



National Audit Office

**REPORT BY THE  
COMPTROLLER AND  
AUDITOR GENERAL**

**HC 33  
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**Department for Transport and the Office of Rail Regulation**

Increasing passenger rail capacity

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**Department for Transport and the Office of Rail Regulation**

# Increasing passenger rail capacity

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Amyas Morse  
Comptroller and  
Auditor General

National Audit Office

27 May 2010

The Department for Transport published a 30-year rail strategy in July 2007 stating an ambition for a railway that could handle double the 1.15 billion passenger journeys made in 2006-07.

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This report can be found on the  
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# Summary

## Background

**1** The Department for Transport (the Department) published a 30-year rail strategy in July 2007 stating an ambition for a railway that could handle double the 1.15 billion passenger journeys made in 2006-07. This was against a background of increased demand for rail travel: passenger journeys were up from 0.74 billion in 1994-95. While capacity has also risen, crowding is widespread at peak times to, from and between major cities. For example, in 2008 nearly half of all passengers arrived into London between 08:00 and 08:59 on services that were either full or over-crowded. Other cities also experience high levels of crowding at the height of the morning peak.

**2** For the five years to March 2014, the Department allocated £15.3 billion to support and improve the safety, reliability and capacity of rail services in England and Wales. The main improvement sought was in capacity, with the industry required to accommodate 17 per cent (64,900) more peak time passengers into London and 27 per cent (17,400) more passengers into other major cities without increasing average crowding. This implied extra capacity of 117,000 places into London and 38,000 into other English cities. These improvements require more and longer trains, timetable adjustments, bigger stations, longer platforms, new and enhanced depots and changes to track and signalling.

**3** We examined the work of the Department and the Office of Rail Regulation (the Regulator) in specifying and securing increased rail capacity for passengers in England and Wales by March 2014. In doing so, we did not evaluate the merits of the current structure of the rail industry, but the efforts of the Department and the Regulator within it. Under that structure, the Department specifies what the Government wants from the industry and sets the level of public funding available, and secures and monitors delivery of passenger services in England, including providing extra capacity. As the railway's economic regulator, the Regulator conducts reviews to determine what Network Rail has to deliver, the incentives to secure delivery and the levels of track access charges paid by train operators. As part of the review for the period 2009-14, it scrutinised Network Rail's plans to enhance the infrastructure for capacity increases. It also monitors Network Rail's delivery with the aim of securing value for money for passengers and taxpayers.



**4** We examined whether: the Department's forecasting and planning were robust; the Regulator's review of Network Rail's plans to enhance the infrastructure to carry extra capacity secured a good deal for the taxpayer; and whether the Department was on track to buy the extra capacity needed from train operating companies by March 2014.

### Key findings

- 5** Since the Department made its plans to increase capacity:
- it committed funding for Crossrail in October 2007, which the Department expects will provide over 100,000 extra peak places across London in 2017. This reduces the viability of some improvements originally planned to happen before then;
  - the recession reduced its projections of demand, with passenger kilometres travelled in 2013-2014 modelled at about 5 per cent lower than when its plans were made. There are some signs that the recession has indeed reduced the use of rail but the extent of the impact is not yet clear;
  - extra rolling stock is proving more expensive than was assumed during planning. Higher costs of financing following the credit crisis, are a key factor. The increased costs have been offset by delays in delivery which have reduced payments in the period up to 2014. There is a risk that this will create affordability problems after 2014; and
  - it announced in 2009 that it would electrify more of the network, which has changed the types of new carriages needed on those routes.

Against this background the Department worked with train operators and Network Rail to develop the efficiency of individual schemes. It assured itself that schemes had a positive business case before entering into contractual commitments wherever possible, and in some instances it decided not to proceed. It had not considered whether deferring investments as a whole in the light of latest demand forecasts would offer better value for money. In May 2010 the Department announced it was pausing the rest of the programme in 2010-11 as part of savings across Government and would reassess it in the light of overall spending requirements. Schemes that have already been contracted will go ahead.

**6** Before this pause the Department expected to spend close to the £1.20 billion originally earmarked for securing extra capacity from train operators in the five years to 2014, but its latest plans showed it would not secure as much extra capacity as originally specified. Capacity was expected for 99,000 extra passengers into London during the three hour morning peak (7 till 10 am) 15 per cent less than the 117,000 first envisaged, and for 25,500 passengers into other cities by 2014, 33 per cent less than first envisaged. Our analysis shows the extra capacity of 44,000 for the one hour morning peak in London (8 till 9am) was 28 percent less than originally envisaged. The Department still expected that crowding would not increase above the maximum levels envisaged in the White Paper because of the fall in its projections of demand.

## On the Department's forecasting and planning

**7** To specify its requirements for the railway and set the level of funding available the Department had to assess demand. Its approach to the original forecasting and planning was robust in that it was based on a good knowledge of the network and on the whole used reasonable assumptions. Inevitably it had to make some assumptions to simplify the real world and some of these distorted estimates of demand. For example, the model does not allow passengers to switch to an alternative train if their "preferred" service is too crowded. Neither we nor the Department can say whether and how these assumptions distorted judgements on the scale of new investment needed, as data on actual passenger numbers is limited so forecasts cannot be fully checked against reality. More extensive data on actual passenger numbers would improve the evidence base for calibrating and validating the forecasting model.

**8** The Department did not test widely the sensitivity of the model's demand forecasts to changes in assumptions. It modelled economic growth scenarios in line with Treasury guidance, but did not test the sensitivity of its forecasts to variations in the relationship between economic growth and rail demand.

**9** To assess value for money, the Department assessed a set of specimen options for new schemes in accordance with Government guidelines, and concluded that the benefits over 60 years would outweigh the costs by 53 per cent. Achieving value for money was always going to be a challenge however, as for nearly half of the new schemes the costs outweighed the benefits. Moreover, 86 per cent of the overall benefit of new schemes is accounted for by the value placed on reducing crowding, and the Department did not test the sensitivity of costs and benefits to changes in this valuation.

**10** The Department is assessing each scheme again for value for money before approving them. This is good but Northern Passenger Transport Executives felt they had lost out unreasonably relative to their expectations as plans for their areas developed.

**11** More generally there needs to be greater transparency for passengers and funders about where and when extra capacity will be delivered, where this can be provided without commercial damage. The Department set itself and the rail industry city-wide requirements for increasing capacity. This allows requirements to be met without putting all new capacity on the busiest routes. This can be sensible in value for money terms as the industry can plan to add capacity in the most readily achievable ways and, since the Department has to approve train operators' proposals there is still a check that plans do meet pressing needs. It is nevertheless important that the rationale for decisions, and their consequences for forecast and actual levels of crowding, are available to passengers and funders as plans are committed and implemented.

**12** The Department's planning focused on securing extra carriages to meet forecast demand in the peak periods. It explored the broad feasibility of shifting demand away from the peak, and is conducting limited trials of this approach. But it did not rely on this option or refitting of existing stock to carry more passengers to accommodate demand prior to 2014.

### On the Regulator's scrutiny of Network Rail's infrastructure plans

**13** The Regulator scrutinised Network Rail's plans to increase capacity of the infrastructure as part of its review of the track access charges to be paid by train operators to Network Rail from 2009 to 2014. Its approach to the review was consistent with normal regulatory practice.

**14** There is a growing body of evidence that rail infrastructure costs more in Great Britain than in other countries. This includes work by the Regulator comparing Network Rail's costs and processes in operations, maintenance and renewals against other countries' railways and other infrastructure companies, and concluded that there was "a very large potential for Network Rail to improve its efficiency."

**15** The Regulator did not specifically seek international benchmarks for new infrastructure schemes to enhance capacity. It reduced costings by removing schemes it deemed unnecessary to fully meet the Department's requirements, rephasing costs to match more realistic delivery timescales, and imposing efficiency savings on the remaining plans. These efficiency savings were based on evidence from industry-wide trends and by reading across from assessments of operating, maintenance and renewal activities. The Department and the Regulator have commissioned a review examining the overall cost structure of the rail industry with the express purpose of increasing value for money. We welcome this development.

**16** We are concerned that the Regulator's ability to assess whether Network Rail is providing value for money is limited by the level of detail available on Network Rail's costings. Network Rail has incentives to become more efficient, for example, it can keep 25 per cent of underspends to use in the future and it must absorb the first £50 million of overspend on infrastructure enhancement projects (including capacity enhancements). For these incentives to work effectively they must be based on realistic and challenging estimates of costs, but the level of detail available is not always enough to judge these. We are also concerned that the Regulator had not agreed with Network Rail the programme of works necessary to deliver the infrastructure enhancements or the process for agreeing changes to that programme by the start of the control period.

On the Department's procurement of extra capacity from train operators

**17** By March 2010 the Department had secured operation of 526 extra carriages, with a further 106 ordered and due to be committed for operation in 2012. While there had been some delays in individual project milestones, the Department expected to have additional capacity in place by March 2014.

**18** The Department looked to secure the majority of its extra carriages by negotiating with incumbent train operators, but this creates specific risks to value for money which the Department recognises and is managing. It is keeping Network Rail informed of changes in plans, thus avoiding the risk of abortive investment if there was a rethink on longer trains on a particular route. At the time of our work, Network Rail believed it could still deliver all the enhancements required by March 2014.

### **Conclusion on value for money**

**19** The Department and Regulator are pursuing value for money in a complex and unique industry structure. It is too early to say whether they have achieved value for money in seeking extra capacity from the rail industry between 2009 and 2014. There are, however, a number of warning signs which indicate that it is at risk.

- The Regulator's own work and that of others indicate that infrastructure costs within the rail industry are high. While the Regulator reduced Network Rail's costings and established incentives for it to improve efficiency, we are concerned that the level of detail available to the Regulator on costs restricts its ability to judge the potential for efficiency gains by Network Rail looking forwards, or its realisation of that potential looking back.
- The costs of rolling stock are increasing.
- The recession reduced the Department's modelled levels of future demand. While the Department assured itself that the whole programme and individual interventions should still achieve positive returns over 60 years, it had not considered whether delaying the programme until after 2014 would offer better value for money.
- Moreover, the Department's latest plans would have delivered significantly less capacity during the morning peak by 2014 than originally specified, though the taxpayer would have provided almost as much extra support to train operators over the next five years as was originally envisaged.

## Recommendations

**20** To address the risks to achieving value for money up to 2014:

**a** the Department should:

- ask bidders for a priced option to bear the risk of meeting specified crowding limits within invitations to tender for future franchises, where initial assessment indicates such risk transfer may offer value for money.

**b** the Regulator should:

- alert the Department to big changes in estimates that might compromise the value for money of individual schemes even if their scope is unchanged.

**21** To clarify for taxpayers, passengers and other funders what is actually being delivered, the Department should:

- a** report annually on progress towards meeting capacity requirements and the likely taxpayer support required with justifications for variances from plans. This should be at the level of London as a whole and other regional centres to avoid compromising individual negotiations with train operators, but should comment on the targeting of extra capacity, its rationale, and the actual experience of crowding on specific routes.

**22** To improve future planning rounds so that there is a better basis for securing value for money:

**a** the Regulator should:

- use the current phase of enhancements to develop a shared cost database with Network Rail and independent benchmarks so that it can challenge future investments; and
- establish a baseline enhancement plan and change control process before the start of the next control period.

- b** the Department should:
  - pursue vigorously its efforts to require the rail industry to collect, verify and make available comprehensive data on passenger numbers;
  - review the sensitivity of benefit-cost ratios in its appraisals to variations in factors such as the valuation of crowding and the levels specified for those factors that have the greatest influence on the overall assessment; and
  - in future use the techniques it is applying to finalise the current round of interventions during initial planning as well by:
    - comparing modelled demand with actual demand from passenger count data and reviewing significant areas of variance;
    - reviewing the sensitivity of demand forecasts and crowding levels to national and regional variations from latest central economic forecasts; and
    - evaluating further the costs and benefits of demand management as well as capacity enhancement approaches to tackling peak time crowding on the railway.

# Part One

## The Department's forecasting and planning

### Capacity requirements for the railway 2009-2014

**1.1** The July 2007 White Paper *Delivering a Sustainable Railway*, set out a 30-year strategy for the railway and stated the ambition that the railway could handle double the number of passengers (1.15 billion passenger journeys in 2006-07). Published alongside the White Paper, the High-Level Output Specification for the railway between 2009 and 2014 specifies the demand to be met as well as safety and reliability. The Government stated it wanted to avoid increased overcrowding in major cities in the morning peak, with improvements targeted on the busiest routes, most of which are in London and the South East.

**1.2** The capacity requirement is implied from the extra passenger arrivals to be accommodated by 2013-14 at urban destinations during the morning peak without exceeding specified city-wide load factors (**Figure 1** overleaf). The load factor is the number of passengers arriving expressed as a percentage of the designated capacity<sup>1</sup> of the trains. Accommodating this level of forecast demand without exceeding the specified load factors implies providing extra capacity of 117,000 in London and 38,000 in other English cities during the three-hour peak.

### The process for specifying requirements from the railway

**1.3** The Railways Act 1993 empowers the Office of Rail Regulation (the Regulator) to undertake periodic reviews of the track access charges which train operators pay to use Network Rail's network. When the Regulator announces a review, the Railways Act 2005 requires the Secretary of State for Transport to set out what the Government wants the rail industry in England and Wales to deliver over that period (the High Level Output Specification), and the taxpayer funds available (the Statement of Funds Available). The 2007 White Paper was the first such statement of requirements and funding. The Regulator must advise the Secretary of State if, during its track access charges review, it assesses that his requirements are not affordable with the funds available. The Regulator does this by scrutinising and challenging Network Rail and the rail industry's plans to meet the requirements. **Figure 2** overleaf summarises the roles of the different bodies.

<sup>1</sup> The designated capacity of commuter trains is calculated by reference to carriage floor areas, regardless of their seating configuration, and allows 0.45 square metres of floorspace per passenger. For longer distance trains that do not stop within 20 minutes of the principal station served, designated capacity is the number of seats.

**Figure 1**

Passenger arrivals to be accommodated and maximum load factors

City	3-hour peak (07:00 – 09:59)			1-hour peak (08:00 – 08:59)		
	Forecast demand in 2008-09	Extra demand to be met by 2013-14	Maximum average load factor by end of 2013-14 (%)	Forecast demand in 2008-09	Extra demand to be met by 2013-14	Maximum average load factor by end of 2013-14 (%)
London	497,000	64,900	67	248,300	34,000	76
Birmingham	32,000	4,600	48	15,400	2,400	55
Cardiff <sup>1</sup>	8,500	900	39	4,000	600	43
Leeds	23,400	5,100	64	11,300	2,700	70
Manchester	22,100	4,100	45	10,700	2,200	49
Other urban areas	27,700	3,600	41	12,300	2,000	46

**NOTE**

1 Delivery of extra capacity in Cardiff is the responsibility of the Welsh Assembly.

Source: Department for Transport – White Paper Delivering a Sustainable Railway

**Figure 2**

Planning responsibilities

Body	Responsibilities
Secretary of State for Transport	Issue High Level Output Specification and Statement of Funds Available. Decide whether to revise the specification and/or funding if the Regulator judges they are not consistent as issued.
Department for Transport	Set the output specification and funding and any revisions for Secretary of State, including assessments of affordability and technical practicability during the design phase.
Office of Rail Regulation	Engage with the Department and Network Rail in design of the specification. Scrutinise Network Rail Strategic Business Plan to judge whether it delivers the specification and other statutory requirements at an affordable and efficient cost. Notify Secretary of State if it believes the specification cannot be achieved with available funds. Issue determinations of Network Rail track access charges and output obligations for the 2009 to 2014 period.
Network Rail	Design and update Strategic Business Plan to deliver changes that satisfy the outputs in an efficient way. Design Delivery Plan.
Train operators	Liaise with Network Rail in design of Strategic Business Plan.

Source: Railways Act 2005 and Office of Rail Regulation documents



**1.4** The Regulator published its proposals for conducting the 2008 periodic review in August 2005. These included a timetable for key events to which both Network Rail and the Regulator adhered. The Regulator commissioned an independent evaluation report which concluded that it had generally managed the process well. The Regulator did not at any time consider that the specification could not be achieved with the available funds. Its draft and final determinations proposed and set the levels of Network Rail's track access charges, and specified the enhancements to be undertaken to meet the capacity requirements. Network Rail contested several elements of the draft determinations and the Regulator considered its arguments, as well as those of other stakeholders, before issuing its final determinations. In many cases the Regulator rejected Network Rail's arguments.

**1.5** This commentary, coupled with the distinctive nature of Network Rail as a not-for-dividend company and monopoly provider of rail infrastructure, shows how the Department and Regulator were acting in a complex and unique industry environment. The relationships between the various parties are shown in Appendix 2.

### **Funding for capacity increases**

**1.6** The 2007 White Paper estimated that the rail industry (Network Rail and train operators) would need £55.4 billion cash between 2009-10 and 2013-14 at prices of the day to run the existing railway without capacity increases. It estimated revenue from fares, car parks and property rents at £43.0 billion<sup>2</sup>. Government was prepared to make available up to £15.3 billion of taxpayers funds providing some £2.9 billion to support investment in capacity increases. The White Paper assumed a further £6.1 billion would be borrowed, giving a total programme for capacity increases of £9 billion. Within this, £7 billion was allowed for infrastructure enhancements by Network Rail, most of which was aimed at increasing capacity, including £3.1 billion for the Thameslink programme. A further £1.2 billion was allowed for additional costs of the Department's support to train operators, much of which was for the lease, maintenance and operating costs of extra carriages.

<sup>2</sup> This figure is sourced from Table 12.1 of the White Paper by summing of the revenues for individual years, which have been rounded, rather than using the published total figure in that table, which contains a summation error.

## Identifying the need for extra capacity

**1.7** Latest levels and trends in demand for rail services are important in planning for future capacity, but the detailed data available to the Department is limited. For any one route it is often based on a manual survey on one day of the year at a single point on that route, though different routes are surveyed on different days over a ten-week period. Data is especially sparse outside London and the South East. There are automatic counting methods based on weighing of carriages or infra-red sensors of boarding and alighting, but the Department tells us that costs of retro-fitting to existing carriages are high. The Department has a policy to implement electronic counting methods for all services, including those not serving London. A growing number of train operators already collect electronic data which the Department uses. The Department is procuring a substantial industry database for this information, but it will not be available before 2011.

**1.8** The Department and the industry use ticket sales as a proxy for the number of current passengers. The actual number of passengers where counted, as well as which routes they use, will vary, however, from numbers inferred from ticket sales, although the Department told us divergence is likely to be less at city or terminal level than for individual services. Actual passenger number data would give a better representation of crowding at the start of any planning period, and should be a better basis for demand forecasts.

**1.9** On the basis of ticket sales, the Regulator estimates that the number of passenger journeys on franchised services in Great Britain increased from 0.74 billion in 1994-95 to 1.27 billion in 2008-09. Capacity as measured by carriage kilometres travelled has also risen. Carriage kilometres grew by 18.6 per cent between 2003-04 and 2007-08 while estimated passenger journeys grew by around 22 per cent over the same period. There are some signs that the recession has reduced the use of rail. Estimated passenger journeys for Great Britain fell from a high of 325 million in the third quarter of 2008 to 314 million for the third quarter of 2009.

**1.10** Available data indicates that crowding is widespread on London routes. In 2008, for trains arriving into London between 07:00 to 09:59, just over a third of passengers were on services that were either at or above their designated capacity. Between 08:00 to 08:59 this rises to nearly one in two passengers. For cities other than London, at the height of the morning peak some services are also very crowded.

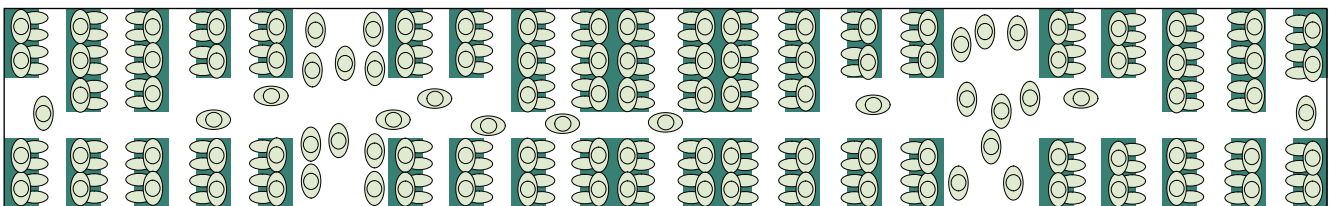
**1.11** Passengers' experiences will depend on which service they use, when and where. Because of this, the Department considers that load factors of around 70 per cent across the one-hour peak city-wide are a reasonable ceiling as, with the current mix of services, this could be expected to limit the number of services where loads reach 100 per cent or higher and conditions are especially crowded. **Figure 3** illustrates what load factors of 100 and 125 per cent might look like.

### Figure 3

Illustrations of load factors for a service where each carriage has 90 seats and a total designated capacity of 120

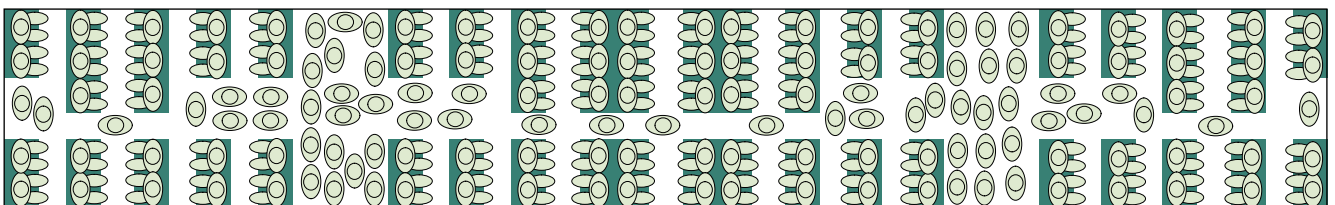
#### 100 per cent load factor – 90 passengers seated and 30 standing

In 2008, 4 in 10 trains into London arriving between 08:00 and 08:59 were at least this busy



#### 125 per cent load factor – 90 passengers seated and 60 standing

In 2008, 1 in 10 trains into London arriving between 08:00 and 08:59 were at least this busy



Source: National Audit Office

**1.12** Prior to the preparation of the High Level Output Specification, the Strategic Rail Authority and subsequently Network Rail had prepared Route Utilisation Strategies for a number of routes on the network. These indicated that for many routes, and for the most crowded routes in particular, train operators had already largely exploited the potential for running more trains on the existing network. Further capacity enhancements would often require investment in additional rolling stock to run longer trains, which in many cases would require: longer platforms and/or station, junction and signalling improvements; and depots and stabling to accommodate the new stock.

**1.13** There are two further options that could be complementary to increasing the number of carriages, and possibly be more cost-effective:

- **Demand management** seeks to make better use of existing capacity by spreading demand away from the height of the peak by, for example, offering discounts to passengers who choose to travel at other times. Using it to its full potential depends on deployment of smart ticketing technology to know when passengers travel, which most train operators did not have in 2007. The Department commissioned research into opportunities for demand management,<sup>3</sup> but concluded that it would require big price differentials to change travel times and passengers on higher incomes would be best able to take advantage. The Department contracted with Southern and South West Trains for trial systems, but did not evaluate the costs and benefits of demand management for widespread implementation.
- **Reconfiguration of carriages** can provide additional standing and overall capacity by removing some seats and changing their layout. The Department did not evaluate the cost-effectiveness of reconfiguring existing carriages, or vary its calculations of the carrying capacity of carriages to allow for high density stock. Transport for London has estimated that high density stock could accommodate up to 30 per cent more passengers than conventional stock.

Some Route Utilisation Strategies prepared by Network Rail and Train Operators have considered these options at operational level, but their active promotion would require strategic choices by the Department.

**1.14** The Department based its planning on a new model of the whole rail network (the Network Modelling Framework) developed jointly with the Regulator and Transport Scotland with elements provided by Network Rail and with widespread technical involvement from across the industry. The model forecasts demand; simulates the effects of possible interventions; tests how any additional or longer services would interact and potentially reduce train punctuality; and appraises the benefits and costs of possible interventions and thus their value for money.

<sup>3</sup> *Demand Management Techniques – Peak Spreading – Faber Maunsell/ACOM report to Department for Transport, Network Rail and Transport for London – April 2007*

**1.15** The Department's model builds on established industry building blocks, as well as new and innovative work. Its high level nature meant that some features of its design could distort its forecasts of demand. For example:

- it models each link between zones of stations separately, and passengers who in practice use stopping services from minor stations may instead be assigned to fast trains from neighbouring major stations. This means that the model will tend to overestimate the demand for fast services and underestimate the demand for stopping services; and
- the model does not allow passengers to switch to an alternative train if their 'preferred' service is too crowded for them to board.

The Department and Industry understood and accepted these limitations and indeed a high level model will inevitably make some assumptions which diverge from reality. The absence of detailed count data on actual demand however, makes it difficult to judge the impact of any distortions.

**1.16** There were some problems with the way the Department used the model.

- The weaknesses in demand data limited the extent to which it could test the model's forecast of demand against the real world before using it to design its requirements. The Department validated the model's forecasts against the limited count data available; unsurprisingly some of the outputs were inaccurate. To remedy these, the Department simply increased the forecast demand for several stations, taking no account within the model of how that extra demand would interact with available capacity. In response to particular difficulties in reconciling actual demand patterns with the model's outputs observed by northern Passenger Transport Executives, the Department has commissioned research to review demand forecasts for these Executives' areas. For the next round of planning, the Department intends to use newly available electronic passenger counts data as its input of demand as well as ticket sales.
- The Department did not test the sensitivity of the model's demand forecasts to changes in assumptions. It modelled economic growth scenarios in line with Treasury guidance, but did not test the sensitivity of its forecasts to variations in the relationship between economic growth and rail demand. It did not test variations in any of the many other assumptions underpinning its model, nor did it use statistical simulations which would have given it an understanding of how likely its plans were to achieve value for money.

## Specimen options

**1.17** The Department used the model to inform development of a set of specimen options for new schemes (additional to those such as Thameslink which were already committed) that it judged to be affordable and value for money while meeting the requirements for capacity, punctuality and safety. Stakeholders including Network Rail and the Association of Train Operating Companies, told us that the specimen options were a good starting approximation of what was realistically achievable on the network between 2009 and 2014.

**1.18** In forming the specimen options, the Department made some simplistic assumptions on costs. It assumed that additional fare revenues from extra capacity would be offset by the costs of spare carriages to cover breakdowns and maintenance, and costs of extra staff and power to handle the longer trains. It also assumed that all extra capacity would require new carriages somewhere in the fleet, rather than refurbishment of old units or refitting of existing stock to accommodate more passengers.

**1.19** Network Rail provided the infrastructure enhancement cost estimates for the specimen options used by the Department. This meant the Statement of Funds Available, which provided the affordability test for the Regulator's scrutiny of Network Rail costs, was based on Network Rail's estimates. There was therefore a degree of circularity in the affordability test. This increases the burden on the Regulator to establish a challenging but achievable financial settlement for Network Rail.

## The Department's specification for capacity

**1.20** The Department gave itself and the industry flexibility by setting capacity requirements in terms of the demand to be accommodated at city-wide level. Requirements could be met by extra capacity on any routes rather than only those currently most crowded, although the additional capacity may serve and shape future demand.

**1.21** We found examples where current plans will either not add capacity to the most crowded routes in the next five years, or direct only some of the new capacity at those routes. The Department explained that this may be due to limited opportunity, greater opportunities elsewhere, or opportunities which do not mature until later, rather than just ignoring them. For example, within the Greater Anglia franchise, some of the most crowded routes are currently stopping services to Romford and Shenfield but Crossrail is due to provide huge capacity relief in that corridor by 2017, so no new capacity is planned before then. Instead much of the extra capacity on this franchise, will go on to the Stansted Express, where existing strong demand is expected to grow. Busy stations in South East London will benefit from longer trains on suburban services but

much of the new capacity on that franchise is coming from Channel Tunnel Rail Link domestic services to St Pancras which do not serve South East London. While these approaches may be sensible in terms of securing value for money, the rationale should be transparent to passengers. Passenger Focus told us that passengers would like detailed information on crowding, such as how crowded particular trains were, rather than the aggregate figures for train operators.

### **The assessment of value for money for new schemes**

**1.22** In compliance with Government guidelines, the Department evaluated the benefits and costs of the package of specimen options for new schemes and used the benefit-cost ratio as an indicator of value for money. It assessed the package as having a benefit-cost ratio of 1.53, meaning the benefits over 60 years outweigh the costs by 53 per cent. While the overall package had a positive benefit-cost ratio, some interventions had benefit-cost ratios lower than 1.0, meaning that in isolation the costs outweigh benefits. In London and the South East, five of the 12 specimen options had benefit-cost ratios of 1.0 or lower. Similarly outside London, five out of 12 had benefit-cost ratios lower than 1.0. These were calculated when the Treasury was forecasting continued growth of the economy, and thus the Department's model was forecasting an uninterrupted increase in demand. The marginal value for money of some individual interventions at this preliminary stage show the extent of the challenge the Department faces in securing value-for-money as it firms up costs with train operators.

**1.23** Specimen options, however, were not full specifications for new capacity, and their benefit cost appraisals were not final assessments of value for money. They were intended to indicate whether a set of interventions meeting a collective value for money test could be achieved. The appraisals only covered benefits of making capacity available during peak periods and did not consider any extra benefits from off-peak use which would only incur the marginal costs of running the extra stock. Nevertheless, since alleviating peak crowding was the main reason for investment, it was right for the Department to focus on peak benefits.

**1.24** A further risk to value for money is that the benefit-cost analysis is heavily influenced by the value attributed to each extra person making a journey as a result of extra capacity. For the whole portfolio of specimen options for new schemes, crowding benefits contributed £6.6 billion or 86 per cent of a total £7.6 billion estimated value of benefits (at 2006-07 prices after discounting of future years' benefits). The Department did not test the sensitivity of its value-for-money appraisals to variations in the valuation of crowding benefits, relying on the accuracy of existing industry estimates of that value.

# Part Two

## Scrutiny of Network Rail's infrastructure plans

### Overall management of the periodic review

**2.1** The Regulator applied its overall approach to the periodic review of Network Rail's track access charges to its scrutiny of capacity enhancement proposals and this approach was consistent with normal regulatory practice. The Regulator asked for Network Rail's proposals to meet its statutory obligations and the requirements set by Government. In the case of capacity improvements, these proposals were based on schemes which had been discussed with the Regulator and the Department before issuing the High Level Output Specification. The Regulator reviewed each element of Network Rail's costs, considering the need for the proposed scheme, the reasonableness of the costs, and the opportunities for efficiency gains during the period under review. This approach places the responsibility for preparing proposals on Network Rail, which needs to prepare such plans to maintain its business, and avoids the need for a parallel and expensive engineering and planning capacity within the Regulator. The Regulator's engagement with the design of capacity proposals prior to issue of the High Level Output Specification also minimises the risk of abortive design work by Network Rail.

**2.2** The Regulator's scrutiny of capacity enhancement proposals was undertaken in the context of a wider review of Network Rail's overall funding requirements. This included studies and benchmarking of costs of operating, maintaining and renewing the existing rail infrastructure. Based on this analysis the Regulator concluded that there was "a very large potential for Network Rail to improve its efficiency." The Regulator did not specifically seek international benchmarks for new infrastructure schemes to enhance capacity.

**2.3** Since conclusion of the Regulator's review and following the international benchmarking of rail infrastructure costs as part of the preparatory work for High Speed 2<sup>4</sup>, the Department and the Regulator have announced that they are co-sponsoring a study of the overall cost structure of all elements of the railway sector. The study's purpose is to identify options for improving value for money to passengers and the taxpayer, while continuing to expand capacity as necessary and drive up passenger satisfaction.

4 High Speed rail: London to the West Midlands and beyond HS2 Cost and risk model December 2009.

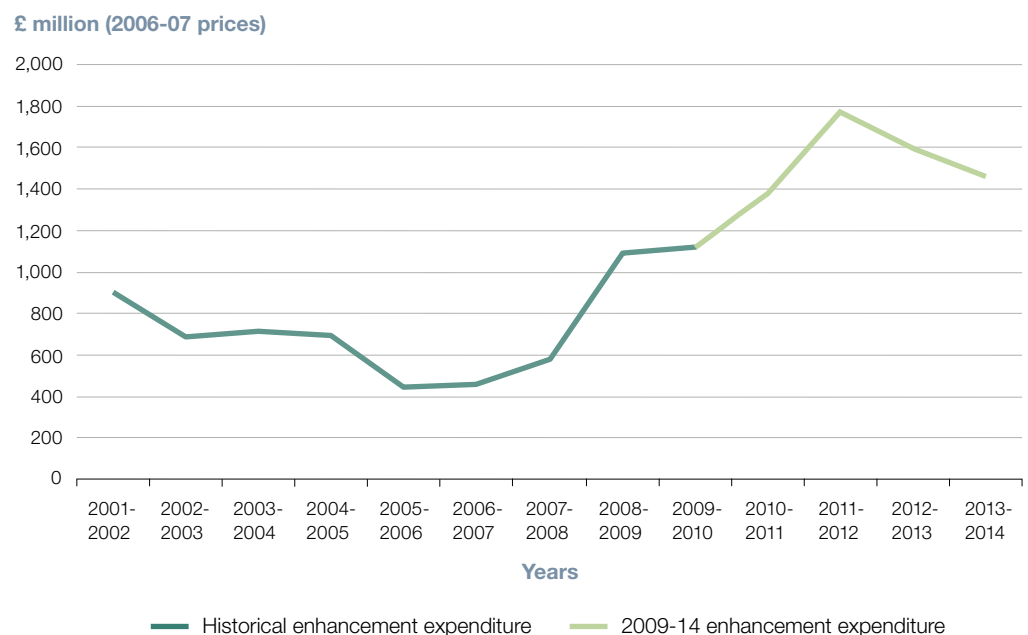


## Scrutiny of the capacity enhancements programme

**2.4** On the basis of the Regulator's final determination the Department is contributing to railway infrastructure enhancements totalling £7.3 billion<sup>5</sup> between 2009 and 2014, as well as buying the extra services from train operators for which £1.2 billion was allowed in the White Paper. The infrastructure enhancements represent the largest programme that Network Rail has managed since it was formed in 2002 (**Figure 4**). Of the £7.3 billion, around £5.4 billion will contribute directly to delivering capacity increases:

- £2.8 billion – The Thameslink Programme will increase the length, frequency and extent of services on cross-London routes.
- £0.4 billion – to ease congestion and allow extra capacity at Reading station.
- £0.2 billion – to provide more concourse and platform capacity at London Kings Cross station.
- £0.7 billion – to tackle a bottleneck at Stafford, upgrade power supply, and improve signalling, and lengthen platforms at Bletchley (West Coast Main Line).
- £1.3 billion – A general programme of projects mainly aimed at allowing longer trains through longer platforms and power upgrades.

**Figure 4**  
Network Rail's annual enhancement expenditure



Source: Network Rail and Office of Rail Regulation

<sup>5</sup> All figures in this part are 2006-07 prices unless otherwise stated.

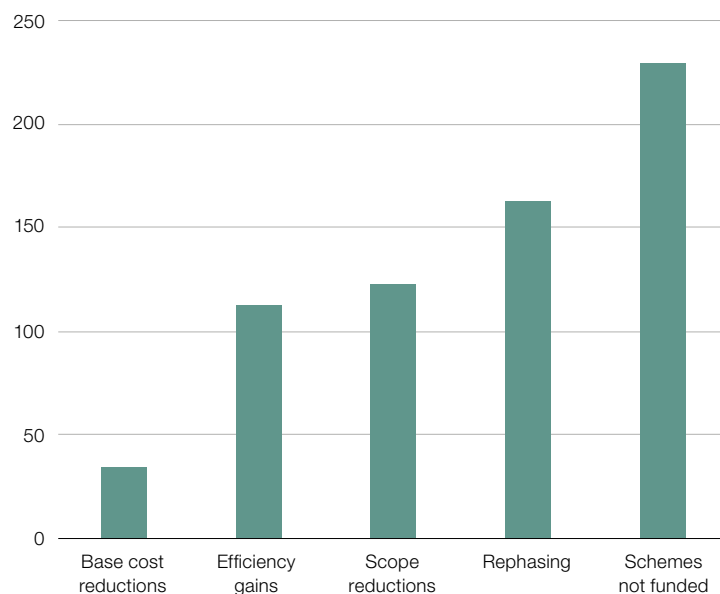
**2.5** The Regulator checked the affordability, but did not test the efficiency of the Thameslink programme – the budget and scope of which had been previously agreed between the Department and Network Rail. Similarly it checked the affordability but not the efficiency of the estimated costs of extra train services (both for Thameslink and other schemes), which the Department is procuring through franchise agreements.

**2.6** The Regulator scrutinised Network Rail’s non-Thameslink capacity enhancement proposals to test whether they were necessary and the costs were reasonable. Network Rail proposed capacity enhancements (excluding Thameslink) with a cost of £3.3 billion. The Regulator determined that an efficient cost of necessary capacity enhancements would be £2.6 billion. Over half of the £0.7 billion reductions were due to the Regulator reducing the scope of schemes or removing schemes (**Figure 5**).

**Figure 5**

Sources of reductions to Network Rail’s capacity enhancement programme (excluding Thameslink)

£ millions (2006-07 prices)



Source: Office of Rail Regulation

**2.7** The Regulator removed the 16 schemes listed in **Figure 6** on the basis that they were not necessary to meet capacity requirements, and reduced the scope of six others to the level necessary to meet those requirements. Network Rail had provided the Regulator with calculations that showed that its proposals, developed with train operators, met or bettered the required load factors for all areas, including some significant overprovision. In Leeds, for example, the proposals would have achieved a load factor of 59 per cent in the one-hour morning peak when it was only required to be 70 per cent or lower, which represents 27 per cent more additional capacity than forecast to be necessary. The Regulator therefore reduced the scope and cost of the scheme.

**Figure 6**  
Capacity schemes removed from Network Rail's plan

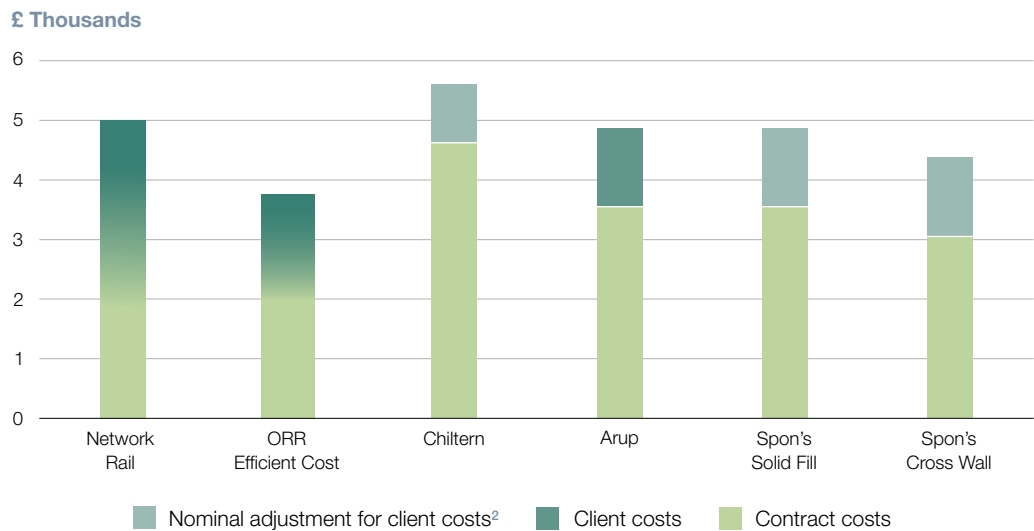
<b>Scheme</b>	<b>Cost (£ million)</b>
12-car operations on Sidcup and Bexleyheath routes (funded through Thameslink)	4.91
Liverpool Central new platforms	11.52
Liverpool James Street	8.32
Cogan Street upgrade	5.00
Ninian Park to Radyr linespeed improvements	5.00
West Croydon station development	5.00
West Anglia inner suburban 9-coach trains	32.39
Birmingham New Street new bay platform	3.00
Fenchurch Street and Chafford Hundred passenger circulation	2.00
West Croydon track capacity	15.10
Didcot-Oxford capacity upgrade	19.40
Bolton corridor package	7.32
Buxton Line capacity	15.28
Doncaster junction improvements	6.33
Hertford Loop	16.01
Swindon-Kemble redoubling	32.29
Risk allowance on these schemes	40.76
<b>Total</b>	<b>229.63</b>

*Source: National Audit Office analysis of Office of Rail Regulation final determination*

**2.8** The Regulator’s engineering advisors – Arup – checked the costings for platform extensions by estimating the cost per metre of platform extension from published industry price books (Spon’s) and manufacturers’ costed proposals. Arup arrived at a cost of £4,868 per metre for a 50-metre extension against the £5,000 per metre used by Network Rail. Arup also performed their own estimates, based on Network Rail’s asset inventory records, of the length of extension needed at each location. Where their figures differed substantially from Network Rail’s without good reason they substituted their own quantities. Where Network Rail specified additional work required, such as the relocation of signalling or realignment of track, Arup reviewed the need for and costs of any additional items and substituted their own estimates where they thought that these were more reasonable. Where no specification of additional work was available, Arup added a fixed percentage, estimated at 60 per cent, to the costs of the basic work.

**2.9** Our own work suggests Arup’s rate, which includes £3,544 for works contract costs, is reasonable for work in the UK (**Figure 7**). We analysed costs of platform extensions undertaken by Chiltern at five stations. These gave average contract costs of £4,626 per metre for Chiltern (generally for short extensions). We also reviewed costs for platform construction cited in Spon’s. Figure 7 also shows the Regulator’s estimate of £3,750 as the efficient all-in cost of platform extension using modular construction techniques. Their efficiency assumptions are discussed in paragraph 2.11.

**Figure 7**  
Costs for one metre long extension of platform – 2.5 metre width



**NOTES**

- 1 2006-07 prices.
- 2 Where separately shown, client costs are derived from Arup estimates of Network Rail’s client costs for items not covered by the contract. Actual client costs for Chiltern and Spon’s are not known.

Source: Office of Rail Regulation, Network Rail, Spon’s, Chiltern Rail

**2.10** The Regulator's advisors also developed independent estimates for other enhancement schemes, excluding Thameslink. Their ability to do so for some projects was limited by their early stage of development, which made it difficult to identify the quantities of work and apply independently estimated unit costs for components within each project. In these circumstances and indeed even for more mature schemes a shared understanding of the historic cost base and cost drivers used by Network Rail itself in preparing its own estimates would help underpin a robust financial settlement. The Regulator and its advisors had access to the Enhancement Price Book used by Network Rail to prepare or check estimates prior to defining detailed scope, but many of its rates were at a high level of aggregation and how they were constructed was not transparent.

**2.11** The efficiency savings that the Regulator required on some Network Rail projects helped keep taxpayer support for its capacity enhancement programme within allocated funds, but were not based on strong bottom-up evidence beyond platform extensions. On the basis of evidence of actual costs from the Netherlands, the Regulator concluded that savings of 25 per cent could be achieved on platform extension costs by using modular rather than conventional construction methods. The Regulator assumed that Network Rail could achieve an average 12.5 per cent reduction to its platform extension cost estimates, taking into account the large scale of the programme and the significant scope for modularisation.

**2.12** The Regulator commissioned consultants to estimate the potential for Network Rail efficiency gains on its enhancement spending more generally. They used a variety of top-down approaches to estimate potential efficiency gains on enhancement spend if Network Rail exhibited the same efficiency trend as comparator industries, or matched efficiency assumptions used by other regulators. On the basis of these analyses, evidence on efficiency potential for operations, maintenance and renewals, and judgements on the repeatability of work relative to platform extensions, the Regulator applied 7.5 per cent efficiency savings to power upgrades and 5 per cent to other schemes within the general programme of capacity enhancements. But these levels of efficiency savings were not supported by bottom-up evidence of actual costs, their trends over time or their current levels relative to comparators.

**2.13** The Regulator also incorporated three incentives for efficiency into the settlement. Network Rail:

- may effectively keep 25 per cent of underspends to use in the next control period, provided the outputs from the associated spending are achieved;
- must effectively absorb the first £50 million of overspend on enhancements, and 25 per cent of overspend above that level, as well as 100 per cent of any “manifestly inefficient” overspend, without these amounts being taken into account in its funding requirement for the next control period; and
- must put in place a management incentive plan designed to promote efficiency.

In making its determination the Regulator noted and welcomed Network Rail’s aspiration to raise new debt without reliance on government indemnity. This would have increased pressure from lenders to demonstrate efficiency. In practice it now looks unlikely that Network Rail will realise that aspiration in the short term.

**2.14** These incentives form part of the general economic regulation of Network Rail and we did not examine their effectiveness in detail. Network Rail, as a not-for-dividend company, is not subject to the normal pressures from shareholders to reduce costs. This places a greater burden on securing efficiency through a tight but achievable initial settlement.

**2.15** Both the Department and the Regulator had wanted to agree a baseline plan for delivery with Network Rail before the start of the five-year period that ran from April 2009 to March 2014. Network Rail published its Delivery Plan on 31 March 2009, but the Regulator required two subsequent revisions, the final one issued in September 2009, before it was content that it could form an appropriate baseline. The absence of an agreed baseline when committing to a five-year financial settlement with Network Rail created a risk that disputes over Network Rail’s obligations would emerge or extend although the level of taxpayer funding had already been committed.

**2.16** Network Rail must initiate a change request if it wishes to make a significant change to the scope of a project and must indicate the effect that change will have on outputs including capacity requirements and on cost. It must consult stakeholders such as Passenger Transport Executives before the Regulator decides whether to agree them. Provided the scope has not changed significantly, it is not required to agree significant changes in the cost of a project which otherwise arise. It is nevertheless important that the Regulator’s monitoring (if not its change control) allows it to alert the Department to big changes in estimates which might compromise the value for money of individual enhancements even if their scope is unchanged.

**2.17** The Department has kept Network Rail informed of the need for capacity-related infrastructure investment to avoid the risk of abortive investment if the Department were to change its plans for train operations on a particular route. Under the settlement for 2009-2014, Network Rail must deliver certain specified schemes, such as those at Reading and Kings Cross, and deliver other projects which together meet the need to accommodate extra demand. While some investment in, for example, platform extensions may be justified in advance of need, it would not represent value for money to have a wholesale mismatch between the provision of network enhancements and that of rolling stock. At the time of our work, Network Rail believed it still had adequate time to deliver all the enhancements required before the end of the 2009-2014 control period. Delays in finalising rolling stock plans could put timely delivery of associated infrastructure enhancements at risk.

# Part Three

## Securing extra capacity from train operators

### Progress

**3.1** The Department's first published rolling stock plan in January 2008 stated that 1,300 additional carriages were to be procured and run by 2014. It listed 15 train operators<sup>6</sup> that might get additional rolling stock. The Department is currently working on 14 "interventions" with train operators. By March 2010 seven of these had been partly or fully contracted. These interventions had secured operation of an extra 526 carriages. In addition, the Department had ordered 106 Pendolino vehicles whose operation is due to be secured through reletting of the West Coast Mainline franchise in 2012. The latest plan we saw showed that, for those projects then being pursued by the Department, while there had been some delays in meeting individual milestones, no final outcomes were due to be delayed beyond March 2014.

**3.2** In May 2010 the Department announced that it was pausing the rest of the programme in 2010-11. It will reassess uncommitted schemes in the light of overall spending requirements. Extra rolling stock that the Department has already contracted with train operators will still be brought into service.

### Governance

**3.3** The current governance arrangements are compliant with Treasury guidance, and have clear reporting and accountability lines. The Department's Programme Board receives monthly updates on the budget and forecast costs, the dates on which milestones have or will be delivered, the value for money of schemes, and risk registers for the Programme.

### Changes in the context for capacity investment

**3.4** The Department committed funding for Crossrail in October 2007 and expects this to provide over 100,000 extra peak places across London in 2017. In 2009 it announced that it would electrify more of the rail network. The Department is revising its rolling stock plan to reflect the effect of these changes, including the fact that fewer diesel and more electric carriages will be needed. It will not publish the revised plan until it has completed commercial negotiations on the Thameslink programme. This is because of the critical dependency of the plan on the Thameslink rolling stock.

<sup>6</sup> These operators were: c2c; One; National Express East Coast; First Capital Connect; East Midlands Trains; London Midland; Intercity West Coast; Chiltern; First Great Western; South Western; South Central; South Eastern; Cross Country; Transpennine Express; and Northern.

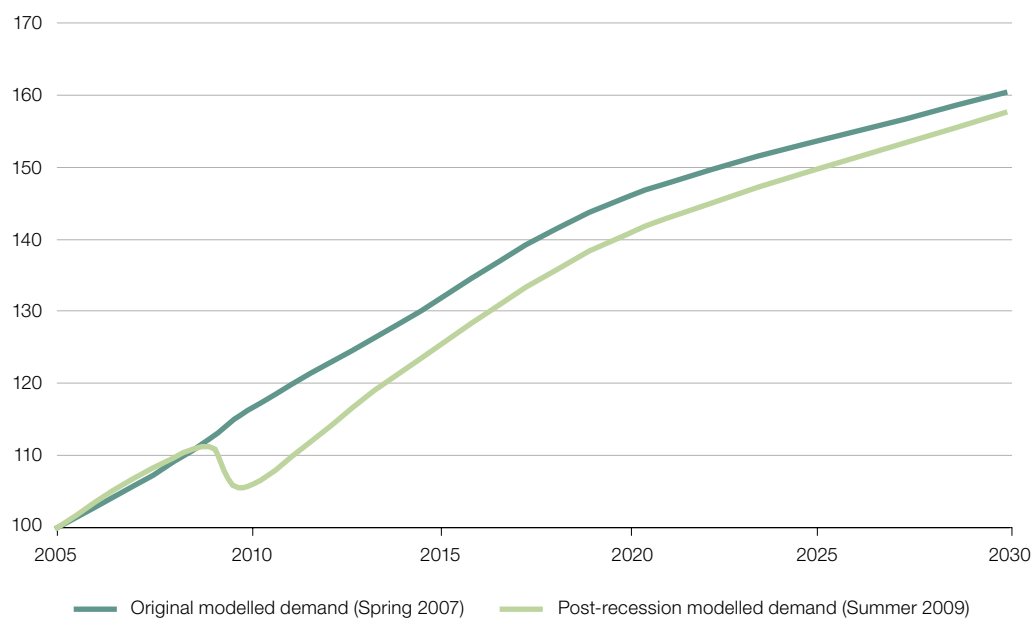


**3.5** The recession significantly affected the Network Modelling Framework’s projections of rail passenger demand (**Figure 8**). The Department monitored the benefit-cost ratios of the interventions it intended to implement in contracts with train operators. The modelled impact of the recession did not greatly change the benefit-cost ratio of the overall package of High Level Output Specification measures since the pool of unmet demand was still enough to yield benefits from reduced crowding even relative to a post-recession baseline, but it reduced the potential benefit-cost ratios of some individual schemes. The Department worked hard with train operators and Network Rail to modify the scope of projects to either increase their benefits and/or reduce their costs so that they had positive business cases, and did not take forward projects with a poor value for money case. It had not, however, tested the costs and benefits of deferring capacity investment beyond 2014 in the light of latest scenarios for future demand.

### Figure 8

Indicative effect of revised Treasury GDP forecasts on modelled rail passenger demand

Passenger Kilometres (Index 2005=100)



Source: Department for Transport

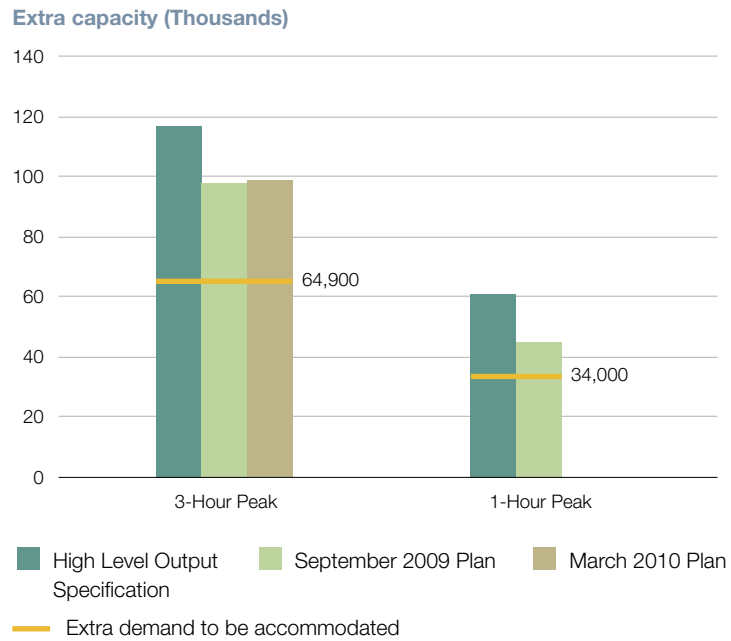
**3.6** In the light of these changes, the Department made some significant amendments to its rolling stock plan. In some cases it reduced the number of additional carriages that it sought from a particular operator, and in others the balance between electric and diesel carriages changed. Under the original rolling stock plan, the separate Thameslink Programme was to contribute around 170 of the 1,300 additional carriages to be procured and run on the network by 2014. However, later versions of the plan show that this has increased to around 294, although the overall number of carriages purchased for the Thameslink Programme has stayed the same. It is not apparent at this stage whether these extra Thameslink carriages are either delayed carriages which should already have been operating before the start of the current five-year planning period, or carriages which were not due to start operation until after 2014 but where estimated delivery has been brought forward.

**3.7** Passenger Transport Executives in the North of England told us that they feel the Department could have been more transparent when dealing with changes required to regional interventions. The Department is seeking to maximise taxpayer value through sensitive commercial transactions while delivering the additional capacity it has committed to, and believes it has been as transparent as it can in the circumstances. It is important to ensure that local transport bodies are properly consulted and informed about any changes the Department considers necessary.

### **Progress against output requirements**

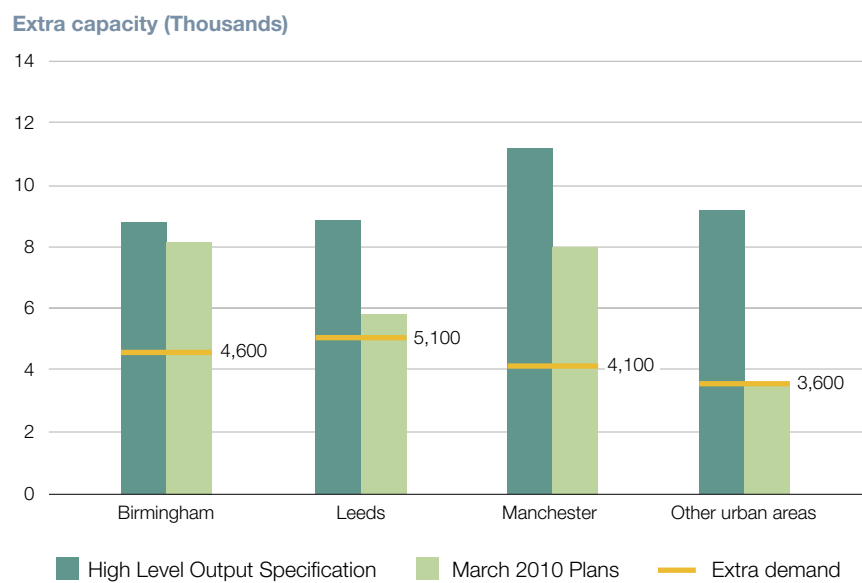
**3.8** The Department's latest plans would not have delivered as much extra capacity as originally envisaged and for which funding was provided in July 2007. Its latest plans showed an 18,000 seat (or 15 per cent) shortfall in extra capacity into London in the three-hour morning peak compared to the requirement implied in the White Paper. Our analysis of the Department's September 2009 plans showed a 17,000 seat (or 28 per cent) shortfall in the one hour peak (**Figure 9**). The latest plans also showed an overall 12,500 seat (33 per cent) shortfall in extra capacity for other major English cities in the three-hour peak (**Figure 10**). It is still expected to meet its requirements for crowding because of the forecast fall in demand.

**Figure 9**  
Planned capacity increases for London



Source: Department for Transport

**Figure 10**  
Planned capacity increases for other English cities – three-hour peak



Source: Department for Transport

**3.9** The Department's latest forecast showed that it expected to spend close to the £1.20 billion it originally earmarked for securing extra capacity from train operators. This was based on the actual cost of interventions already contracted, and the provision for outstanding interventions. No assurance can be given about the realism of the provisions for future interventions since they depend on the responses of incumbent train operators to requests for proposals, and the response of the market to invitations to tender for new franchises.

**3.10** There is some evidence that the cost of new rolling stock has risen significantly since publication of the White Paper, with key factors being higher costs of financing following the recession and credit crisis, and adverse movements in exchange rates. In the worst cases reviewed, costs had risen by almost 50 per cent since 2007. Such underlying cost movements can be moderated by maintaining competitive tension during procurement but they will inevitably exert upward pressure on the cost of securing extra capacity. These pressures have been offset in the period to 2014 by later delivery of additional carriages, but their full effect may create affordability problems thereafter.

### **Routes to securing extra capacity from train operators**

**3.11** The Department has three contractual routes available to secure extra capacity from train operators. It can:

- negotiate amendments to existing franchise agreements;
- incorporate extra capacity requirements when re-letting the franchises; and
- enforce provision of extra capacity on the basis of terms set in the original franchise if such terms were included.

National franchise terms require all operators to use "reasonable endeavours" to deploy the train fleets to give peak passengers a reasonable expectation of a seat within 20 minutes of boarding, and if this is not possible to minimise the extent of crowding and ensure any excess is not unduly concentrated on specific routes. National terms do not, however, require operators to expand their train fleets to avoid excessive crowding. Only the Chiltern franchise contains specific provisions requiring the operator to meet demand without exceeding specified load factors. Incentives under other franchises are not adequate for train operators to increase capacity without Government intervention, especially on commuter routes where they argue that relieving crowding generates little new fares revenue.

**3.12** The NAO's 2008 report on *Letting Rail Franchises* highlighted that extensive negotiation with incumbent train operators for extra carriages risks poor value for money.<sup>7</sup> The Department seeks to manage this risk by requiring a financial model in franchise bids, which is used as the basis for negotiations during the franchise. The timing of franchises was such that to put extra capacity in place by March 2014 the Department had to make extensive use of such negotiation. For eight of fourteen interventions, the Department is negotiating amendments to existing franchise agreements with the current operator<sup>8</sup>. We were not able to establish whether negotiation has proved more expensive than competition in practice, since too many other variables affect the cost per extra carriage of a particular intervention.

**3.13** Market interest in the most recent rail franchise competition was strong, but the outlook is uncertain. Four franchises<sup>9</sup> come up for renewal during 2009 to 2014 for which the Department has enough time to require improvements to capacity as part of its specification. To date, the Department has let the first of these for the South Central franchise. Although the recession had just started, and the costs of bidding were high (estimated in 2006 by the Association of Train Operating Companies to be between £3 million and £5 million), the Department shortlisted four bids for this competition.

**3.14** Incorporating a franchise requirement for the operator to provide capacity to meet demand without exceeding specified load factors avoids the risks of negotiation with operators to secure extra carriages. It can also avoid the risks of negotiating with Network Rail to secure infrastructure enhancements. The Chiltern Railways franchise requires the operator to provide enough capacity – in terms of both platform lengths and carriages – to meet demand during peak hours without exceeding specified load factors. The franchise also requires the operator to provide sufficient off-peak capacity to provide a seat for each passenger other than in exceptional circumstances – such as when off-peak trains serve a special event generating high demand. The operator must meet the costs of meeting these capacity obligations and will have taken this into account in their bid for the franchise. The circumstances of the Chiltern franchise are distinctive, with a long franchise, only one operator using the infrastructure, and strong growth potential, but the principle of incorporating obligations to avoid crowding in franchises may be more widely applicable. Against this should be balanced the extent to which a franchise bidder can evaluate the risk of meeting forecast demand and the premium they will charge for bearing it.

<sup>7</sup> *Letting Rail Franchises 2005-07*, Report by the Comptroller and Auditor General, HC 1047 Session 2007-2008, 15 October 2008.

<sup>8</sup> These eight are: National Express East Anglia, First Capital Connect, First Great Western, South West Trains, London Midland, Arriva Trains Wales, East Midlands Trains, and Northern.

<sup>9</sup> These franchises are: c2c, South Central, TransPennine Express, and Intercity West Coast.

# Appendix One

## Methods

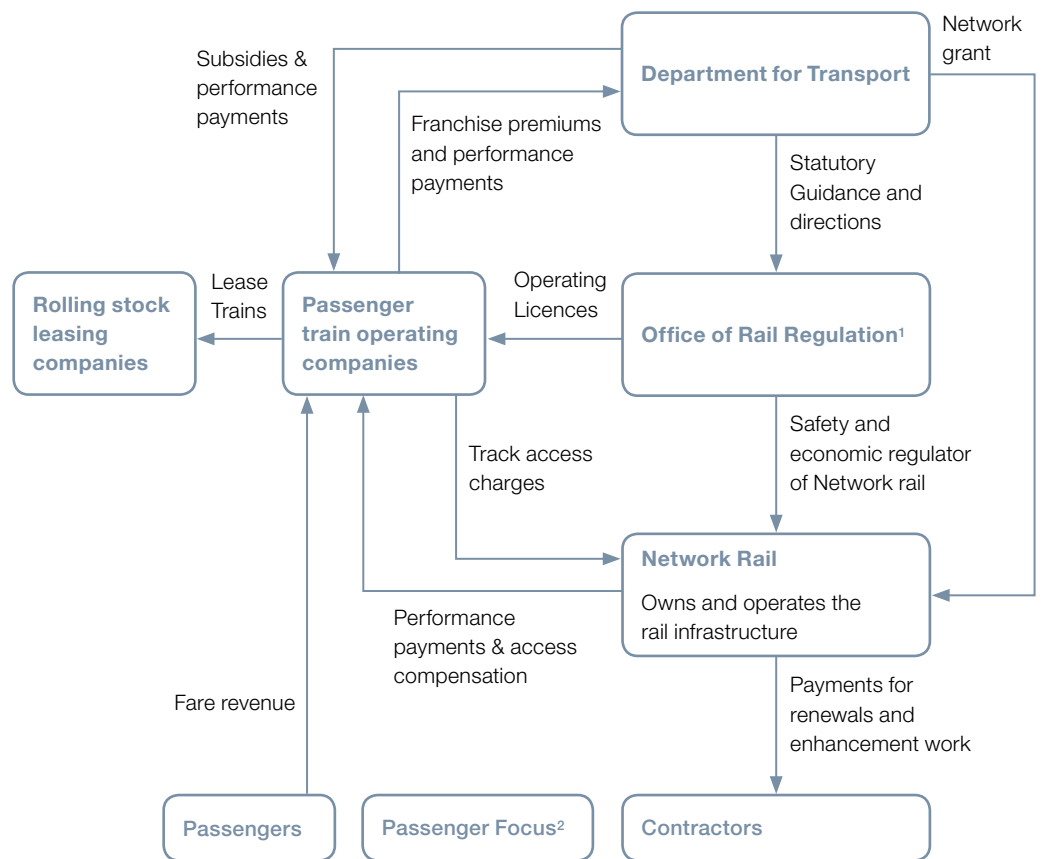
The main elements of our fieldwork, which took place between July and October 2009, were:

Selected method	Purpose
<p><b>1 Audit of the Department's forecasting model</b></p> <p>We commissioned the Institute for Transport Studies, University of Leeds, to audit the Department's forecasting model.</p>	<p>To identify the strengths and weaknesses of the model so it can be improved for the next round of planning for 2014-2019.</p>
<p><b>2 Benchmarking of platform extension costs</b></p> <p>We obtained data on costs of platform extensions undertaken by Chiltern Railways.</p>	<p>To compare with Network Rail's costs to see if the Regulator's scrutiny helped to secure value for the taxpayer.</p>
<p><b>3 Quantitative analysis</b></p> <p>We analysed the National Passenger Survey and the Department's passenger count data.</p>	<p>To understand passengers' views on crowding and to understand the actual level of crowding passengers experience.</p>
<p><b>4 Stakeholder consultation</b></p> <p>We communicated with a number of stakeholders interested in crowding on the railways, including industry bodies and passenger representatives.</p>	<p>To understand the many different issues different stakeholders are concerned about.</p>
<p><b>5 Review of board minutes</b></p> <p>We reviewed the Department's board minutes.</p>	<p>To ensure that proper governance procedures are in place, working effectively and to understand the Department's management information.</p>
<p><b>6 Reference partner</b></p> <p>We commissioned Professor John Preston of Southampton University to act as an independent expert to advise us on railway technical matters.</p>	<p>To quality assure our work.</p>
<p><b>7 Examination of the Regulator's scrutiny of Network Rail's costs</b></p> <p>We reviewed the Regulator's public documents, interviewed their staff, and examined supporting documentation.</p>	<p>To evaluate whether the Regulator's work was based on sufficient appropriate evidence.</p>

# Appendix Two

## The structure of the rail industry in England and Wales

The structure of the Passenger Rail Industry



**NOTES**

- 1 The Office of Rail Regulation is legally independent of the Secretary of State; and regulates Britain's railways.
- 2 Passenger Focus is an independent body set up by government to protect the interest of passengers.