to better VfM and reduced net industry cost. However, there is a risk that Network Rail's regulatory outputs may be inconsistent with future franchise requirements.

Innovation will continue to be crucial. For example, the implementation of Traffic Management technologies to move towards world class operational management, GPS to improve information and regulating decisions and further roll-out of remote condition monitoring to inform proactive maintenance decisions.

All of this will need to be under-pinned by resilient timetables with every train service, every day, being focused on safe and reliable working. Front-line and supporting parts of the industry must maintain their focus on achieving high levels of performance. The industry must continue to take mitigation actions to reduce the risk to performance of severe weather, cable theft, fatalities and level crossing misuse. The industry must continue to train staff to implement suitable contingency plans in times of disruption. The focus on fleet reliability must continue, particularly as rolling stock is replaced and cascaded through CP5.

The outlook for the exit of CP4, in terms of meeting the regulatory outputs, is now under considerable pressure after the recent adverse impact on the moving annual average for performance. Network Rail remains committed to working with operators to deliver the target agreed through Joint Performance Improvement Plans (JPIPs) and the current plans will continue to be supplemented by nationally driven programmes to assist in meeting the targets. The industry has developed, and will continue to implement, improvement actions to drive performance towards the 93 per cent target for the London and South East sector and the 92 per cent target for Long Distance. The challenge is to deliver the target for PPM whilst at the same time delivering other core industry ambitions.

To improve our confidence of meeting the national targets for performance a National Performance Improvement Programme will be developed for commencement in CP5, with initiatives such as Control Centre actions, improvements to incident response times, fleet initiatives and improved performance modelling. This will be over and above initiatives that are defined through the JPIP Process.

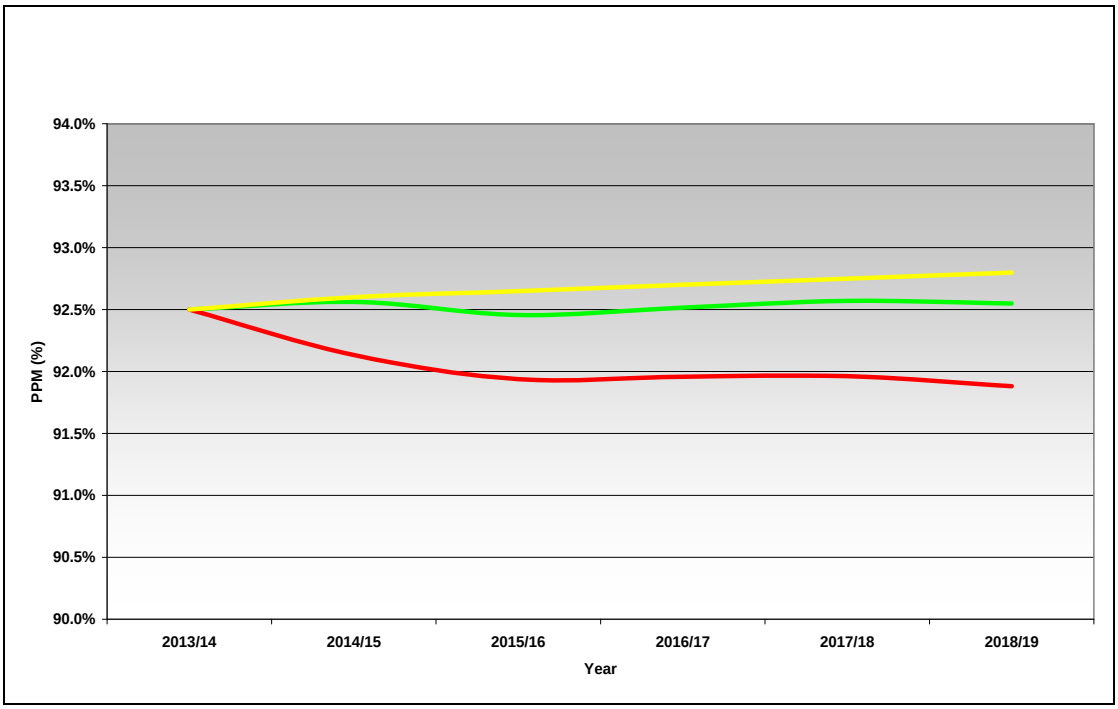
For freight, the industry proposes that the Freight Delivery Measure should be a regulated output at an industry level. The industry does not believe it is sensible to disaggregate the regulated output to an individual operator as it is not possible to know which operators will be operating particular freight paths in CP5. Annual performance plans will be produced for each freight operator and these will include forecast performance measures.

The industry has collated the evidence, analysis and assumptions into a model to show three scenarios for performance outputs:

- A performance trajectory without the effect of traffic growth and infrastructure changes, and assuming continuing year on year JPIP improvements (yellow line)
- Impact of traffic growth and infrastructure changes at the low end of estimates (green line)
- Impact of traffic growth and infrastructure changes at the high end of estimates (red line)

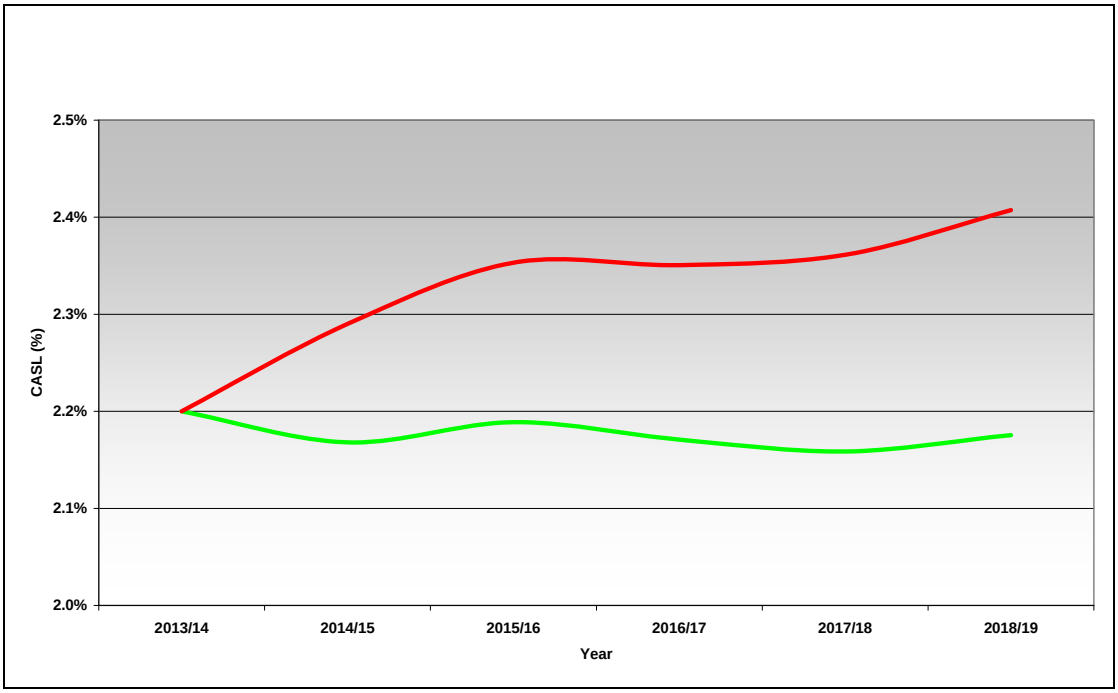
These are illustrative only and the range of PPM performance that the industry has a high confidence of delivering is between 91 and 93 per cent.

Figure 6: Forecast performance (PPM) scenarios in CP5



The various challenges in achieving PPM are also reflected in the CaSL target of no more than 2.2% of trains being cancelled or significantly late by the end of CP5. The main challenges include unforeseen disruptive events such as extreme weather where trains may operate over 30 minutes late in the interests of getting people to their destinations. This is especially important on those days where effects are widespread, restricting the operation of road and air transport and making rail the best option. Work being done to reduce the impact of other external events such as fatalities and cable theft will be equally important as will quicker recovery from disruption and further improvements in fleet reliability.

Figure 7: Forecast performance (CaSL) scenarios in CP5



In conclusion, the industry must work together to deliver performance in CP5: Network Rail, Freight and Passenger Operators, DfT, ORR, Rolling Stock Companies and Infrastructure Delivery Partners. The industry is committed to meeting the challenging performance targets set out in the HLOS. It is recognised that the targets are a stretch given the exceptional amount of investment in enhancements through CP5 and the anticipated traffic growth for both passenger and freight services. The delivery of the targets requires significant performance improvement in order to offset the profile of risk that is anticipated through the control period.

4.4 Capacity – passenger growth

In order to support the economy, the HLOS set out the level of passenger demand to be accommodated by the end of CP5. To meet this requirement the capacity plan proposes a significant increase in capacity, building on the increases committed to in previous control periods. The HLOS requirement is shown below (Tables 3 and 4).

Table 3: HLOS capacity metrics, Major Cities

	Peak Three Hours		High Peak Hour	
Major Cities	Forecast demand in 2013/14	Extra demand to be met by 2018/19	Forecast demand in 2013/14	Extra demand to be met by 2018/19
Birmingham	37,500	3,900	19,200	1,800
Leeds	25,400	5,100	13,000	2,800
Manchester	28,100	6,200	13,600	2,600
Others	34,800	4,900	16,500	2,000

The HLOS only specifies the level of demand to be accommodated for a small number of major cities. Other towns and cities will, however, benefit from extra capacity during CP5 as a large number of towns and cities are located on the same 'line of route' as these cities. Extra capacity can also be specified and procured by the Government outside of the five yearly periodic review process, including through the franchising process.

Table 4: HLOS capacity metrics, central London

	Peak Three Hours		High Peak Hour	
London	Forecast demand in 2013/14	Extra demand to be met by 2018/19	Forecast demand in 2013/14	Extra demand to be met by 2018/19
Blackfriars (terminating)	0	8,000	0	3,800
Blackfriars (via Elephant & Castle)	21,100	-8,600	10,800	-5,000
Euston	24,300	2,400	11,500	1,200
Fenchurch St	24,100	2,000	13,000	900
King's Cross	17,300	-4,600	8,000	-3,300
Liverpool Street (terminating)	66,800	-4,400	34,600	-2,300
Liverpool Street (Crossrail)	0	33,000	0	16,500
London Bridge (Kent Routes)	92,300	13,600	48,700	8,000
London Bridge (Sussex Routes)	45,300	24,600	23,500	11,800
Marylebone	11,400	1,000	5,100	500
Moorgate	13,200	-2,300	7,400	-1,100
Paddington (terminating)	26,300	-2,400	12,100	-1,900
Paddington (Crossrail)	0	23,600	0	11,800
St. Pancras (terminating)	9,600	400	4,300	200
St. Pancras (Thameslink)	19,700	15,400	10,500	6,500
Victoria (Southeastern)	20,100	900	10,100	400
Victoria (Southern)	47,700	6,700	23,200	1,300
Waterloo	100,100	9,700	45,700	4,900
London total	539,300	119,000	268,500	54,200

The passenger capacity plan has been developed by Network Rail, the train operators and other industry partners working closely together. The plan therefore reflects both current commitments in franchise agreements, and longer term strategies established through the rail industry's planning process.

In responding to the HLOS, the rail industry has developed a capacity plan which is both efficient and well targeted, focusing the extra capacity on the routes and services where it is most needed. The plan has been informed by the rail industry's established long term planning activities, including the Route Utilisation Strategies (RUSs). The RUSs consider long planning horizons, typically 25 years, reflecting the longevity of rail assets and investments. By using a longer term view of the required capability of the network to inform the plan for CP5, the robustness of the plan is more assured.

The passenger capacity plan will be delivered through an additional 115,000 seats into central London during the weekday morning peak (an increase of 20 per cent) and further standing capacity to accommodate short distance trips, including the anticipated deployment of 'metro style' rolling stock on some inner suburban services. Across the regional cities specified in the HLOS, the plan provides 55,000 extra seats during the weekday morning peak, an increase of 32 per cent during CP5.

Table 5: Anticipated impact of the capacity plan in the high peak hour

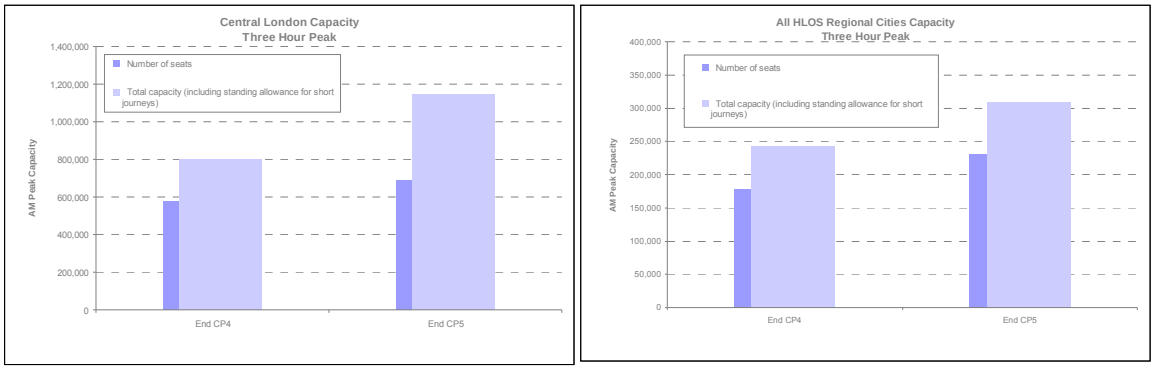
HLOS Route / City	End CP4 average load factor (%)	End CP5 average load factor (%)	Broad change over CP5[1]
Blackfriars (terminating and via Elephant & Castle)	102%	66%	▼
London Bridge (Kent Routes)	80%	80%	=
London Bridge (Sussex Routes)	92%	95%	=
Euston	62%	64%	=
Fenchurch Street	82%	65%	▼
King's Cross	58%	47%	▼
Liverpool Street[2] (terminating and Crossrail)	62%	54%	▼
Marylebone	63%	63%	=
Paddington (terminating and Crossrail)	101%	74%	▼
St. Pancras (East Midlands Trains & Southeastern)	40%	39%	=
S. Pancras (Thameslink)	82%	47%	▼
Victoria (Southeastern)	83%	74%	▼
Victoria (Southern)	77%	76%	=
Moorgate	97%	83%	▼
Waterloo	87%	90%	=
London total[2]	77%	70%	▼
Birmingham	66%	65%	=
Manchester	59%	46%	▼
Leeds	72%	77%	=
Other urban areas[3]	53%	49%	=

[1] Threshold for indicating a positive or negative change set at ±5% movement in the average load factor
[2] Excludes the impact of proposed additional capacity on the West Anglia route terminating at Stratford
[3] Covers Bristol, Leicester, Liverpool (excluding Merseyrail services), Newcastle, Nottingham and Sheffield

The anticipated impact of the passenger capacity plan is illustrated by Table 5, which expresses average train load factors in the busiest peak hour. It should be recognised that the use of aggregated, average loadings (as expressed in Table 5) will mask variations in the level of crowding. Furthermore, one of the consequences of the flexible, 'turn up and go'

nature of rail services is that uniform 100 per cent train loadings are, in practice, unachievable - in reality some services may be at, or over, capacity when average train loadings reach, say, 80 per cent. Even where there is spare capacity available, this is not easily transferrable to other routes if there is no capability to accommodate additional train movements or rolling stock.

Figure 8: Capacity growth over CP5, central London and HLOS regional cities



The additional capacity provided by the plan will, in general, keep pace with the anticipated increase in peak demand during CP5.

In some cases, the additional capacity in the plan will be greater than the anticipated passenger growth, resulting in lower average load factors by the end of the control period. This does not mean, however, that the Industry SBP has overprovided for capacity in responding to the HLOS, for several reasons:

- 92 per cent of the extra capacity proposed by the plan is provided by operational solutions (solutions which do not require investment in infrastructure capability), schemes committed pre-HLOS or directly named in the HLOS as being sought by funders
- Where it is required, infrastructure-led capacity rarely comes in neat, five year segments consistent with the length of a control period. In some cases (Crossrail and Thameslink), the additional capacity will be a step change designed to meet demand over a longer period than just CP5. By basing the capacity plan upon strategies established through the industry's long term planning process, the robustness of the plan is more assured.
- 'Line of route' factors - some routes or train services provide capacity into two or more cities. Adding capacity for the benefit of one city will generally increase capacity for all.
- On some routes extra capacity will be provided over CP5 by delivering schemes that are not necessarily being promoted primarily for capacity. For example, further network electrification is being principally developed to reduce industry's operating costs; Northern Hub delivers a step change in rail connectivity between northern cities to stimulate and grow the regional economy. Both of these schemes also deliver extra peak capacity.
- Under some circumstances, investment in extra capacity is brought forward taking advantage of planned access for other renewal or enhancement activities. This normally provides greater flexibility over the rate at which additional vehicles are deployed.

4.5 Capacity – freight growth

The industry forecasts show that demand is expected to double by 2030, placing increasing demands on the network and in particular the main trunk routes such as the West Coast Main Line (WCML) and East Coast Main Line (ECML). The headline forecasts mask a change in the expected commodity mix moved, with a decline in coal for electricity generation, following the anticipated closure of several power stations, being replaced with considerable growth in the intermodal sector concentrated on the main conurbations and using the key trunk routes.

This increase in volume is being achieved in part through continued increased efficiency and productivity by the freight operators; by running longer and heavier trains and reducing the requirement for additional train slots which consume scarce capacity (see 2.6).

The forecasts also looked at productivity improvements for rail freight, in particular the impact of longer trains and a move from a 5 day week to a 6 day week operation for intermodal trains. Such measures, if implemented would reduce the number of additional paths needed on the network, and as they would reduce rail costs, should generate additional modal shift.

Some of the capacity interventions through the SFN and the HLOS are aimed at continuing to improve the efficiency and productivity of rail freight, especially providing the ability to run 775m long trains and this will facilitate the forecast growth on the network.

4.6 Carbon

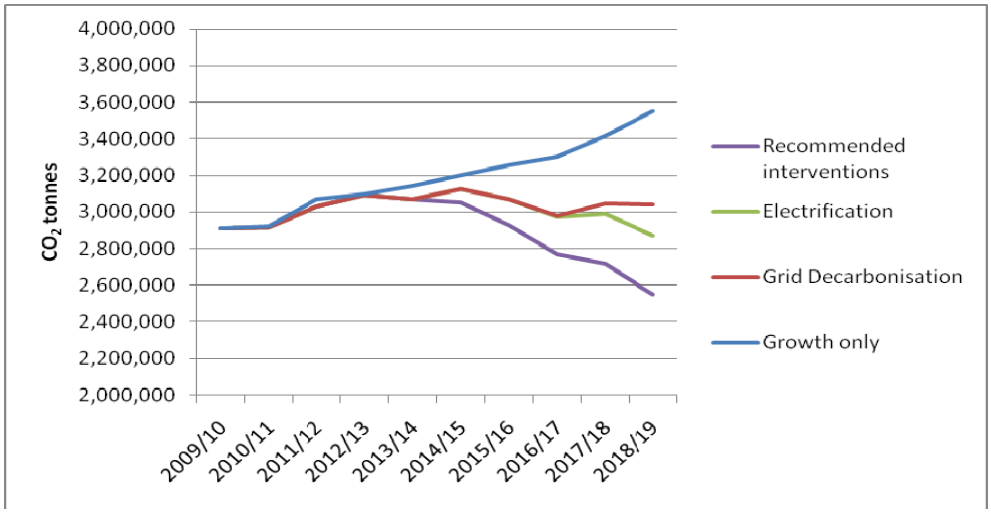
The industry set itself an ambition in the IIP to reduce carbon emissions by 25 per cent per passenger kilometre by the end of CP5, against a 2009/10 baseline. The approach to meeting the industry's ambition and the HLOS requirements is built on the following four elements, set out in a more detailed supporting document produced by RSSB on behalf of the industry as part of the Sustainable Rail Programme.

First, the main opportunities for the industry remain in addressing traction emissions, which account for 88 per cent of its direct CO_2 emissions. The electrification projects planned for CP5 will complement the Government plans to de-carbonise electricity generation, such that the combined effect is forecast to reduce the absolute level of annual traction carbon emissions by the end of CP5, even after allowing for expected growth in passenger demand.

Second, research commissioned by the industry following the IIP has identified four key network-level interventions that could further reduce traction carbon emissions, each with a positive business case over the course of CP5:

- Further energy-efficient driving (68 per cent of identified extra savings)
- Technology to reduce energy consumption when rolling stock is not in use (27 per cent)
- Weight reduction of new trains (3 per cent)
- Enabling regenerative braking by freight operators on Class 92 locomotives (2 per cent)

Figure 9: Traction CO_2 emissions trajectory, England and Wales



If implemented, the combined impact of the four interventions could, over the course of CP5, mean a further emission reduction of 1 million tonnes with a positive business case of £110 million. Together with the impact of de-carbonisation and electrification, this would cut absolute annual traction emissions from 2.91 million tonnes CO_2 (2009/10) to 2.55 million

tonnes CO_2 by the end of CP5. This equates to a fall in emissions per passenger kilometre of 37 per cent and per freight tonne kilometre of 11 per cent.

Third, the industry will continue to progress initiatives that help to unlock the potential for further interventions to improve energy efficiency. Critical to this has been recent progress in more accurate measurement and billing of traction electricity. In particular, 20 per cent of traction energy is now metered and billed on this basis; IEP and Thameslink rolling stock specifications include on-train-meters; and ORR has published a plan to further incentivise operators to meter their trains.

Fourth, the industry will develop further its understanding of its non-traction and embedded emissions, and the scope for cost-effective reductions in these areas. Progress has already been made in the last year:

- to measure non-traction emissions, which should fall due to planned de-carbonisation of electricity generation. More savings might be achieved (for example, introducing more efficient lighting technology), but it has not yet been possible to develop a robust cost benefit analysis in support of this
- with a commitment to develop its Carbon Management Framework. The industry has agreed updated protocols for reporting traction and non-traction emissions, which will be the basis for reporting emissions to the ORR
- under the Carbon Management Framework, the industry is also commissioning a rail-specific carbon accounting tool for use in infrastructure projects. This will be valuable in helping to understand the scale of industry embedded emissions and will be available for CP5.

4.7 Understanding and managing trade-offs

The work undertaken by the industry on trade-offs has identified the scale of change to rail operations during CP5 that makes performance forecasting with confidence very challenging.

In order to allow funders, Network Rail and train operators to strike the right balance between capacity, performance and cost at a local level and deliver better value for money, a change control mechanism is proposed for CP5. This would enable regulatory output targets to be changed if necessary. The mechanism will be limited to changes in outputs that are deliberate decisions, initiated by funders or operators, that cannot be foreseen in the periodic review and have a material impact on Network Rail's ability to deliver its regulated outputs.

In principle, the change control mechanism could apply to any regulated output. However, most of the changes proposed by funders and operators will be between track capacity, journey time and train performance. Network Rail's regulated outputs in respect of track capacity will generally be the delivery of enhancement schemes, for which a change control process already exists. In practice, therefore, the change control mechanism would primarily be used, if at all, in respect of train performance.

The mechanism would be based on the same principles as the CP4 change process for enhancements, in that affected parties (operators and funders) should be consulted on any proposed change, and ORR would ultimately need to approve the change. Any proposal would be supported by evidence as to the scale of the necessary change in the regulatory outputs. This evidence would be based on analysis carried out as part of normal industry processes, in particular the relevant Event Steering Group (through which it is proposed that major timetable changes will in future be handled) and the JPIP process (through which industry performance plans are made).

The existence of change control is fundamental to our plans for CP5. We cannot anticipate all the potential changes that funders or operators may propose; and even if we could do so, it would be costly and inefficient to create a plan that would deliver the anticipated outputs under any circumstances.

5 Industry strategy and plans

5.1 Introduction

This section describes the key strategies and plans to be implemented by the industry to deliver the HLOS and make progress towards the industry's long term vision.

The IIP included a plan that set out the industry's proposals to make progress in CP5 towards its long term vision for rail. Many of the schemes proposed by industry in the IIP have been specifically named in the HLOS as being sought by funders e.g. the Northern Hub, or are required to accommodate the level of passenger demand specified in the HLOS.

However, there are a number of schemes proposed in the IIP that are not required to meet the HLOS outputs. This set of schemes includes congestion relief schemes at stations, journey time improvements, and capacity on specific routes into regional centres. These schemes deliver additional outputs to those required to meet the HLOS and offer value for money. The schemes in this category include Gospel Oak to Barking electrification, congestion relief Wimbledon and Clapham Junction, additional capacity for the Merseyrail network in Liverpool, and journey time improvements on routes to Bristol and Stansted Airport. Further discussion is required with funders on the future development of these schemes including the potential to procure them through the franchising process or as candidate schemes for various funds including journey improvement, station improvement and discretionary funds.

5.2 Network wide strategies and funds

The HLOS provided a number of ring-fenced funds to deliver specific outcomes in relation to safety, freight, stations, journey times, East Coast and the future development of the rail network. The industry, through Planning Oversight Group, is developing the proposed governance arrangements and criteria for these funds, based on the use of existing industry groups. This has led to a number of funds being disaggregated into specific sub-funds recognising the different objectives and governance.

Table 6: Funds in CP5

Fund	Funding (2012/13 prices)	Proposed governance group
Level Crossings	£67m	N/A
Passenger Journey Time: NRDF Journey time improvement	£309m £103m £206m	 Rail Industry Planning Group Rail Industry Planning Group
Station improvement: Passenger experience Access for All	£206m £103m £103m	 Stations Board Access for All Board
Strategic Freight Network	£206m	SFN Steering Group
Development: Innovation CP6 Development HS2 Development	£144m £52m £36m £56m	 Technical Strategy Leadership Group Rail Industry Planning Group N/A
East Coast Connectivity	£252m	ECML Programmes Board

5.2.1 Level crossings

The safety of the industry's workforce, passengers and the public is of paramount importance. A safer railway is also a better performing railway.

Ring-fenced funding of £67 million is provided in the HLOS to reduce the risk of accidents at levels crossings. A list of candidate interventions has been prioritised informed by risk modelling and it is estimated that this level of funding will reduce risk by 8 per cent (from the

current level of risk). The £67 million will enable the closure of 30 high risk crossings, enforcement cameras at 200 locations and replacement of whistle boards with local warning systems at 300 of the higher risk locations.

5.2.2 Passenger journey improvement

A £309 million fund has been identified for use in CP5, targeted at the improvement of several aspects of the passenger service offer. It is expected that activities will be focused on journey time improvement, reliability and other opportunities that emerge, often as increments to asset renewal activity, such as projects to reduce station transit time for passengers.

The process for governance is being developed, but it is likely to be focused on splitting the fund into the specific areas listed above, and then forming an appropriate cross-industry governance group to allocate the funding based on defined assessment requirements (generally a positive industry business case).

The fund is not expected to be disaggregated to specific geographic areas but will instead be prioritised based on a 'best case' approach. Proposals will be put forward from various industry forums, but it is expected that the regular Route Investment Review Group meetings, where train operators, freight operators and Network Rail discuss future investment opportunities, will be the prime originator of schemes.

5.2.3 Station improvement

Two specific funding streams, each of £103 million, are identified to provide enhanced passenger facilities at stations during the control period. These funds will build on the success of the current Access for All (AfA) and National Stations Improvement Programme (NSIP) to further improve passenger accessibility and journey experience at stations.

It is intended to build on the cross-industry national approach developed by the NSIP Board, and locally implemented by Local Delivery Groups, to provide effective governance and direction; efficient delivery; and the capturing of synergies with other rail industry and external funding opportunities. Past experience has shown that the availability of specific station improvement funding enables the industry to work proactively with a variety of external bodies, including local authorities, property developers and stakeholder representatives, to mutual benefit.

In addition to these specific funding streams, the industry will continue to exploit opportunities for external investment which improves stations; and develop commercially driven opportunities such as additional car parking and retailing. Further station improvement works will result from capacity improvement schemes referred to elsewhere in this plan including extensive works at London Bridge, Reading, Peterborough and Birmingham New Street.

5.2.4 Customer information strategy

The customer information strategy consists of four projects that will enhance the journey experience. The industry is focussed on delivering these projects through CP5 and an early re-commencement of the franchising process will help achieve this.

The strategy will assist integration between Network Rail's Traffic Management System and train operator resource allocation systems; provide integration between Network Rail's Traffic Management System and Darwin (the system that supports National Rail Enquiries and other websites) to enable consistent information to customers; the development of a GPS gateway for more precise train location; and enable the provision of consistent real time train running information to station and train information systems.

5.2.5 Electrification

A key component of the HLOS is a rolling programme of electrification, making continued use of cascaded modern electric rolling stock where this is the most cost effective option and

exploiting synergies between schemes in order to meet forecast demand growth and deliver better environmental outcomes. Electrification schemes will also free up diesel units that can be cascaded to increase capacity on other lines.

The industry strongly endorses a rolling programme of electrification, which after many years with little new work is important to building the confidence of its infrastructure and rolling stock supply chains. That in turn is vital to controlling capital and operating costs, securing value for money and supporting the environmental agenda.

Great Western Main Line electrification

On 23 July 2009, the DfT published 'Britain's Transport Infrastructure: Rail Electrification confirming the Government's support for further 25kV AC overhead electrification of the network. As part of that process the Government announced that the GWML would be electrified from London to Bristol and Swansea with contiguous electrification from the mainline to both Oxford and Newbury. In March 2011 the Secretary of State reconfirmed the plan, but without the section from Cardiff to Swansea. The HLOS further reconfirms the scheme, treating the London to Bristol, Oxford and Newbury as a committed project and the sections between Cardiff and Swansea as 'named schemes'. It is expected that electrification will be delivered as far as Oxford and Newbury by December 2016 with Bristol and Cardiff to be delivered to a timetable that is consistent with the IEP programme.

North West / Trans-Pennine electrification

The Government has shown commitment to electrification in north west England since 2009 when it announced its commitment to provide overhead 25kV AC electrification on the Liverpool to Manchester route via Newton-Le-Willows and then a 'Lancashire West Triangle' incorporating routes from Huyton to Wigan, Preston-Blackpool and Deal Street Junction to Euxton Junction. The programme is re-confirmed in the HLOS as a committed scheme, the 'North West Triangle'.

The programme facilitates the introduction of electric train operation for both passenger and freight services. It offers the opportunity to increase capacity, which would be realised by the introduction of electric units on a number of services currently operated by diesel units. The programme is due to deliver the project in four phases. Whilst the first phase will be commissioned before the start of CP5, the remaining phases will be completed during it.

The Government announced its commitment to the electrification of the North Trans-Pennine route in 2011 and has confirmed its commitment by naming it as a committed scheme in the HLOS. The project includes overhead new 25kV AC electrification and associated power supply. Electrification of the north Trans-Pennine route is being considered as a means of increasing capacity in order to deliver the robust operation of the Northern Hub service structure from Manchester to Leeds via Huddersfield. The benefits of electrification (using modern electric traction for local services) may lead to shorter journey times and a reduction in the speed differential between local and express services creating additional route capacity, compared to the continued use of diesel services. It may also bring further benefits through the conversion of inter-urban, long distance and freight services in the longer term.

Midland Main Line electrification

The electrification of the Midland Main Line from Bedford (the most northerly point operated by Thameslink services) to Sheffield via Derby, from Kettering to Corby and from Trent Junction to Nottingham has a very good business case. The scheme will provide overhead 25kV AC electrification which will enable operation of electric passenger trains up to 125 mph.

Electric Spine

The HLOS requests that the rail industry develops and delivers rail electrification and capability enhancements referred to as the Electric Spine. The Government views this as key to increasing regional and national connectivity and to supporting economic development.

The vision is the creation of a high capability passenger and freight route powered by 25kV AC electrification from Southampton via Reading and Oxford and The Midlands to South Yorkshire. This implies over 1,000 additional single track kilometres of electrification. The electric spine programme will be developed during CP5.

Other electrification

The HLOS names a number of other schemes as part of the rolling programme of electrification. Taken together they represent in the order of an additional 560 single track kilometres of overhead 25kV AC electrification.

In Wales, this will include the electrification of the GWML from Cardiff to Swansea and the Cardiff Valley Lines, including the lines to Maesteg, Ebbw Vale and the Vale of Glamorgan.

The scope of the GWML electrification in the Thames Valley will be extended to include Acton to Willesden; Slough to Windsor and Eton Central; Maidenhead to Marlow; and Twyford to Henley on Thames. The lines between Walsall and Rugely and between Micklefield and Selby will also be electrified.

Electrification beyond CP5

The HLOS requests that the industry considers further electrification beyond CP5. The industry welcomes this opportunity and has started the process with an industry workshop. It will be progressed further with the development of a publicly consulted Network RUS, focusing on electrification. This will be overseen by the industry which will take the CP5 SBP electrification schemes as a baseline.

5.2.6 Passenger rolling stock and depots/stabling

Projects committed during CP4 for completion during CP5 and beyond represent the largest change to the requirements for rolling stock in England and Wales in a generation. The electrification of GWML (and introduction of Super Express Trains), Cardiff Valleys, MML, the North West, Trans-Pennine and the Electric Spine, and major projects such as Thameslink and Crossrail, create a requirement for significant rolling stock construction during CP5. This in turn provides an opportunity for the redeployment of existing diesel and electric multiple units, in many cases following life extension work. Significant orders for 2,400 new vehicles have already been committed by the Government (around 1,200 Thameslink and 600 IEP vehicles) or are actively being assessed in the case of Crossrail (around 600 new vehicles). Taken together these are referred to as the 'Government Orders'.

Joint work by ATOC, Network Rail and ROSCOs underway since last summer is leading to the development of the first 'Long Term Rolling Stock Strategy', which is expected to be published shortly after this Industry SBP. It is looking at scenarios for fleet size for each of seven vehicle types over the next thirty years. The vehicle types are:

- Short-distance diesel vehicles
- Medium-distance diesel vehicles
- Short-distance electric vehicles
- Medium-distance electric vehicles
- Long distance diesel vehicles
- Long distance electric vehicles
- High speed electric intercity trains (>125mph)

Given the objective of a rolling programme of electrification for CP5 and beyond, the strategy has looked at high level options for electrification over the next three control periods, building up to about 75 per cent of track mileage being wired. This would have a major impact on fleet, such that only up to 10 per cent of vehicles would be diesel by 2030.

Ahead of the HLOS, ATOC published a view on fleet requirements for CP5 and, as part of the Industry SBP, these numbers have been updated. The following section summarises the position, taking the Government Orders as a given. Details of further orders inevitably will remain fluid until the franchise programme is re-commenced. The current delay to the franchising programme means that train operators are not yet in a position to start placing contracts either for new build or for the retention of existing stock.

A key part of the rolling stock element of franchise bids is to assess whether rolling stock requirements are best addressed through new builds or the continued operation of existing vehicles, with or without refurbishment and re-engineering. The balance can often be fine and much will depend on the attractiveness of specifications and lease rentals for continued operation of current vehicles offered by ROSCOs measured against the benefits, capabilities and capital and financing costs of new trains.

New Build Vehicle Requirement

The main conclusions from this work are as follows:

- The national fleet in use is currently forecast to grow from 12,350 vehicles (end 2012) to 12,700 vehicles by the end of CP4 (March 2014) as a result of committed and planned vehicle orders already in the pipeline (these numbers exclude off-lease vehicles)
- By the end of CP5 the national fleet will need to grow to 14,500 vehicles, i.e. almost 15 per cent over the expected end CP4 position both to address growth and to realize the benefits of the projects being planned during CP5
- During CP5 a number of vehicle types could be displaced: Pacers or other older DMUs, as a result of electrification in the North West and Cardiff, and approximately 550 HST trailers and power cars by Super Express Trains
- In addition, a further 2,100 largely multiple unit vehicles built in the late 1970s and early 1980s will be nearing the end of their original design life during CP5. Based on understanding of the economics of fleet replacement and assuming that ROSCOs deliver demonstrable value for money, it might be reasonable to assume that 65-75 per cent of these 2,100 older vehicles (predominantly EMUs) could be life-extended and 25-35 per cent (a combination of older EMUs and DMUs) could be replaced by new build, a good deal of the latter as a result of further electrification in CP5. Should new build costs fall, the number of older vehicles that might be replaced could potentially rise above this. Similarly, if retaining existing vehicles did not offer good value for money because capital rentals were too high, then new build would also become more attractive. It is also possible that if life extension work is sufficiently attractive commercially, the new build numbers could fall below this level. For the purpose of this plan, it is assumed that up to 750 new replacement vehicles might be bought in addition to the Government Orders.
- The CP4 and CP5 electrification programme potentially removes the need for the construction of any short distance and medium distance diesel vehicles during CP5; however, franchise bidders are likely to continue to explore diesel options once the franchise programme has re-commenced to test whether they provide value for money, either compared with the retention of existing vehicles or to accommodate growth on routes that are likely to remain diesel for some years

Taking the ‘Government orders’ as a given, the remaining fleet build issues are:

- Continuing need to strengthen the middle-distance EMU fleet, to address growth and electrification across the network primarily through train strengthening
- Possible development of a high-acceleration/high-speed medium-distance EMU that can operate on the fast lines on the main radial routes out of London. This EMU could be based on existing rolling stock platforms. One potential deployment for a high-acceleration/high-speed EMU is between Paddington and Oxford and Newbury (where Network Rail have indicated that trains operating on the fast lines must be capable of 110mph in future in order to maximize the capability of the infrastructure); similar opportunities may exist on ECML, WCML, MML and Anglia.

The table below illustrates the possible new build orders for growth and/or electrification in CP5, beyond the 'Government orders', that are the most likely. The precise details will be settled through franchise bidding and these numbers are put forward only to give an indication of what the result could be.

Table 7: Potential new commitments in CP5 beyond Thameslink, Crossrail and IEP

Opportunity	Possible vehicle orders
Short-distance electrics: Fleet strengthening on LOROL, to relieve crowding.	30
Medium-distance electrics: Edinburgh-Glasgow electrification; possible new Outer-Suburban fleet for GW; new Southern vehicles (first stage of 100 vehicles recently announced) to accommodate growth and provide flexibility in the EMU market	380
Long-distance EMUs: for MML electrification; the initial stage of Cross Country electrification; London-Norwich main line services; and strengthening on WCML	590
Replacement of older trains, in addition to the 2,400 vehicles from the Government Orders, depending on cost-effectiveness of life extension work on existing fleets	Up to 750
Total	Up to 1,750

Adding in the 2,400 vehicles from the 'Government orders', the total of new vehicles in CP5 could be up to 4,150, of which over 60% have been funded or committed already.

It is possible that there could be additional orders to these, potentially for a new Merseyrail electric fleet (190), new Moorgate line trains as part of the new Thameslink/Southern franchise (130), Trans-Pennine electrification, depending on the cost-effectiveness and engineering issues of cascade options (140) and for South West Trains to accommodate growth (40). Further Super Express Train orders, to replace existing electric, not just the diesel, trains on ECML could be a possibility as is substantial life extension and refurbishment of the existing fleets. This should be addressed through the planned re-franchising of the East Coast.

Compliance with accessibility legislation

During CP5 compliance with the Persons of Reduced Mobility - Technical Specification for Interoperability (PRM-TSI) will require considerable investment in older trains. DfT has worked with the ROSCOs to agree the scope of the modifications required for PRM-TSI. It has taken a pragmatic approach, which is welcome, given the difficult trade-off between cost and service life of older vehicles. Assuming retention of the existing pragmatic approach, it is estimated that the costs of compliance with the PRM-TSI will be £150-175 million. These costs will be incurred during CP5 and it is expected that they will be financed by the ROSCOs and amortised into leasing costs.

There is likely to be a peak of activity in 2017-2019 and franchisees may need to have the ability from DfT to reduce service levels slightly to make vehicles available for workshop visits to achieve this. At present, no allowance for lower fleet availability has been built into franchise agreements. The options of seeking a change to the law to permit a longer timescale for these modifications or further review of PRM-TSI scope for vehicles with a short life expectancy or very low use remain.

Driver-only operation

The VfM Study identified potential opportunities to extend Driver Only Operation (DOO) where there is a commercial case to do so. Both new and refurbished trains would need to have the relevant capability, where the decision was taken to implement this. DOO can also require expenditure on infrastructure to meet the appropriate standards and we believe that this should be progressed where there is a whole industry benefit.

Depot provision

Progress on HLOS implementation in CP4 was hindered by lack of clarity on funding for depot and stabling provision and the industry seeks a clearer starting point for CP5. In relation to depot and stabling provision in CP5, the industry is assuming that for the DfT major projects (Thameslink, IEP and Crossrail), new depot and stabling provision will remain a DfT responsibility. In the case of Thameslink and IEP the contracts with preferred bidders already include depot provision.

For all other replacement or 'growth' rolling stock, i.e. train operator sponsored orders, support for depots and stabling will be sought by franchisees from DfT, either as an add-on to Network Rail's CP5 commitments or via privately financed deals such as those put together for Mark 1 fleet replacement a few years ago. Given the size of the new build needed in CP5 and the shortage of stabling capacity in many areas, at least £200 million in capital spend, estimated at approximately £125,000 per vehicle for depot and stabling work, will be needed in CP5.

Network Rail's expenditure plans include the cost of maintaining the current depot portfolio and capabilities on a minimum whole life cost basis but do not identify any depot or stabling expenditure other than that identified to particular projects. 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. It is important that funders note that Network Rail's SBP does not in general cost for depot and stabling work other than specific schemes identified in the plan, and the industry therefore relies on the DfT to make sufficient allowance for this and ring-fence it from other expenditure.

Changes to standards

In preparing these plans, it is assumed that there are no further changes to standards or requirements beyond the application of accessibility legislation and gradual ETCS fitment. In particular, this includes no other changes in standards, e.g. any requirement to fit closed emission toilets on older trains, further tightening of emissions requirements, changes to crashworthiness and new safety requirements. Cost effective changes in industry standards that support efficient operation will continue to be developed during CP5.

5.2.7 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. The system includes some features which are as advanced as any in the world. The National ERTMS Programme has reviewed the issues which arose during this installation and drawn a number of conclusions to use in future projects.

The next application of ERTMS will be on the Western route between London Paddington and Bristol. This is required to replace Automatic Train Protection technology and will be installed initially with conventional signals retained. Current plans are to commission between 2016 and 2019. It will be followed by the ECML between London King's Cross and south of Doncaster between 2018 and 2020 (commissioned into service after the Thameslink Key Output 2) and then the MML between Farringdon/St Pancras and south of Derby between 2020 and 2022. The current dates are subject to confirmation of the system trial following tests at the Hertford National Integration Facility in 2013/14.

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.

It is understood that the new Super Express Trains, Crossrail and Thameslink trains – the bulk of those being supplied in the next few years – will be fitted with ERTMS from build. It is envisaged that the degree of readiness for further new trains will depend on the planned date for ERTMS use. For most existing trains 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 tools are being developed by the National ERTMS programme to facilitate train fitment. It is likely that this will be achieved via franchise bids and changes to contracts.

Nearly all freight locomotives will have to be retrofitted because they are not geographically constrained and therefore the freight fleet forms over 50 per cent of the early train fitments. Network Rail and the rail freight operators are developing a bespoke contractual framework which is based on the principle that Network Rail will fund train fitment and associated costs.

5.2.8 Strategic Freight Network

Throughout CP4 the industry has worked with the Government to promote the development of a Strategic Freight Network (SFN), 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 existing mixed use traffic network.

The SFN is governed by an industry wide steering group, comprising representatives from RFOA, DfT, Network Rail, ORR, the Rail Freight Group, Freight Transport Association, ATOC, the PTE Group, Transport for London, Transport Scotland and Welsh Government.

The HLOS further endorses the SFN and recognises the role that it plays in economic growth and securing economic benefits. To this end, a ring-fenced fund of £206 million has been provided to further develop the SFN. The money will be allocated to reflect the nine key objectives for the SFN which have been developed collaboratively by all the key parties in the rail industry. The HLOS emphasises that the Secretary of State intends that the SFN funded enhancements will make best use of the network and encourage further private sector investment.

Experience has shown that there needs to be sufficient flexibility within the SFN fund to allow for changes in the portfolio if there are changes in demand, synergies identified with other schemes, additional funding or changes in the cost drivers of schemes.

5.2.9 Rail Technical Strategy

The Rail Technical Strategy published in December 2012 (RTS2012) has been developed by the Technical Strategy Leadership Group (TSLG) in consultation with the whole industry. It builds on the first RTS published by the Department for Transport in 2007. The new edition takes account of the work during the intervening five years, addressing ways to improve the railway's performance in four primary areas: customer satisfaction, capacity, cost and carbon.

RTS2012 addresses six key themes of Infrastructure; Rolling Stock; Control, Command and Communications; Information; Customer experience; and Energy. These are interdependent as many technical developments focus on the interfaces between systems and span the boundaries of traditional technical domains. Importantly, it addresses the three common foundations that underpin the delivery of these; Enabling Innovation; Whole Systems Approach; and People. It also introduces common design concepts, which are technical issues that stakeholders have consistently identified as applicable to all the main themes: Whole-system Reliability, Resilience, Security, Automation, Simplicity, Flexibility and Sustainability.

RTS2012 provides a long-term holistic vision of the future railway from a technical perspective, not readily available in any single part of the industry. It is intended to be particularly valuable for suppliers to the railway, by presenting an industry view of the direction of technical developments in the coming decades. Even in areas where certainty is not possible, a sense of the options to be explored should provide useful indicators to the implementation and delivery of integrated solutions.

On behalf of the rail industry, the National Skills Academy for Railway Engineering (NSARE) has undertaken a skills forecasting exercise to predict the resources required to deliver the Industry SBP in parallel with Transport for London's investment programme, HS2 and light rail schemes. The model predicts the number of engineers, technicians and artisans required for Track, Signalling & Telecommunications, Electrification & Plant and Traction & Rolling Stock. Initial findings have resulted in NSARE working with Network Rail and the Railway Industry Association (RIA) on the specific Electrification & Plant challenges. In addition, NSARE has submitted a bid to the Department for Business, Innovation and Skills for a National Training Academy for Traction & Rolling Stock, in conjunction with Siemens plc.

5.2.10 Technical Strategy Leadership Group (TSLG)

The development of cross-industry technology and innovation is co-ordinated by the Technical Strategy Leadership Group (TSLG), which has governance links to RDG and is administered by RSSB. TSLG has recognised the need for increased activity in cross industry research and development (R&D), and has provided input into a number of cross-industry studies including initiating projects that form part of this plan (such as the Electric Spine). TSLG is supported by five System Interface Committees and a support group, and is steered by a Core Group. By demonstrating the benefits of R&D in rail, it has been successful in increasing the R&D activity and has been supported by RSSB increasing the allocation of funds to TSLG. In addition, TSLG worked successfully with the Technology Strategy Board during 2012 in a call for projects which generated research to a value of £10 million for an investment of £2.5 million.

While TSLG's focus is largely on the long term system issues, a growing activity in CP5 will be demonstrating the impact of new ways of working and in further exploring the potential from technical solutions in each of the areas identified in the RTS2012.

TSLG also made arguments in support of a CP5 innovation fund of at least £50 million to take forward strategic cross-industry R&D. The central assumption in this plan is that £52 million will be provided from the £144 million Development Fund. Due to this increased activity and with RDG support, it has established an Enabling Innovation Team (EIT) to support the industry and manage the increased portfolio of innovation projects. The EIT aims to improve efficiency by addressing rail business challenges and grow worldwide opportunities for the existing and potential rail supply chain. Network Rail and TSLG have presented arguments to further increase spend (over and above the £52 million CP5 innovation fund) on R&D, demonstrator and innovation programmes, based on the opportunities to transform the cost base of the industry. As such, the plan includes a further £300 million in CP5 to progress these initiatives.

5.2.11 Cross industry research programme

RSSB manages on industry's behalf, and through cross industry governance, a programme of R&D which is funded by direct grant from the Government (£10.7 million in 2012/13). It uses these funds to support cross industry research across many technical, environmental and economic issues; to facilitate the TSLG and its programme of strategic research; and to support (in conjunction with Network Rail) the Rail Research UK Association. Additionally, it supports the Sustainable Rail Programme, develops knowledge sharing partnerships with other research and rail bodies that can benefit the industry and promotes the implementation of research findings across the industry. The programme supports R&D activities that would not otherwise take place, given the structure and incentives faced by individual companies. The current assumption and understanding with the Government is that this level of direct

grant funding will remain broadly the same during CP5 while the focus will continue to be directed towards industry priorities – particularly those articulated by RDG.

5.2.12 Sustainability

Cross-industry sustainability initiatives are managed through the cross-industry Sustainable Rail Programme (SRP), facilitated by RSSB. Since 2006 the SRP has delivered a series of evidence-led programmes to help integrate sustainable development into the way the industry operates. In 2009 the SRP published the rail industry Sustainable Development Principles with the aim that they will become an integral part of the culture and decision making of the industry:

- Customer driven
- Putting rail in reach of people
- Providing an end to end journey
- Being an employer of choice
- Reducing our environmental impact
- Carbon smart
- Energy wise
- Supporting the economy
- Optimising the railway
- Being transparent

In the IIP the industry made a commitment to implementing these principles and the HLOS requested the industry set out plans to embed them. The DfT has also committed to embed them in projects where it is the funder.

To support this, in 2012, the industry launched the Sustainable Development Self-Assessment Framework, a bespoke online tool designed to support individual organisations in the rail sector understand their sustainability performance, highlight strengths and gaps, and provide clarity on what can be done to make improvements.

Embedding the principles is complex, with a need to balance a range of issues in achieving a more sustainable railway overall, as well as balancing whole-life, whole-system sustainability with more short-term considerations such as affordability. To help meet the requirement of the HLOS, the industry has commissioned guidance on implementing the principles. This will be developed and will be available by CP5.

The industry has made significant progress in implementing the Carbon Management Framework and has identified key interventions to help meet its carbon ambition, as well as commissioning a carbon accounting tool for infrastructure projects. While this guidance can support industry implementation it is not in itself a plan. Further commitment from organisations in the industry as well as some form of monitoring will be needed to ensure that the HLOS requirement is met. The SRP has convened a cross-industry working group that will be making detailed recommendations in the coming year on how best to embed the principles and monitor progress.

5.2.13 Development of HS2

The proposed high speed line (HS2) will run from London Euston and serve cities in the Midlands and North of England, including Birmingham, Leeds and Manchester, and onwards via the existing network to Glasgow and Edinburgh. It will also provide through services to the continent via a direct link to the existing HS1 line and on to the Channel Tunnel. Possible connections with other lines are under consideration.

The prime output for HS2 is increased capacity for city to city travel with associated economic benefits. The project also delivers substantial benefits to the classic network in the form of released capacity on the southern end of the WCML.

If approved Phase 1 of the project, known as London West Midlands (LWM) could start construction as early as 2017 and be fully operational by 2026. It includes the line to Birmingham and beyond to a new junction on the WCML. It will provide high speed services to Birmingham and improved services via the WCML to Liverpool, Manchester, Preston and Scotland. It will include a new 8-platform station on the GWML at Old Oak Common which changes the dynamics of the Western Route and allows access to Crossrail services, including to Heathrow.

Phase 2 of the project, known as Leeds-Manchester-Heathrow (LMH) follows on, with a plan to be fully operational by 2033. It extends LWM to connect Leeds, Manchester and cities in the East Midlands, and connects to the WCML and ECML further north, allowing journey time improvements to Scotland.

Network Rail's involvement in the development of HS2 during CP5 is to be funded through the Development Fund. Expenditure will be controlled against a plan agreed with DfT and HS2 Ltd. and will be subject to change control through a governance panel with ORR oversight.

5.3 Urban

5.3.1 City capacity projects – Northern Hub

In 2011 the Government announced its commitment to fund the first phase of the Northern Hub and the HLOS has confirmed that the Government wished to fund its completion. The Northern Hub is the industry's proposal to stimulate economic growth in the north of England and as such provides the capability required by the conditional outputs developed by the Northern Way and published in its Manchester Hub report in 2010. In doing so the project provides the capacity and capability for:

- faster more frequent service between the cities of the north
- capacity for commuting into the cities of the north
- direct access from the cities of the north to Manchester Airport
- capacity for the growth of rail freight

Through the development of a North of England Programme these interventions are being developed in an integrated way with North West electrification and Trans-Pennine electrification to maximise the effectiveness of the outputs and the efficiency of delivery. The timescales for delivery will be confirmed through the detailed development work currently underway.

5.3.2 City capacity projects – South East

In Wessex Route, there is a rolling programme of platform lengthening underway that will provide for a move from 8 to 10-car trains on the majority of Windsor line services. In CP5 a move from 8 to 10-car trains on the remaining suburban services is planned as well as the balance of Windsor line services to Reading. Beyond CP5 it will be necessary to relieve crowding on main line services into Waterloo. The industry is working together to devise and evaluate optimal strategic solutions that will deliver capacity and reliability for passengers and be consistent with potential post 2030 options for Crossrail 2.

Within Sussex Route, CP4 has seen the delivery of a step change in peak capacity on routes into London Bridge and London Victoria with platform lengthening to 10 and 12-car from the current 8-car capability. Thameslink has already enabled some Brighton to Bedford services to be extended to 12-car and towards the end of CP5, high peak capacity between the Brighton main line and London Bridge will be nearly doubled. Other CP5 investments will see an additional platform added at Redhill to improve the robustness of operations. Beyond CP5, Three Bridges re-signalling offers a major opportunity to remove some historical constraints.

The main focus on Kent Route during CP5 (alongside successful delivery of the Thameslink works at London Bridge), will be the delivery of 12-car suburban operations. This was

originally a CP4 deliverable and platforms are being lengthened accordingly, but the necessary rolling stock will not be available for train lengthening until CP5.

Finally, Anglia Route has a number of important interventions planned for CP5. There is an opportunity to improve the capacity on Great Eastern main line services from Norwich without alteration to the infrastructure, depending on the choice of rolling stock in the next franchise. A scheme is also planned at Bow Junction as the first step to make use of freed up capacity from the diversion of slow line services into Crossrail. Further interventions may be required to make maximum use of the platforms at London Liverpool Street. On West Anglia, the industry is developing options to generate additional capacity south of Tottenham Hale onto the Lea Valley route to allow an improved service into Stratford. This is a logical building block in a longer term plan to deliver a 4-track West Anglia main line.

5.3.3 City capacity projects – The west

To reduce journey times and increase capacity and service frequency in and around Bristol, a programme of improvements is being developed following their recommendation in the Greater Western RUS. The programme aims to provide the infrastructure necessary to deliver the envisaged IEP service level of four trains per hour between Bristol and London Paddington, local network service expansion and reduce journey times from the south west into Bristol and northwards onto Birmingham.

The Oxford corridor provides the key strategic link for passenger and freight traffic between the south coast, WCML and the north, in addition to acting as a branch of the GWML for outer Thames Valley and Cotswold Line traffic. A large proportion of passenger train arrivals at Oxford from the south terminate there, and turn back for Reading and London Paddington. The Oxford corridor also forms part of the SFN.

To facilitate predicted growth in passenger and freight traffic through Oxford a package of schemes is being reviewed following its identification in the Greater Western RUS to increase capacity and route availability as well as introduce higher line speeds. With the recent announcement of funding for East West rail and the continuation of the proposed Evergreen III services and the development of the Electric Spine, the infrastructure requirements at Oxford have recently been revised. Coupled with the City and County Councils' aspirations for wider city redevelopments the opportunity to maximise the investment around Oxford Station is being jointly reviewed with a city and station masterplan underway.

5.3.4 Thameslink

The Thameslink Programme will deliver increased capacity and connectivity for a range of services operating across London between the Sussex and Kent Routes on the south side of the Thames and the East Midlands, London North Eastern and Anglia routes on the north.

Key Output 1 of the Thameslink Programme was completed in December 2011. This enabled peak services on the Bedford – Brighton corridor to operate at 12-car rather than 8-car length, and as the new Thameslink rolling stock arrives in CP5, more services will be lengthened.

Key Output 2 will allow up to 24tph through the Thameslink core, which is a significant strengthening against a current capacity of around 16tph. Terminating capacity at London Bridge will be reduced as platforms will have been changed from terminating to through running capability, but at Kings Cross terminating platform capacity will be released as some services switch to running through the tunnel.

On completion, a combination of the new 12-car capability through the Thameslink core and the ability to route more trains via London Bridge will mean that current overcrowding in the core itself and on services on Brighton Main Line and MML slow lines will be alleviated.

During the course of CP5 there will be some disruption to services through London Bridge and the Thameslink core as the major phases of the work at London Bridge progress. The main impact will be from early 2015 onwards as works switch from the low level (terminating

platforms) to the high level. This will necessitate diversion of Brighton Main Line Thameslink core services away from London Bridge to the Elephant and Castle route throughout the day. The high level works will also bring a period of alterations to South Eastern services, most notably a period when Charing Cross services will be unable to stop at London Bridge and also following this a period when Cannon Street services will be unable to stop there. Plans are being developed by the industry to mitigate the impacts of these different phases of development.

5.3.5 Crossrail

The Crossrail operation will provide a cross-London train service between Maidenhead and Heathrow in the west and Abbey Wood and Shenfield in the east via a new tunnel under central London and replacing current inner suburban services on the route. Main construction works commenced in 2010 and will be ongoing until 2018 when the service becomes operational.

The services will provide additional passenger capacity from the Thames Valley with 24tph in each direction through the central tunnel with 14 services turning round at Paddington, 4tph to Heathrow Airport, 2tph to West Drayton and 4tph to Maidenhead.

It will initially operate with 10-car electric trains, capable of carrying around 1,500 passengers in each train delivering substantial economic benefits across London and the south east. It is envisaged that Crossrail will make travelling easier and quicker and will reduce crowding on London's existing transport network, by approximately 30 per cent on the western section of the route.

In order to deliver this output, reconfiguration of the GWML relief lines with platform extensions to cater for longer electric trains will be undertaken at Acton Main Line, Ealing Broadway, West Ealing (including a new bay platform for Greenford services), Southall, Hayes & Harlington, West Drayton, Iver, Langley, Slough, Taplow and Maidenhead.

5.3.6 Birmingham

In view of Birmingham's strategic and regional importance, the Government has committed to the electrification of the route between Walsall and Rugeley Trent Valley, providing an alternative electrified route to the north from Birmingham. This extension of electrification will allow the replacement of diesel units with electric units and further allow the release of rolling stock to strengthen other services in the West Midlands. In CP5 the capacity upgrade on the Redditch Branch will be completed with a new double track alignment at Alvechurch increasing capacity.

The HLOS identifies the need to provide for forecast growth of 1,800 people travelling into central Birmingham in the three hour morning peak between 2013/14 and 2018/19. This additional capacity is expected to be delivered by lengthening existing train services. The passenger facilities at Birmingham New Street station are a significant constraint on passenger growth into Birmingham. This will be addressed by the completion of the redevelopment of Birmingham New Street in early CP5, providing a significant improvement in the passenger experience. The relocation of Bromsgrove station, funded by Worcestershire County Council and Centro will enable the extension of electrification on the Cross City line and allow three Cross City services per hour to be extended from Longbridge to Bromsgrove.

In the longer term the industry will work with stakeholders on future development of the rail network to identify local connectivity and maximise the benefits of HS2. With the Local Enterprise Partnerships, the industry will identify future development of the rail network to facilitate the growth of the West Midlands economy and inform future funding decisions.

5.4 Inter Urban

5.4.1 Intercity Express Programme

This programme will deliver infrastructure capable of allowing the Super Express Trains (of up to 260m) to operate on the GWML, ECML and specified diversionary routes.

The scope includes capability works and specified capacity enhancements including traction power supplies, gauge clearance, platform extensions and overhead line alterations. The ECML traction power upgrade provides for all known CP5 services changes and enables at least 30 per cent future growth. The specified capacity enhancements on Western are longer platforms and linespeed enhancements in the Paddington area; track, signalling and platforms enhancements at Bristol Parkway and journey time and fleet utilisation driven enhancements in the Cotswolds.

The capability works are to be complete and ready on the core GWML routes (London to Bristol, Swansea, Cheltenham and Worcester) by 2016 and remaining Western and East Coast routes in 2017. The introduction of Super Express Trains into passenger service is anticipated on Western routes in 2017 and East Coast routes in 2018. The IEP is a key enabler to the introduction of enhanced timetables on both GWML and ECML which will include increased frequencies and reduced journey times.

5.4.2 East Coast connectivity

The programme builds on the output from the ECML RUS, the ECML 2016 Capacity Review and the ECML CP4 Enhancements Programme.

The HLOS provides for an ECML Connectivity Fund to improve capacity and journey times and to address the crossing movements of passenger and freight trains at Peterborough. Initial assessments of a proposed train service specification identified infrastructure constraints that impact on capacity and performance. The cost of removing all the constraints is likely to far exceed the £252 million fund proposed in the HLOS.

Consequently, there is a need for the industry to agree a prioritised list of schemes that maximise the outputs and are value for money. An ECML Programmes Board comprising all operators with an interest in the ECML, DfT, ORR and Network Rail will allow stakeholders to participate in a joint process to propose projects and any associated trade-offs.

The identification of value for money options will involve modelling of industry agreed train service specifications.

5.4.3 West Coast Main Line

The West Coast Main Line (WCML) is recognised as being of critical importance to the economy and the strategy for CP5 reflects the needs of the core market segments that it serves; more specifically long distance, London and south east, regional and freight.

For the London and south east market the HLOS identifies the need for the industry to provide for growth of 1,200 people into London Euston during the three hour morning peak. The strategy for delivering this in CP5 proposes that this will be delivered through train lengthening.

The long distance sector sees a number of significant improvements to the WCML including works to improve passenger capacity and experience at Birmingham New Street, the Stafford Area Improvement project delivering improved line speeds and provision for additional services on the north of the route.

SFN plans recognise the criticality of the WCML and development work on candidate schemes to deliver the forecast increase in capacity on the route north of Preston is underway.

Forecasts for the long term have identified that by the mid 2020s the route south of Rugby will be at capacity and unable to meet further projected growth. HS2 represents the solution to this challenge and during CP5 the industry will work with HS2 to maximise the benefits of the high speed network and develop the interfaces between it and the existing network.

5.4.4 Reading

The redevelopment of Reading station is a major scheme to relieve a bottleneck on the GWML. The programme of works delivers a major capacity, capability and performance enhancement of the station area and its approaches. Based around a core of new platforms for GWML services, a new platform and platform extensions for London Waterloo services, the scheme also includes a major capacity enhancement through grade separation at Reading West Junction and reinstatement of the east end dive under. A new train maintenance depot is being constructed to the west of the station replacing the existing depot, which will be demolished to accommodate the new track layout.

The redevelopment will deliver an additional 4 tph in each direction, 125 per cent improvement on through-line platform capacity, an expected 38 per cent improvement in performance (train delay minutes) and longer trains up to 12-cars from the London Waterloo lines. Preliminary works commenced during 2009 with construction ongoing until full implementation in 2016.

5.4.5 East West

East West rail is a third party proposal to reintroduce direct passenger services from Oxford and Aylesbury to Bletchley, Milton Keynes Central and Bedford. The primary objective of this initiative is to improve east-west connectivity, providing a local transport link to support growth and development. It is seen as a means of easing traffic congestion in Oxford, Bletchley and Milton Keynes and will create a direct link between the GWML, WCML and MML. This will provide capacity to accommodate growth in both freight and passenger markets.

Chiltern Railway's Evergreen III project Phase 2 (Bicester – Oxford) will also enable the first stage of East West rail. Electrification of the Oxford – Bedford route is included in the Electric Spine proposal, which would enhance the capability of the line above that proposed in the East West project, and provide the opportunity not only for its use as a major freight artery, but also for inter-regional electric passenger services beyond the route's boundaries.

No firm programme has yet been developed for the design and implementation of the project. Electrification of the route from Bletchley to Bedford will be determined by the timing of the electrification of the Midland Main Line.

5.5 International gateways

5.5.1 Airport and port access – Heathrow

There is growing demand, particularly from the business community who currently account for a third of the passengers using Heathrow Airport, for improved rail access from the west. Network Rail is developing options to deliver this in partnership with Heathrow Airport Limited and Slough Borough Council. Whilst Heathrow Airport primarily serves the south east of England (with rail links to and from London by Heathrow Express, Heathrow Connect services and London Underground services), rail access to the airport from the west is presently by road from Reading, by interchange from Thames Valley stopping services at Hayes and Harlington and then via Heathrow Connect, or by interchange from long distance high speed services from further west at London Paddington and then via Heathrow Express.

A direct western link into Heathrow Airport from the GWML has been identified in the HLOS as a scheme for development in CP5 and implementation in CP6. Network Rail is exploring options to identify the most suitable corridor east of Slough to link the two and deliver a typical 4 tph between Heathrow Terminal 5 and Reading. A number of options have been proposed and these will be assessed as part of the scheme development.

5.5.2 Airport and port access – Gatwick

Industry plans developed for CP4 and CP5 are designed to meet the dual challenge at Gatwick of supporting the airport target for continued growth in public transport share of the surface access market (rail share is currently 35 per cent) and supporting the continued growth in peak and off peak travel on the Brighton Main Line.

At the end of CP4, the track layout at Gatwick Airport will benefit from a major remodelling scheme delivered as part of a local re-signalling project. An additional platform will be created on the fast line side of the station reducing conflicting moves at the north end and creating extra capacity. CP5 will then see two further important developments that will take advantage of the remodelled layout. The completion of Redhill Platform 0 will allow the second train in each hour to operate through to Gatwick from Reading – rather than the current 1 tph service. The Thameslink Key Output 2 timetable, to be implemented toward the end of CP5, will see a near doubling of high peak capacity between Gatwick Airport and London Bridge.

With this significant boost to capacity from the Thameslink route delivered in CP5, demand projections suggest focus will then need to return to the London Victoria route. Plans will be developed during CP5 for improvements to capacity on the Brighton Main Line that could be implemented during CP6 at the same time as Three Bridges re-signalling and for improvements to Gatwick Airport station. The rail industry is confident that the plans in place for CP4 and CP5, combined with initial work underway to define what can be achieved alongside Three Bridges re-signalling, will put the railway in a strong position to handle any growth associated with further expansion at Gatwick Airport.

5.5.3 Airport and port access – North of Ely

Network Rail and freight operators are engaged in developing further SFN plans to create additional capacity on the Felixstowe to Nuneaton freight route via Ely. In addition for a number of years local stakeholders in Suffolk and Norfolk have been working to encourage a range of service improvements between key population centres in the region. These aspirations are based primarily around increasing service frequencies to Kings Lynn, between Norwich and Cambridge and between Ipswich and Peterborough. A number of different interventions will be required including upgrades to track layouts in the Ely area and potentially elsewhere, power supply improvements and level crossing upgrades and closures.

For CP5, a scheme at Ely North Junction has been identified to double the single lead connections and shorten the signalling headway between this junction and Ely station. Whilst this scheme would not on its own enable all the aspirations to be met, alongside power supply upgrade work and improvements to level crossings, it is likely to allow some additional services to operate and remove a key constraint.

In addition to these works at Ely North, Network Rail is developing further capacity options on the cross country route between Felixstowe and Nuneaton via Ely for possible implementation in CP5 and CP6, to allow a greater number of freight services from the port of Felixstowe to use the route.

6 Next steps

6.1 Further development of industry plans

The industry will continue to develop its plans for the railway. Over the coming year the industry will work together to refine the proposals for CP5 including:

- Further examination of opportunities to deliver efficiencies, continuing the leadership and work overseen by RDG
- Development of two year Joint Performance Improvement Plans for the final year of CP4 and the first year of CP5
- Scheme development, particularly of the enhancements portfolio, in order to get more robust definitions of outputs, scope and costs
- Development of Network Rail's delivery plan for CP5, working with its customers and delivery partners and continued refinement of its plans at a route-level

6.2 Concluding the periodic review

ORR will review this plan alongside Network Rail's SBP to assist it in establishing the proposed outputs to be delivered and funding available in CP5. It is scheduled that ORR will publish its draft determinations in June 2013 and final determinations in October 2013.

Establishing a clear baseline set of outputs with an appropriate level of funding is the key outcome required from the periodic review process. This will enable the industry to deliver the plan whilst providing value for money for customers and funders.

The industry will continue to engage in dialogue with ORR during the periodic review process, collectively through RDG, Planning Oversight Group and the National Task Force.

6.3 Franchising

The re-commencement of the franchising programme and reform to franchising policy are fundamental enablers required to allow train operators to continue delivering better value for money for customers and funders.

Consistency of outputs and incentives between the periodic review process and franchising programme will be crucial in aligning the plans of Network Rail and train operators to deliver improved value for money.

6.4 Longer term plans

The industry has set out a vision for the longer term and this plan outlines the key steps in CP5 to deliver that vision. The industry will continue to develop its strategy and central to informing this will be the Long Term Planning Process. This builds on the successful completion of the Route Utilisation Strategies and provides a framework (at a market and route level) for updating plans to reflect new opportunities.

The industry stands ready to meet the challenges within CP5 and beyond.


NetworkRail


Train Operators
Working Together
ATOC


Railway Industry Association


RFOA
Rail Freight Operators' Association