

# Review of the Government's Strategy for a National High Speed Rail Network

January 2012

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# 1 About this document

- 1.1.1 This document reviews the Government's strategy for a national high speed rail network in light of responses to the *High Speed Rail: Investing in Britain's Future* consultation.
- 1.1.2 The Government received a wide variety of responses to this consultation, ranging from views and concerns to substantiated evidence. Responses were received from a variety of stakeholders, ranging from private individuals to representative bodies. All of this material, provided to the Government in written responses to the consultation as well as at consultation events, was considered.
- 1.1.3 This document provides analysis of the main strategic issues raised, to support the Secretary of State for Transport's decisions set out in *High Speed Rail: Investing in Britain's Future – Decisions and Next Steps*.

## 1.2 *High Speed Rail: Investing in Britain's Future* consultation questions

- 1.2.1 The Government's consultation asked seven questions. The first three questions related to the strategy for a national high speed rail network:

### **1. This question is about the strategy and wider context:**

*Do you agree that there is a strong case for enhancing the capacity and performance of Britain's inter-city rail network to support economic growth over the coming decades?*

### **2. This question is about the case for high speed rail:**

*Do you agree that a national high speed rail network from London to Birmingham, Leeds and Manchester (the Y network) would provide the best value for money solution (best balance of costs and benefits) for enhancing rail capacity and performance?*

### **3. This question is about how to deliver the Government's proposed network:**

*Do you agree with the Government's proposals for the phased roll-out of a national high speed rail network, and for links to Heathrow Airport and to the High Speed 1 line to the Channel Tunnel?*



- 1.2.2** This report analyses only those elements of consultation responses relating to the Government's strategy for a national high speed rail network, focussing on the most significant issues raised and the issues raised most frequently. In some cases the Government has undertaken or commissioned further research as a result of material provided in consultation responses, to inform its analysis.
- 1.2.3** Consultation responses related to the other consultation questions are considered in a range of other review documents available at <http://www.dft.gov.uk/topics/high-speed-rail/>.

# 2 The Government's high speed rail strategy set out for consultation

**2.1.1** The consultation document *High Speed Rail: Investing in Britain's Future* described the Government's proposed strategy for a national high speed rail network in Britain. This strategy was set within the Department for Transport's organisational vision, as described in its *Business Plan 2011-2015*<sup>1</sup>, for:

*"...a transport system that is an engine for economic growth but one that is also greener and safer and improves quality of life in our communities. By improving the links that help to move goods and people around, and by targeting investment in new projects that promote green growth, we can help to build the balanced, dynamic and low-carbon economy that is essential for our future prosperity."*

**2.1.2** The *Business Plan 2011-2015* identifies the delivery of a national high speed rail network as a key pillar of the Department for Transport's (DfT) plans to achieve this vision.

**2.1.3** The proposed strategy set out by the Government in the consultation document is summarised below.

## ***The case for enhancing the capacity and performance of Britain's inter-city rail network***

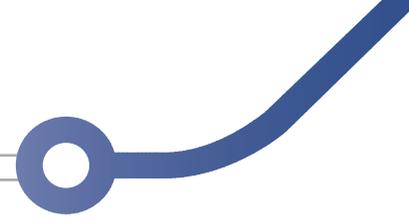
**2.1.4** Effective links between the UK's productive urban centres are vital for economic growth and rail is well-suited to such markets. However, expected demand growth for inter-city rail journeys is likely

to outpace the incremental capacity improvements achieved over recent years. By the mid-2020s Network Rail forecast that all capacity for additional or lengthened services will have been exhausted on the southern section of the West Coast Main Line. Unless this capacity challenge is addressed, rail passengers and economic growth will suffer.

**2.1.5** Passengers value reliable and quick rail journeys. The rail network currently achieves reliability levels of over 90 per cent, but as capacity becomes more constrained, achieving such levels of reliability is becoming increasingly difficult. Capacity constraints are also likely to lead to more crowding, making it even more challenging to meet passengers' expectations for their journeys.

**2.1.6** By directly linking the UK's four largest conurbations, as well as enhancing wider connectivity, the proposed network would transform journey times between the country's major cities, Heathrow Airport and the Continent. There would be significant journey time savings not just between London and Birmingham, Manchester and Leeds, but between the cities of the Midlands and the North themselves. The journey time between London and Scotland's major cities would also be reduced by services running from the high speed lines onto conventional routes.

<sup>1</sup> <http://www.dft.gov.uk/publications/dft-business-plan-2011-2015/>



***The case for enhancing rail capacity and performance through a Y-shaped national high speed rail network***

**2.1.7** The Government's strategy is not to cater for increases in inter-urban journeys through new motorways or domestic aviation. In respect of the rail options a Y-shaped high-speed network appears the best way to meet this capacity challenge. There will continue to be a role for incremental upgrades to many parts of the existing rail network, including the electrification of key lines. However, the long-term, strategic needs of the major north-south corridors would not be best served by such an approach alone. Significant incremental capacity upgrades to these lines would be excessively disruptive and unable to provide the same level of capacity as, nor match the overall benefits of, high speed rail. New conventional lines would not be significantly cheaper than new high speed lines and nor would their environmental impact be significantly less. The benefits of such lines would, however, be significantly lower, making their value for money worse. Therefore a high speed rail network would represent the optimal solution for dealing with the UK's long-term rail capacity challenge on its main north-south lines, supporting low-carbon economic growth and meeting passengers' expectations.

***The case for phasing the proposed high speed rail network, and for links to Heathrow Airport and the High Speed 1 line to the Channel Tunnel***

**2.1.8** The Government's proposal is for the Y-shaped network to be delivered in two phases. The first phase would comprise an initial line from London to the West Midlands, including a link to the existing West Coast Main Line to enable high speed trains to serve destinations further

north including Liverpool, Manchester and Glasgow. It would also incorporate a connection onto the High Speed 1 line to the Channel Tunnel. The second phase would comprise two lines from the West Midlands to Manchester and to Leeds, including stations in South Yorkshire and the East Midlands and a direct link to Heathrow Airport.

**2.1.9** The Government feels that a phased approach is correct to help ensure rapid and early progress with the London to West Midlands section as well as to effectively manage the Parliamentary, cost and construction implications of such a large project.

**2.1.10** The Government also believes that there is a strong strategic case for ensuring that two of Britain's most important international passenger gateways (Heathrow and the Channel Tunnel) are integrated with HS2.

***The analysis***

**2.1.11** The consultation responses and evidence presented in relation to the strategy summarised above are analysed in the subsequent chapters.

# 3 Enhancing inter-city rail capacity and performance to support economic growth

**3.1.1** This chapter reviews the Government's case for enhancing the capacity and performance of Britain's inter-city rail network to support economic growth, in light of responses received to Question 1 of the consultation *High Speed Rail: Investing in Britain's Future*:

*Do you agree that there is a strong case for enhancing the capacity and performance of Britain's inter-city rail network to support economic growth over the coming decades?*

**3.1.2** The most significant issues raised in responses, and the issues raised most frequently, are set out and considered below. This chapter also draws on any subsequent analysis and assessment undertaken by the Department for Transport.

## 3.2 The Government's case

**3.2.1** The case set out for enhancing the capacity and performance of the inter-city rail network in the consultation document was based on the Government's commitment to providing a strong basis for long-term and sustainable economic growth in the UK. Key to this is creating the right environment for private enterprise to flourish and re-balancing our economy.

**3.2.2** The consultation document explained that for Britain and its major cities to compete effectively in the 21st century, it is vital

that the right infrastructure is in place. Infrastructure helps promote competitiveness – by boosting productivity, reducing costs and increasing efficiency, and expanding business and labour markets.

**3.2.3** The UK's transport networks provide the crucial links that enable firms to operate efficiently. The country's rail links play a vital role in this. Rail commuter networks support the deep labour markets that underpin the productivity of the UK's cities. Inter-city lines have an unrivalled capacity to enable rapid and direct journeys between central business districts – avoiding traffic jams and the difficulties of finding parking space. And the rail freight industry is playing an ever stronger role in ensuring goods and raw materials get to the right place at the right time.

### **Enhancing network capacity**

**3.2.4** Britain's rail network is experiencing a continuing pattern of steeply rising demand. As a result, rail capacity is under increasing strain and services are growing more crowded.

**3.2.5** Between 1994/95 and 2009/10, total passenger miles travelled rose from 18 billion to almost 32 billion. The fastest growth of all has been in demand for long distance travel, which continued to rise even through the recent recession. The total number of long distance journeys

made more than doubled in the period from 1994/95 to 2009/10.

- 3.2.6** As capacity on the network becomes ever more intensively used, the scope to meet rising demand by running additional services and longer trains is becoming increasingly limited. This means that some of the country's key rail routes are forecast to be completely full in peak hours in the next 20 years. If demand carries on rising in this way, it is clear a substantial expansion in rail capacity will be needed to prevent economic growth being suppressed.

#### ***Enhancing network performance***

- 3.2.7** Rising demand for travel and increasing overcrowding are not the only challenges facing Britain's rail networks. Experience on the West Coast Main Line following the completion of the route modernisation programme demonstrates the value placed by travellers on reducing journey times and improving reliability.
- 3.2.8** But maintaining current levels of reliability is likely to become increasingly challenging as more services are accommodated on the network and those services become more crowded. Yet public expectations of reliability are rising as they witness enhancements to performance in a range of consumer sectors – particularly as other countries are seen to invest in improving connectivity and modernising their networks.
- 3.2.9** Incremental upgrades have a role to play on many parts of the network but it is only by making a step-change in the capacity – with related benefits for performance – of our core North-South inter-urban rail network that the network will continue to be an engine for, rather than a brake on, economic growth and provide the levels of performance that passengers increasingly expect.

## **ISSUES RAISED DURING CONSULTATION**

### **3.3 Enhancing the capacity of Britain's inter-city rail network**

#### ***Inter-city transport capacity***

- 3.3.1** A number of respondents agreed with the Government's view that there was a need for additional inter-city travel capacity in the UK to support economic growth, and that this would be best provided through additional rail rather than road or air capacity. This view was often based on the perceived greater environmental sustainability of rail compared to road or air.
- 3.3.2** The practical constraints of creating additional road capacity, particularly into city centres, and the rising price of fuel were also identified as reasons to favour increased rail capacity over road expansion.
- 3.3.3** Some respondents suggested that Government policy should be to reduce the need to travel rather than enable it, claiming that increasing travel is not compatible with the Government's environmental objectives. The Government sees a clear case for enabling travel where it is environmentally sustainable. The ability to travel has been one of the great transformational forces of the last 200 years and will continue to be so; the free movement of people and goods is not only critical to our economic prosperity, but is fundamental to a vibrant, creative and healthy society.
- 3.3.4** Our view is that enabling inter-city travel by rail to support economic growth is entirely consistent with Government's

objectives for greener, safer transport. As well as offering greater carbon efficiency per passenger mile than road or aviation, rail is particularly well-placed to cater for city centre to city centre travel. Enhanced rail capacity can also play a role in ensuring people can continue to make journeys of value to society and communities, such as visiting family and friends. The environmental case for additional rail capacity is discussed in more detail later in this chapter.

- 3.3.5** It should also be noted that increased rail capacity is not just required to cater for additional passenger journeys. Rail freight on the network is predicted to double by 2030 through a combination of Government policies to encourage modal shift, increased fuel prices and concerns about environmental impacts. The Government supports the provision of new capacity on the national rail network for journeys that matter most for economic growth. Supporting key container freight flows will drive economic growth and help to tackle road congestion, as well as generating carbon savings.

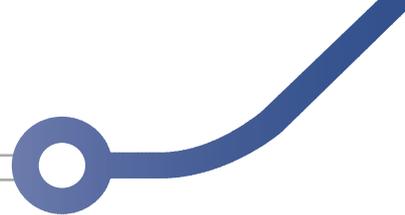
### ***Inter-city rail capacity***

- 3.3.6** Many consultation responses supported the Government's view that capacity on the existing inter-city rail network is an issue that needs to be addressed. Respondents cited the capacity constraints on the West Coast Main Line in particular in support of this view but also on the Midland and East Coast main lines. Crowding on commuter services into London was also highlighted as a reason for providing more capacity, supported by the demand forecasts from Network Rail's Route Utilisation Strategies<sup>2</sup> that indicate the extent of the future

capacity shortfall on certain sections of the network. Some respondents argued that extra capacity was required to allow the rail freight industry to grow, both encouraging modal shift to rail and preventing modal shift away from rail due to constraints on track capacity for freight on key lines.

- 3.3.7** Other responses argued that no additional inter-city rail capacity was required because the crowding experienced on the West Coast Main Line is the result of the prevailing rail fares structure and not excess demand. Some asserted that standing on services leaving Euston in the evening is concentrated on the first departure after 7pm, and attributed this to the service being the first of the evening where cheaper "off-peak" fares are available. This, it was argued, creates artificial crowding as people would like to travel earlier when there are fewer or no standing passengers.
- 3.3.8** The Government accepts that there may be some passengers who travel after 7pm in order to take advantage of off-peak fares and changes to the fares structure may be capable of transferring a small number of passengers to less crowded services. However, it is also important to take account of the long-term increase in rail demand that is forecast. Such fares changes could only provide a short-term tactical response to a much larger problem on our railways, which requires a proportionate, strategic response. Small adjustments at the margins of our railway system would be unlikely to provide a long-term solution to the capacity challenge faced on our inter-city railways.

2 <http://www.networkrail.co.uk/asp/4449.aspx>. Accessed November 2011



#### **Passenger demand forecasting and videoconferencing**

- 3.3.9** Some respondents presented the view that, although some additional capacity was required, the amount was overstated by the Government. Respondents argued that the Government's demand forecasts were inflated or unsubstantiated and that the availability of modern communication technologies, such as videoconferencing, would reduce the need for extra capacity.
- 3.3.10** The Government's demand forecasts have been developed in line with established Government and industry practices and we have received no evidence to cause us to significantly doubt their content. This is discussed in more detail in the *Economic Case for HS2: Value for Money Statement*.
- 3.3.11** The impact of modern communication technologies on rail demand is complex, but the argument that such advances will mean that significantly less additional rail capacity is required appears to be overstated. Only around 30 per cent of journeys on HS2 are projected to be business journeys, which is the travel type most likely to be affected by advances in communications technology. Such advances would need to have a significant dampening effect on demand to make additional capacity unnecessary.
- 3.3.12** There is little historical evidence to suggest that advances in communication technologies lead to reductions in travel demand. There have been a series of technological advances over a number of centuries that have improved people's ability to communicate, from the telegraph and the telephone to the mobile phone and the internet. Despite communication devices becoming ever more sophisticated and accessible to the public, recent decades

have still seen increasing demand for travel, and particularly for rail travel. Communication technologies such as video conferencing have been available for a number of years, but during this time business demand for travel, including rail travel, has continued to rise.

- 3.3.13** Videoconferencing and improved communication technologies are taken into account in our demand forecasts, within our consideration of changing social behaviours. This is discussed in more detail in the *Economic Case for HS2: Value for Money Statement*.
- 3.3.14** Some respondents pointed to the demand forecasts for HS1 as evidence that the forecasts for HS2 were overstated but this is a misleading comparison. Demand forecasting for HS1 was particularly challenging as it provided a completely new international service meaning there was less evidence on which to base passenger numbers. HS2 provides additional capacity for existing services where we have a much greater wealth of evidence of the market. In addition, services on HS1 began at around the same time as considerable changes in the aviation sector, which were not foreseen in the original demand forecasts. This meant that HS1 services were unexpectedly competing with the services offered by low-cost airlines.

#### **McNulty Report**

- 3.3.15** A number of respondents felt that the Government's strategy was not consistent with the 'predict, manage and provide' approach recommended in Sir Roy McNulty's independent *Rail Value for*

*Money Study*.<sup>3</sup> Such an assertion misunderstands the study's recommendation, because it made clear that investment in new infrastructure remains a necessity where existing system capacity is unable to meet growth in demand or to deliver required improvements in performance. The Government is clear that incremental upgrades to the existing network are unlikely to be able to accommodate expected increases in demand on the core North-South lines, so new infrastructure offers a better solution. This is discussed in more detail in Chapter 5.

**3.3.16** Managing demand on the existing infrastructure would only be possible through reducing access to services through fares increases. This is inconsistent with the thrust of McNulty's focus on increasing the efficiency of the railway and reducing its costs. It would also be incompatible with the Government's objectives for a greener, safer transport system as this would be likely to encourage greater use of roads and aviation. Therefore, the Government believes its approach on HS2 is consistent with its wider objectives for the railways.

## 3.4 Enhancing the performance of Britain's inter-city rail network

### ***Reliability and connectivity***

**3.4.1** Many respondents agreed with the Government's view that it was important to improve the performance of rail links between Britain's main cities. Reliability and connectivity were two of the key

areas of performance highlighted as being important for the passenger experience. In contrast, some respondents argued that the performance of our inter-city rail services was already adequate and that no further investment was required. Some believed that the existing London to Birmingham services perform sufficiently well, both in terms of frequency and reliability.

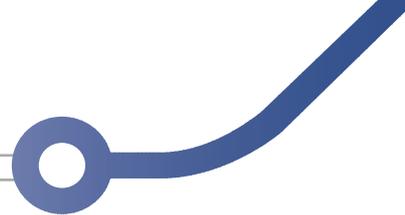
**3.4.2** The reliability of the UK's rail network has improved steadily, with a 10 per cent improvement in punctuality since 2004. Between 2000 and 2010 passenger satisfaction has risen from 73 to 84 per cent.<sup>4</sup>

**3.4.3** However, whilst the rail industry has been very successful in improving reliability, and therefore customer satisfaction, over recent years, maintaining these levels of performance is likely to be increasingly challenging on our most congested routes. As more services are accommodated in response to growing demand so the risk of reduced reliability increases. Network Rail report that the West Coast Main Line is currently a comparatively poor performer in terms of reliability. Any additional services to accommodate demand growth are likely to put further pressure on reliability.<sup>5</sup> Although satisfaction has increased, we know that passengers seek ever higher levels of performance. As passenger demand increases it would be challenging for these expectations to be met with the existing infrastructure.

3 <http://www.rail-reg.gov.uk/upload/pdf/rail-vfm-summary-report-may11.pdf>

4 <http://www.passengerfocus.org.uk/research/nps/content.asp>

5 *Review of the Strategic Alternatives to High Speed Two*, Network Rail, 2011



### **Journey times**

**3.4.4** Many respondents identified the need for improved journey times between the main urban centres in the UK, drawing unfavourable comparisons with elsewhere in Europe. They highlighted the fact that it took roughly the same time to travel by train from London to Brussels than from Leeds to Birmingham or Leeds to London. Journey times between regional cities were seen as particularly poor.

**3.4.5** But others argued that existing journey times were competitive, and comparable with inter-city rail travel in European countries that already possessed high speed rail networks. In practice available evidence suggests that journey time savings are valuable to the majority of rail passengers. The experience of the French high speed rail operator, SNCF, is that market share increases as journey times decrease, indicating that faster journeys are attractive to rail passengers.<sup>6</sup> Experience on the West Coast Main Line following completion of the route modernisation programme also indicates the value placed by passengers on reducing journey times and improving reliability, with usage of the line increasing rapidly and rail's overall share of the market on this key inter-urban route growing substantially.

**3.4.6** Some of those who saw no case for improving the performance of our inter-city rail network argued that improvements should be made to commuter and intra-city rail lines instead. These points are discussed in Chapter 5.

6 Transport Select Committee, High Speed Rail inquiry 2011: <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmtran/1185/11062101.htm>

## **3.5 Supporting economic growth**

### **Infrastructure investment and economic growth**

**3.5.1** Some organisations believed that Britain is lagging behind its competitors in terms of infrastructure investment. Respondents argued that infrastructure investment is important to economic growth. There is evidence for a link between investment in infrastructure (and hence its performance) and economic growth. The OECD found, for instance, that between 1970 and 2005, investment in UK roads, rail and electricity generating capacity had a stronger positive effect on the level of GDP per capita, and on short term growth, than other types of capital investment.<sup>7</sup>

**3.5.2** Over the past 15 years the UK has invested a relatively low proportion of its GDP in economic infrastructure, relative to the OECD average.<sup>8</sup> This indication of relative under-investment compared with our European competitors is something which this Government is seeking to address, particularly in light of evidence demonstrating that marginal infrastructure projects in the UK continue to exhibit high benefits relative to costs. The Government has signalled its intentions to invest in economic infrastructure in the National Infrastructure Plan<sup>9</sup> and in the recent Growth Review.<sup>10</sup>

7 Egert, B, Kozluk, T and Sutherland, D (2009) 'Infrastructure and Growth: Empirical Evidence'. *OECD Economics Department Working Papers 685*.

8 [http://cdn.hm-treasury.gov.uk/national\\_infrastructure\\_plan291111.pdf](http://cdn.hm-treasury.gov.uk/national_infrastructure_plan291111.pdf) pg14

9 [http://www.hm-treasury.gov.uk/ppp\\_national\\_infrastructure\\_plan.htm](http://www.hm-treasury.gov.uk/ppp_national_infrastructure_plan.htm)

10 [http://www.hm-treasury.gov.uk/ukecon\\_growth\\_index.htm](http://www.hm-treasury.gov.uk/ukecon_growth_index.htm)

**3.5.3** Currently the UK is lagging behind its international comparators in terms of infrastructure quality – we rank 28<sup>th</sup> in the World Economic Forum's Global Competitiveness Index and 16<sup>th</sup> in the World Bank's Logistics Performance Index. This provides further support for the Government's strategy for investment in infrastructure to help support economic growth.

### **Transport infrastructure and economic growth**

**3.5.4** Many respondents agreed with the Government's case that increasing the capacity of Britain's inter-city rail network would support economic growth by meeting rising demand, and that failing to meet this demand would constrain growth. There was also considerable support for improving rail performance to promote economic growth, for example improving the rail connectivity of key cities in the North was considered essential by some to support ongoing economic growth in the Northern regions.

**3.5.5** Other respondents argued that the link between rail capacity and performance, and economic growth, was weak and unsubstantiated. Others disagreed with the suggestion that economic growth is being, or will be, constrained by the capacity and performance of the inter-city rail network.

**3.5.6** The Department has considered the impact of transport services on the economy a number of times in the past,<sup>11</sup>

including wide-ranging reviews of expert advice and evidence. It is familiar with the challenges involved, and the varying degrees of certainty inherent in the different types of evidence available, which lead to different views being put forward on this subject. The Department's assessment of the evidence remains that there are strong grounds to expect a positive impact of well-targeted transport improvements on the economy, particularly when supported by complementary local policies.<sup>12</sup> This is discussed in more detail in Chapter 4. It is also notable that no major business organisations supported the case that transport investment was not important for their businesses and economic growth.

**3.5.7** Other respondents acknowledged the link between transport investment and economic growth but felt that that investment should go into other modes of transport or elsewhere on the rail network to have the greatest impact on economic growth. This issue is discussed in Chapter 4.

## **3.6 The Government's carbon objectives**

### **Modal shift**

**3.6.1** Although most respondents addressed the theme of carbon emissions in relation to high speed rail (see Chapter 4) a small number addressed the issue of inter-city rail capacity and performance, and emissions. Most of these focussed on the important role that modal shift from road and air to rail could play in reducing the

11 *Report of the Advisory Committee on Trunk Road Assessment (ACTRA)*, 1977

The Standing Advisory Committee on Trunk Road Assessment (SACTRA), 1999, *Transport and the Economy*

Eddington (2006) *The Eddington Transport Study* <http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/about/strategy/transportstrategy/eddingtontstudy/>

12 [http://projetic.ucs.inrs.ca/pdf/report\\_IC.pdf](http://projetic.ucs.inrs.ca/pdf/report_IC.pdf)  
[http://ace2011.org.au/ACE2011/Documents/Abstract\\_Minoo%20Farhadi.pdf](http://ace2011.org.au/ACE2011/Documents/Abstract_Minoo%20Farhadi.pdf)



UK's net carbon emissions. They felt that improved rail capacity and performance had an important role to play in encouraging this modal shift from road and air, by making rail more attractive than car or plane journeys, particularly in the London to Scotland domestic aviation market. Other respondents highlighted that removing freight from the roads would help reduce both carbon emissions and congestion, noting that without additional rail capacity the freight industry's plans for modal shift would be severely constrained.

**3.6.2** These comments support the Government's view that improving rail capacity and performance is entirely consistent with our ambitions to reduce carbon emissions in line with the Government's Carbon Plan.<sup>13</sup>

**3.6.3** Rail is a comparatively carbon efficient mode, generally creating significantly fewer carbon emissions per passenger mile than either car travel or aviation. Even allowing for the fact that power usage increases with speed, the high levels of passenger usage that high speed services tend to attract mean that per passenger carbon emissions remain comparatively low, and as the grid decarbonises over the longer term the operation of high-speed rail will be substantially decarbonised as well.

**3.6.4** On a lifecycle basis, most of the carbon emissions associated with a rail network are those resulting from its operation, which can be mitigated in a variety of ways. The carbon emitted during construction, and embodied in the infrastructure and trains, is significant but can be managed and reduced by applying best practice.

In addition, many of the carbon emissions from building and running a high speed line are covered by the European Union Emissions Trading System, meaning much of the carbon impact of HS2 would be offset by emissions reductions elsewhere.

**3.6.5** The Government is working closely with the rail industry to improve energy efficiency and reduce emissions across the rail network. Next year the rail industry will publish its second Rail Technical Strategy assessing how, over the longer term, technology can help deliver a more cost-effective, higher capacity, higher performance and lower carbon railway.

**3.6.6** Enhancing inter-city rail capacity presents an important opportunity for reducing the UK's net carbon emissions, through modal shift, not only of passengers from air to rail, but of freight from roads to rail. HS2 will release capacity on key sections of the conventional network, for example along the West Coast Main Line, and some of this could be used to provide additional freight services. The Rail Freight Group estimates that providing additional freight capacity on our railways could save some 500,000 tonnes of carbon emissions per annum by removing around 200 trucks an hour that would otherwise be added to the M40, the M1 and parallel 'A' roads. The Government's high speed rail strategy has been broadly supported by the rail freight industry in its responses to consultation.

<sup>13</sup> [http://www.decc.gov.uk/en/content/cms/tackling/carbon\\_plan/carbon\\_plan.aspx](http://www.decc.gov.uk/en/content/cms/tackling/carbon_plan/carbon_plan.aspx)

# 4 Enhancing rail capacity and performance through a Y-shaped national high speed rail network

**4.1.1** This chapter reviews the Government's case for enhancing rail capacity and performance through a Y-shaped national high speed rail network, in light of responses received to Question 2 of the consultation *High Speed Rail: Investing in Britain's Future*:

*Do you agree that a national high speed rail network from London to Birmingham, Leeds and Manchester (the Y network) would provide the best value for money solution (best balance of costs and benefits) for enhancing rail capacity and performance?*

**4.1.2** The most significant issues raised in responses, and the issues raised most frequently, are set out and considered below. This chapter also draws on any subsequent analysis and assessment undertaken by the Department for Transport. A key theme of many consultation responses that disagreed with the Government's proposals was that enhancing the existing rail network would offer a better alternative to high speed rail. This is discussed in detail in Chapter 5.

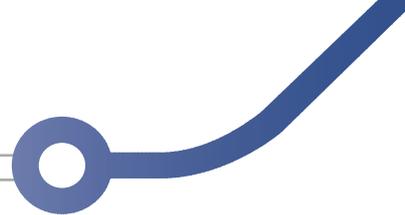
## 4.2 The Government's case

**4.2.1** The Government's case, set out for consultation, for a Y-shaped high speed rail network as the optimal approach for addressing the UK rail's capacity challenge, was based on a thorough review of the costs and benefits of different options to meet this challenge. This included new lines – both high speed and conventional – and upgrades to existing infrastructure.

**4.2.2** The Government's view was that a new high speed rail network was the right approach as it would generate significantly greater benefits for travellers in terms of capacity, connectivity and reliability than any of the other options considered, as well as offering valuable potential to support the Government's wider strategy to promote long-term and balanced economic growth.

### **Assessing costs and benefits – high speed rail**

**4.2.3** The Government favoured a Y-shaped high speed rail network, comprising a line from London to the West Midlands and onward legs to Manchester and Leeds, with direct links to the Channel Tunnel and Heathrow Airport. This network would cost around £32 billion to construct (in 2009 prices) – revised costs for HS2 are detailed in the *Economic Case for HS2: Updated Appraisal of Transport User Benefits and Wider Economic Benefits* – and would deliver very significant benefits



for rail travellers, including unprecedented increases in capacity and reductions in journey times, as well as making a major contribution to economic growth, job creation and regeneration. These benefits are set out in more detail below:

- **Increased capacity:** A national high speed network would transform rail capacity between London and the major cities of the Midlands and the North. New high speed lines would enable 14 or more additional train services per hour and be designed to accommodate larger and longer trains able to carry up to 1,100 passengers.
- **Transferring long-distance services** to this network would also enable capacity to be released on the West Coast, East Coast and Midland main lines, which could be used to increase the number of services to other important destinations, including enhancing service levels on key commuter routes.
- **Improved reliability:** Dedicated high speed lines can deliver high levels of reliability. The High Speed 1 line to the Channel Tunnel has an annual average of just 6.8 seconds delay per train due to infrastructure incidents.
- **Faster journeys:** Speeds of up to 225 miles per hour (and potentially faster in future) would transform journey times, bringing Birmingham within 49 minutes of London, and Manchester and Leeds within 80 minutes. Travelling from Birmingham to Manchester would take around 50 minutes and to Leeds just over an hour. Benefits would also be felt from through-running services onto the conventional network – cutting journey times from London

to Glasgow and Edinburgh to around 3 hours 30 minutes.

- **Enhanced integration:** Links to urban transport networks (such as Crossrail at Old Oak Common) would further reduce end-to-end journey times – bringing Leeds and Manchester within 1 hour and 40 minutes of Canary Wharf.
- **Modal shift:** This enhanced capacity and connectivity could see significant numbers of air and road trips shift onto rail. HS2 Ltd's updated projections of modal shift from air and road resulting from the Y network are detailed in the *Economic Case for HS2: Updated Appraisal of Transport User Benefits and Wider Economic Benefits*.
- **Wider economic benefits:** The additional capacity and connectivity created by new high speed links would generate valuable wider economic benefits, for instance by contributing to increased business productivity. A London to West Midlands line alone would deliver benefits of this kind worth approximately £4 billion.

### ***The strategic case for high speed rail***

**4.2.4** In addition to the strong case for high speed rail as the appropriate solution for capacity and performance issues, the Government considered that high speed rail could play an important role in promoting growth of the national economy, as faster, more reliable and more comfortable journeys between our major conurbations would help to enhance business productivity.

**4.2.5** At a regional level the Government's view was that high speed rail would promote growth by reducing journey times between the major cities of the Midlands and the North, enabling them to increase specialisation, attract new businesses and merge labour and client bases. Improved connectivity with London and international gateways was also considered to have a valuable role to play in enhancing regional productivity, helping to attract additional and more productive businesses to a city or region, and boosting productivity in existing firms by providing access to major new markets and enabling them to more easily attract the most highly skilled workers. This would help to encourage growth and investment outside of London and the South East, thus supporting sustainable long-term growth and contributing to reducing regional disparities.

**4.2.6** High speed rail was also considered likely to act as a catalyst for regeneration, as has been seen in cities across Europe, such as Lille, where the arrival of high speed rail drove the development of the major Euralille complex. A British high speed rail network could contribute strongly to regeneration in England's major cities, for example at Old Oak Common in West London and in the Eastside district of Birmingham. A London to West Midlands line alone was assessed as having the potential to support the creation of around 40,000 jobs.

## ISSUES RAISED DURING CONSULTATION

### 4.3 The strategic case for high speed rail

#### **Transport strategy**

**4.3.1** A general theme in consultation responses was that the Government should articulate an integrated national transport strategy before considering any proposals for new high speed lines. This strategy should set out the Government's strategic objectives for the whole transport network, and proposals for high speed rail should be assessed against these objectives.

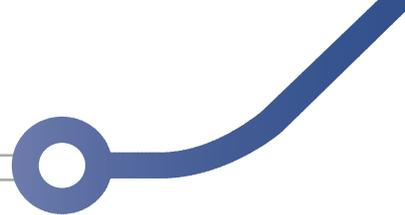
**4.3.2** This view was supported by the Transport Select Committee report on high speed rail,<sup>14</sup> which stated that:

*"The Government should set out in more detail than what is available in the Business Plan not only why HS2 is desirable, but how it fits within an overall transport strategy", and "The Government should explain more clearly that growing demand is to be welcomed and fostered for strategic reasons, and why this doesn't apply to road and air".*

**4.3.3** Some respondents asserted that a lack of wider transport strategy indicated that the decision on HS2 had been predetermined.

**4.3.4** Set against this is the argument that the Department for Transport's Business Plan and vision provide a clear strategy for transport, and high speed rail is consistent

14 <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmtran/1185/118502.htm>



with this. The Government's vision for transport in the Business Plan is for "a transport system that is an engine for economic growth, but one that is also greener and safer and improves quality of life in our communities." By "improving the links to help move goods and people around...we can help to build the balanced, dynamic and low carbon economy that is essential for our future prosperity". Through the High Level Output Specification for rail,<sup>15</sup> the 5 year strategic plan for Highways,<sup>16</sup> and the Civil Aviation Authority's Strategic Plan,<sup>17</sup> the UK has set out the objectives for transport across the different modes.

**4.3.5** The forthcoming National Networks National Policy Statement will set out the Government's policy for the national road and rail networks, including a description of the pressures they will face in the future, predominantly from demand growth, and detailed guidance on how to assess and mitigate the impacts of these pressures.

**4.3.6** On examination we consider that the high speed rail proposals are consistent with the Government's overall strategy as the project is designed to improve the links that move people and goods around and, in this way, provide support to economic development.

**4.3.7** The case for investing in rail rather than other modes such as roads and aviation has been discussed in Chapter 3. The Government's policy has been made clear through its actions; the decision to cancel

the third runway at Heathrow, and not to support additional runways at Gatwick and Stansted, demonstrates the Government's desire to see modal shift away from domestic aviation routes wherever possible. The Government is committed to producing a sustainable framework for UK aviation and in March 2011 published a scoping document to initiate a dialogue with a wide range of stakeholders on the future direction of aviation policy. We intend to issue a draft framework for consultation by March 2012.

**4.3.8** Similarly, the Government does not see a case for major motorway expansion, focussing its strategic roads policy instead on addressing pinch points on the motorway network and rolling out managed motorways as more appropriate ways in which to enhance performance and capacity.

**4.3.9** On balance the evidence suggests that a strategic transport framework exists to allow a decision on high speed rail to be taken and that pursuing high speed rail is consistent with it.

### **High speed rail strategy**

**4.3.10** Some respondents suggested that the strategic case for HS2 had not been presented clearly; specifically that the relative importance of increasing capacity and increasing speed had not been clearly articulated. Some respondents also felt that the integration of high speed rail strategy into supporting policies for land use, economic development and local transport to maximise the social and economic benefits had not been stressed sufficiently.

<sup>15</sup> <http://www.dft.gov.uk/publications/white-paper-delivering-a-sustainable-railway>

<sup>16</sup> [http://www.highways.gov.uk/aboutus/documents/NPPD\\_Strategic\\_Plan\\_-\\_Final1.pdf](http://www.highways.gov.uk/aboutus/documents/NPPD_Strategic_Plan_-_Final1.pdf)

<sup>17</sup> <http://www.caa.co.uk/docs/1743/CAA%20Strategic%20Plan%202011-16%20v2.pdf>

**4.3.11** This view was supported by the Transport Select Committee in their November 2011 report:

*“The Government must recognise as a priority that local economic partnerships and integrated transport authorities will need support – not least with funding – to ensure that there are regional economic benefits from HS2.”*

**4.3.12** The Government considers that enhancements to both rail capacity and performance are of significant value. The initial catalyst for high speed rail as set out in the consultation was the need to address forecast capacity constraints. On the basis that a step change in inter-city rail capacity is required and can be provided most effectively by new lines, the Government must consider the case for high speed as opposed to conventional speed lines. The significantly increased benefits of high speed rail over new conventional lines, especially in terms of journey times, compared to the relatively small incremental cost increase, support the case for high speed rail as the appropriate solution. This is discussed in more detail later in this chapter.

**4.3.13** The Government is clear that integrating the high speed rail network into local strategies for land use, economic development and local transport is important to maximise its benefits. International examples of high speed rail networks demonstrate that integrated transport and planning strategies provide a solid platform for maximising the economic and social opportunities for the regions.

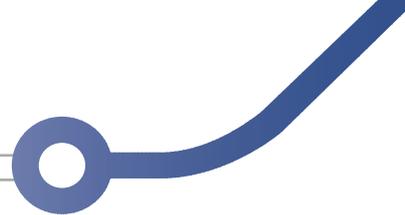
**4.3.14** It will be important for local authorities, HS2 Ltd and Government to work together to understand the interplay

between HS2 and local level strategies, and to ensure that end-to-end connectivity works efficiently and the benefits of HS2 are spread widely.

**4.3.15** The Secretary of State is currently considering the most effective way of proceeding on funding and deciding local major transport schemes for the next Spending Review. The Government believes that local decisions should be made at a local level and, consistent with this, we propose to offer freedoms and flexibilities to capable areas to bring forward schemes that are right for their local communities and citizens. For local organisations, this will mean providing assurances on financial management and propriety, governance and accountability, and ensuring value for money. In this context the Government and HS2 Ltd will, as part of the detailed development of this project, work with local authorities, Local Enterprise Partnerships, Passenger Transport Executives and other organisations to consider how flexibilities can be used to make best use of the opportunities offered by high speed rail.

### **High speed rail and investment in the existing network**

**4.3.16** A view expressed by a significant number of respondents was that investment in high speed rail should not displace investment in the existing railways or transport in general. Respondents stressed the need for improvements to existing lines, in addition to building a national high speed rail network, to enhance the capacity and performance of the current railway, and to promote economic growth. Suggested improvements include upgrading both the West Coast and the East Coast main lines, electrifying existing



tracks (such as the Midland Main Line) and reopening closed lines.

**4.3.17** In their November 2011 report on high speed rail the Transport Select Committee recommended that:

*“the Government should engage with Network Rail to identify whether there are affordable options, including rolling stock, infrastructure or timetable improvements which would enable more peak time capacity to be provided for Milton Keynes and Northampton commuters in the interim period.”*

**4.3.18** The Government is clear that we do not have to make a choice between HS2 and investing over the long term in the existing rail network. Proposals for a national high speed rail network have always been, and continue to be, developed alongside plans for continuing improvements to our existing railways. HS2 is designed to complement, rather than supersede, the important role of the conventional network. Despite the pressing need to deal with the deficit, the Government has outlined an ambitious programme of investment for transport, and the railways in particular, over the current spending review period and beyond. Record levels of investment are being targeted at projects and interventions to support economic growth and tackle some of the most pressing needs on the transport system.

**4.3.19** The Chancellor’s Autumn Statement confirmed the importance of an efficient transport system to driving economic growth by announcing a significant tranche of investment in the transport network over the next few years. With regard to the rail network, the Government announced plans to improve the rail line between Manchester

and York through electrification and investigate reopening the East-West rail line, supporting housing and commercial development from Oxford to Milton Keynes. The Chancellor also allocated £100 million to help Network Rail quickly tackle local problems on the rail network.

### **Suitability of high speed rail for the UK**

**4.3.20** Some respondents argued that the UK is not geographically large enough to support a national high speed rail network, nor are the distances between our major cities long enough. It was also suggested that high speed rail does not suit the population density of the UK.

**4.3.21** However, this is not borne out by the evidence of European and Asian countries with high speed rail networks nor by the Government’s analysis of the economic case for HS2. For example, the very successful high speed line between Frankfurt and Cologne in Germany is only 110 miles long, slightly shorter than the proposed first phase of HS2. Other lines such as Paris to Lille in France are also of a comparable distance. Should a high speed rail network extend to Scotland, the distance between Edinburgh and London is similar to the line that runs between Tokyo and Osaka in Japan, a highly successful service.

**4.3.22** Whilst the UK has a relatively high population density, it is also an increasingly urbanised population creating a growing demand for inter-city travel. This is reflected in the significant increase in long-distance rail journeys seen over recent decades. International examples of high speed rail networks demonstrate its suitability for meeting demand for travel between large centres of population.

### **Integrating utilities services into a high speed rail corridor**

**4.3.23** A small number of respondents suggested that a mains electricity or broadband network should be integrated into any high speed rail corridor. This suggestion aimed to maximise the potential usage of the land acquired and developed by high speed rail, to deliver benefits both to the taxpayer and to business, and to contribute to the UK's carbon objectives.

**4.3.24** The National Infrastructure Plan<sup>18</sup> demonstrates the Government's proposals for developing and enhancing UK infrastructure to promote long term, sustainable economic growth. The Plan sets out the Government's intention to investigate infrastructure interdependencies across sectors and to develop strategies for maximising their usage and benefits. This will include consideration of any opportunities presented by HS2.

## **4.4 Enhancing rail capacity through high speed rail**

### **Capacity**

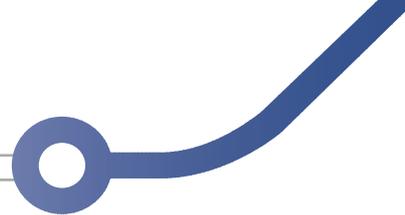
**4.4.1** Many respondents supported the Government's view that high speed rail is the right approach to addressing capacity problems on the railways, notably on the West Coast Main Line, which experiences overcrowding on many services. Some identified the efficiency advantages high speed rail offers by enabling greater segregation of services rather than using the same infrastructure for freight, long distance and local services, as is currently the case on the existing network.

**4.4.2** Few respondents disagreed that a national high speed rail network would provide a large amount of additional capacity on the rail network. However, some questioned whether there would be sufficient demand for the considerable additional capacity provided by high speed rail and whether that additional capacity would be in the right locations to meet demand.

**4.4.3** The Government's analysis of current and future demand levels indicates that a step change in capacity is likely to be needed to manage demand growth over the coming decades, whilst also ensuring the future resilience of the rail network. The Government's passenger demand forecasts are discussed in detail in the *Economic Case for HS2: Updated Appraisal of Transport User Benefits and Wider Economic Benefits*.

**4.4.4** Some respondents questioned whether a national high speed rail network would provide additional capacity in the most appropriate locations to meet demand. However, demand forecasts show that the most pressing rail capacity needs are on the West Coast Main Line between London and Birmingham, indicating that the first phase of the proposed high speed rail network would provide additional capacity in the right place, both through inter-city services on the new line and the release of conventional capacity to serve commuter markets. The whole Y network will help to address the forecast future shortages not only on the West Coast Main Line, but also on the East Coast and the Midland main lines.

18 [http://www.hm-treasury.gov.uk/national\\_infrastructure\\_plan2011.htm](http://www.hm-treasury.gov.uk/national_infrastructure_plan2011.htm)



**4.4.5** Therefore, from the evidence available there appears to be a strong case that the capacity provided by a high speed network is required, will enhance the passenger experience and is targeted where it is most needed.

### **Impacts on the capacity of the existing network**

**4.4.6** Many respondents supported the Government's case that the capacity freed up on the existing network, as a result of transferring a number of long distance services to a high speed rail network, would have a much needed positive impact on the capacity of the existing network. Many felt that a high speed rail network would reduce overcrowding on the existing network and on commuter lines in particular.

**4.4.7** Some responses made suggestions about how the capacity released by high speed rail should be utilised and called for a clear strategy for the use of the released capacity, rather than allowing it to be taken up in an organic way. One option suggested was for rail freight services to benefit, particularly since freight traffic is expected to rise substantially in the coming years. Others argued that long-distance services to places not served by HS2 should benefit from the released capacity, and it should not be used exclusively for commuter services to London.

**4.4.8** The Government agrees that the capacity freed up on the existing network would be an important benefit of HS2, and that the options for the use of such capacity should be carefully considered. HS2 Ltd's indicative specification sets out one option for how it could be used. However, given that the capacity will not become available

until 2026 it is too early to make definite plans for how it will be utilised. Instead there will need to be considerable additional work and extensive engagement with stakeholders before decisions are made. As a first step, Network Rail and Passenger Focus are examining how best to use the released capacity in line with the aspirations of passengers and the rail industry.

## **4.5 Enhancing rail performance through high speed rail**

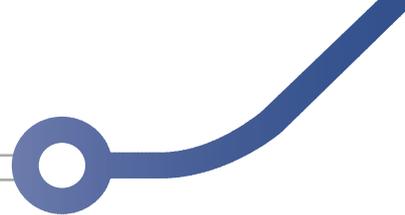
### **Journey times**

**4.5.1** Many respondents expressed support for reduced journey times between the country's largest cities through high speed rail, particularly those living in or representing cities in the Midlands and North of England. They highlighted a disparity of journey times in the UK. For example, the Eastern Network Partnership argued that existing trains between Nottingham, Sheffield and Leeds operate at an average speed of 36mph taking almost two hours for the 70 mile journey, which is not attractive to businesses.<sup>19</sup> The Government agrees that some journey times between cities in the UK are disproportionately long.

**4.5.2** Some respondents questioned the value of journey time savings at all believing that time spent on a train was already productive, so there was not a case for reducing journey times any further. The approach to valuing time is discussed in detail in the *Economic Case for HS2: Value for Money Statement*.

<sup>19</sup> Arup, 2011 *Emerging HSR Eastern Network Partnership Study*

- 4.5.3** However, the view that journey times are not important does not appear to be borne out by the experience of the West Coast Main Line or Eurostar. The journey time improvements resulting from the introduction of the Virgin Pendolino services in 2008 have contributed to growth in passenger demand of around 30 per cent in just three years, and an increase in the rail share of the air/rail market on the Manchester to London route from 38 per cent to 80 per cent by 2010. Similarly improvements in Eurostar journey times have led to significant increases in market share. Therefore, passengers, and in the case of Eurostar, particularly business travellers, appear to value improved journey times highly. It should also be noted that all major business organisations that responded to the consultation supported the objective of reducing journey times. Indeed some organisations believed that the maximum speeds proposed for HS2 were insufficient and should be more ambitious. This is discussed in detail in the *Review of HS2 London to West Midlands Route Selection and Speed*.
- 4.5.4** Some respondents did not believe that the journey time savings offered by high speed rail were enough to justify its costs and potential impacts. However, although journey time savings are an important element of the benefits of this project, they are not the only benefits, which include a step change in rail capacity alongside connectivity and reliability benefits that can only be achieved by building new lines.
- 4.5.5** A further suggestion was that the selection of the proposed route from London to the West Midlands prioritised speed at the cost of other route selection factors including sustainability considerations. On this basis some respondents argued that new conventional speed lines would be preferable to high speed lines. This assertion was not borne out, however, by the route selection process conducted by HS2 Ltd, which focussed on achieving the best balance between costs, sustainability impacts and benefits rather than being determined by a set line speed. This is discussed in detail in the *Review of HS2 London to West Midlands Route Selection and Speed*.
- 4.5.6** Some respondents also highlighted the view that door to door journey time, including travel to and from the station at either end, is more important than the travel time between the two stations alone. Some made this point to highlight a perceived need for investment in local transport connections, either alongside or instead of HS2. Others argued that HS2 journey time savings are modest when considered as door-to-door savings, and that other investments could have a greater impact.
- 4.5.7** The Government believes that door-to-door journey times are important and conducted its journey modelling, as far as possible, on this basis. The proposed station locations for phase 1 have been selected to enable efficient end-to-end journeys, for instance through a new connection to Crossrail at Old Oak Common.



**4.5.8** The Government is committed to improving transport for everyone with an extensive programme of investment in local transport. As discussed in Chapter 3, a key element of HS2 Ltd's future work programme would be to work with local authorities and local communities affected by the scheme to identify how the railway can best integrate with their local transport networks.

### **Reliability**

**4.5.9** A number of respondents supported the Government's view that a high speed rail network would offer high levels of reliability. This is because HS2 would be utilised by the same type of trains with similar stopping patterns, in contrast to the existing network where a range of service types share the same lines, often with radically different stopping patterns.

**4.5.10** Additionally, there were suggestions by some respondents that HS2 could improve reliability for the network as a whole by providing increased resilience, so that if there were problems on the West Coast Main Line passengers could be diverted onto HS2 and vice versa. This resilience could also allow longer possessions for engineering works on the conventional network leading to less disruption, improved passenger experience and greater cost efficiencies.

**4.5.11** In contrast, a small number of respondents either believed that the existing network was already sufficiently reliable or that a high speed rail network would not offer reliability benefits. However, experience from high speed rail services in the UK and elsewhere suggests that these types of network can deliver very high levels of reliability. For example, HS1's performance in 2010/11 was consistently good, with

only 0.43 per cent of services being delayed by HS1-attributable incidents.<sup>20</sup> Despite evidence received in consultation responses, results from the National Passenger Survey<sup>21</sup> suggest that passengers do not believe that the existing rail network is reliable enough. On the West Coast Main Line, at least one in every 10 trains arrives more than 10 minutes late.<sup>22</sup> Greater reliability is also attractive for train operating companies as it allows the available rail capacity to be utilised more effectively.

**4.5.12** Some organisations predicted a detrimental impact from HS2 on the reliability of existing services, particularly London Overground and the North London Line. While we will continue to work with Network Rail and others on detailed implementation, we are confident that the HS2 Ltd approach will provide sufficient capacity to ensure that there are no impacts on services on the North London Line. This is discussed in detail in the *Review of the Technical Specification for High Speed Rail in the UK*.

### **Connectivity**

**4.5.13** Respondents identified five main types of connectivity benefits from high speed rail:

- Improved connections between London and the cities of the Midlands and the North
- Improved connections between the cities of the Midlands and the North themselves

20 Office of Rail Regulation, June 2011, *HS1 Review 2010/11*

21 <http://www.passengerfocus.org.uk/research/nps/content.asp>

22 [www.rail-reg.gov.uk/upload/pdf/nrt-yearbook-2010-11.pdf](http://www.rail-reg.gov.uk/upload/pdf/nrt-yearbook-2010-11.pdf)

- Improved connections between the cities of the Midlands and the North, and Heathrow Airport
- Improved connections between the cities of the Midlands and the North, and the Continent, via the Channel Tunnel
- Improved connections via new links to urban networks, such as Crossrail.

**4.5.14** This improved connectivity was highly valued by many respondents, including the local authorities from the cities on the proposed HS2 network, supporting the Government's view that this would provide increased opportunities for jobs and growth in these areas.

**4.5.15** By contrast, some people were concerned that HS2 would do nothing to improve links between Manchester and Sheffield, and Manchester and Leeds. They also note that other major UK cities and conurbations, such as Newcastle, Teeside, Bristol, Exeter, Cardiff, Liverpool and Hull, remained outside of the network.

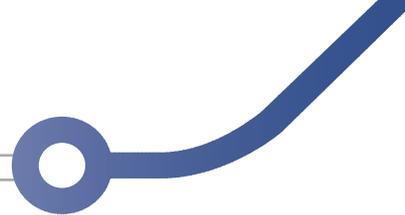
**4.5.16** Whilst it is true that connectivity benefits offered by high speed rail are greatest for those cities directly served by high speed rail, there are many other locations that would benefit from the through-running of services from the high speed lines onto the conventional network. In addition, the Government is continuing to invest in the existing rail network to deliver capacity and performance improvements. For example, the Government has recently announced its support for the electrification of the north trans-Pennine route from Manchester to the East Coast Main Line via Leeds, which will improve journey times on this line.

**4.5.17** Following completion of the first phase of HS2 (from London to the West Midlands), locations north of Birmingham on the West Coast Main Line would experience journey time savings from London as a proportion of the journey could be made at high speed. In the second phase of HS2 (from the West Midlands to Manchester and to Leeds), locations north of both Manchester and Leeds would experience significant journey time savings from London via through-running services onto the West Coast and East Coast main lines. Furthermore, there would be connectivity benefits for stations on the Great Western Main Line via interchange to the high speed rail line at Old Oak Common.

**4.5.18** Locations such as Edinburgh, Glasgow, Liverpool and Newcastle would all experience improved connectivity with other parts of the UK, despite not being directly on the Y-shaped network, because a significant part of the journey could be made at high speed. It should also be noted that HS2 would be developed alongside the existing large programme of improvements to the railways conducted under the High Level Output Specification process.

### ***Impacts on the performance of the existing network***

**4.5.19** Some respondents felt that the increased capacity on the existing network resulting from the transfer of inter-city express services to high speed rail, could have a transformative effect on services to stations on the existing network. However, others felt that HS2 would cause the loss of local train services or were unclear about the potential impacts on existing service frequency and speed.



**4.5.20** The Government expects the impacts of the capacity released by HS2 on the performance of the existing network to be positive. Service frequencies to many key commuter and regional destinations could be enhanced, thereby improving connectivity. The increased capacity on the existing network, combined with many long-distance passengers switching to high speed services, would reduce crowding and improve the passenger experience, particularly where the same services are used by both inter-city and commuter passengers, as on many services between London and Milton Keynes.

**4.5.21** Other respondents expressed concern that a high speed rail network could have negative impacts on the reliability of the existing network, through its construction and operation. The Government accepts that some disruption is unavoidable, but its view is that the disruption caused by construction of a high speed line would be expected to be less than that caused by major enhancements to existing lines. This view is supported by the analysis undertaken by Network Rail in the *Review of the Strategic Alternatives to High Speed Two*.

**4.5.22** A smaller number of respondents voiced concern about the future reliability of the existing network, as a result of diversion of investment from other services. As discussed previously in this chapter, the Government's view is that investment in HS2 would not replace continued investment in the rest of the rail network, nor in transport more generally.

## 4.6 Costs and benefits

### **Costs and affordability**

**4.6.1** Amongst those respondents in favour of a national high speed rail network, some supported the Government's view that the estimated costs of a national high speed rail network were acceptable given the expected benefits. A significant number of businesses supported the construction of HS2 on this basis.

**4.6.2** Some of those in favour of a high speed rail network commented that projected costs should be reduced as far as possible, including through involving the private sector. The Government is committed to ensuring best value from investing public money and always seeks opportunities to bear down on costs wherever possible, including through exploring the role that the private sector could play. The proposed timetable for the construction of HS2 also means that it should benefit from the significant cost efficiencies that we expect to see following the implementation of the McNulty Study findings. Infrastructure UK's work to drive down the costs of delivering major infrastructure projects will also be valuable.

**4.6.3** In contrast, cost was the most commonly cited concern among those who oppose a national high speed rail network. Many respondents thought that the same money should be invested in other transport projects such as investment in road infrastructure, which they felt offered greater value for money. However, this view ran counter to the Government's strategy for catering for inter-urban travel via rail rather than road. Investment in road or local transport schemes would be unlikely to mitigate the need for rail

capacity improvements on the north-south lines into London, for which Government considers high speed rail is the appropriate response.

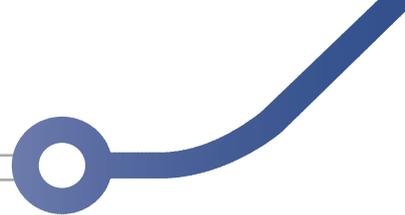
- 4.6.4** Some consultation responses advocated building new conventional speed lines instead of new high speed rail lines, largely on the understanding that lower speed lines would allow a route more closely following existing transport corridors, which could mitigate the impact on the natural environment. This issue is discussed in detail in the *Review of HS2 London to West Midlands Route Selection and Speed*. In terms of cost, HS2 Ltd's analysis indicates that a new conventional line, designed to broadly the same route as HS2 but with a lower line speed of 125 mph, would be only marginally cheaper, but would generate significantly lower benefits than the high speed alternative. These reduced benefits would result from the slower journey times and reduced passenger numbers of a conventional speed line.
- 4.6.5** The Government, therefore, does not consider that there is a strong case for new conventional speed lines as an alternative to a national high speed rail network.
- 4.6.6** A number of organisations believed that upgrades to the existing network would provide better value for money than high speed rail. This is discussed in Chapter 5.
- 4.6.7** Some respondents made more general comments regarding the effects and value of subsidies for public transport and the rail network in particular. The Government's view is that the rail network plays a vital role in Britain's economy and society, and that there is a strong case for ongoing

public funding, including, where appropriate, in major enhancements such as HS2.

- 4.6.8** Other respondents believed that HS2 would be too expensive and could not be justified in the current economic climate. The Government's view is that continuing investment in infrastructure is vital in creating a platform for long-term, sustainable economic growth. This is discussed in detail in its National Infrastructure Plan. For this reason, while final funding decisions will be taken in future spending reviews, the Government considers that it is important that it retains a long-term focus at this time and supports the development and delivery of key infrastructure projects such as HS2.
- 4.6.9** Concerns were also expressed that the project would overrun its projected budget or that its projected benefits would not materialise. However, the HS2 project costs, as detailed in the *Economic Case for HS2* published for consultation, include contingency for risks and overruns equivalent to up to 64 per cent of construction cost. This issue is discussed further in the *Economic Case for HS2: Updated Appraisal of Transport User Benefits and Wider Economic Benefits*.

### **Fares structure and equity**

- 4.6.10** A number of consultation responses question whether the fares on HS2 would be affordable for the majority, in particular non-business travellers. Greater clarity on the proposed fares structure was requested.
- 4.6.11** The economic modelling undertaken for HS2 demonstrates that the network could generate sufficient demand and revenues to more than cover its operating costs



whilst charging fares in line with long distance services on the existing network.

- 4.6.12** No decisions have been taken at this early stage in the project on the precise operating, regulatory and competitive parameters in which HS2 would exist. However, we would expect that any future operator of a new high speed line would utilise fare-setting approaches similar to those currently in place, with a mix of lower-priced fares for advanced bookings or off-peak travel, and higher-priced peak fares.
- 4.6.13** The demand forecasts also show that only 30 per cent of passengers on HS2 are expected to be business travellers, with the remaining 70 per cent travelling for non-business purposes. Leisure travellers are likely to be the dominant part of those travelling for non-business purposes, and they are a sector relatively sensitive to the level at which fares are set, which any commercial operator would be expected to take into account in its pricing policies.
- 4.6.14** In addition, the Government is committed to ensuring that the costs of maintaining and operating the railways in Britain are reduced. The recent McNulty Study found that the railways in this country cost up to 40 per cent more than comparator railways overseas, and recommended that the industry should be aiming to achieve a 30 per cent reduction in unit costs by 2018/19. Bearing down on the cost of the railways will reduce the burden on both the taxpayer and the fare-payer, helping to ensure the long-term sustainability of the railways.
- 4.6.15** Other consultation responses included the argument that HS2 would be inequitable as it would be inaccessible to the majority

of the public. However, rail is increasingly a form of travel used by all sections of society, with a 2009 survey showing that 55 per cent of the adult population had used the railway in the previous year.<sup>23</sup> The Y network will also provide a combination of direct high speed services and through-running services onto the conventional rail network that will serve nine out of ten of the UK's largest conurbations. On this basis, HS2 would offer connectivity benefits to a significant proportion of the population. In addition even people living near stations not served by HS2 services could benefit from improved services utilising the released capacity on the existing lines, or could access HS2 via the existing road or rail network. For example, the Birmingham Interchange station is located specifically to expand the accessibility of HS2 to the wider West Midlands region and potentially beyond. Therefore, it is reasonable to assume that the benefits of HS2 would be shared by a large proportion of the population.

### ***Economic growth***

- 4.6.16** Many respondents supported the Government's view that a high speed rail network would help Britain remain economically competitive and would deliver significant economic benefits. There was a view that by reducing the journey times between major cities, thereby effectively bringing them closer together, there would be more opportunities for businesses to grow by widening their markets. Local authorities in Birmingham, Manchester and Leeds all asserted that the estimates underpinning the HS2 economic case were too conservative.

<sup>23</sup> [http://assets.dft.gov.uk/statistics/series/rail/110805\\_Rail\\_Factsheet.pdf](http://assets.dft.gov.uk/statistics/series/rail/110805_Rail_Factsheet.pdf)

**4.6.17** An assessment submitted by Leeds and Sheffield City Regions, for example, suggested that the Eastern Arm of the proposed Y network would deliver £60 billion in transport benefits and £2.3 billion in productivity benefits.<sup>24</sup> The Leeds, York & North Yorkshire Chamber of Commerce stated that the total wider economic impacts of the Eastern route of the Y could be as high as £4.2 billion (comprising productivity benefits of £2.6 billion, imperfect competition benefits of £0.8 billion and released “conventional network” capacity benefits of £0.8 billion). These responses argue that the eastern leg of the Y would help to create, in effect, a single economic zone encompassing the East Midlands and the Leeds and Sheffield City Regions, which would have a combined population of 6.7 million people and three million jobs.<sup>25</sup>

**4.6.18** Many stakeholders – particularly from the cities and regions which could be served by a new high speed rail network – argued in addition that there could be further economic benefits which would be created by high speed rail, over and above the conventional economic benefits of new high speed rail links and the monetisable benefits such as agglomeration assessed using the Department's wider economic impacts guidance. These include the potential for new high speed rail lines and stations to facilitate economic growth by attracting investment, influencing land use and development, and widening business and labour markets for the cities that they serve.

**4.6.19** These arguments were often founded on the regional economic benefits that are perceived to have been delivered by international high speed rail lines. For example, Lille's position at the heart of the European high speed network and the Euralille complex that has been developed around its high speed rail station were considered to have made a significant contribution to the city's redevelopment and to the achievement of its ambition to refocus its economy on the tertiary sector.

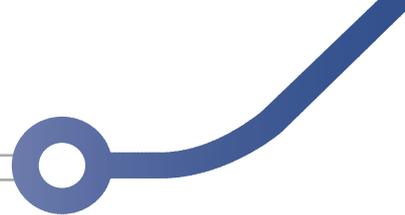
**4.6.20** In contrast, other responses were sceptical that high speed rail infrastructure would stimulate economic growth, with some also disputing the robustness of the quantified economic case for HS2. Key arguments made were that:

- The predicted benefits were overstated or unlikely to materialise;
- Any new jobs or development would reflect a redistribution of, rather than additional, economic activity; and
- Any agglomeration effects would be likely to be very small.

**4.6.21** The robustness of the economic case, including both its assessment of benefits for business travellers and wider economic impacts, is discussed in the *Economic Case for HS2: Value for Money Statement*. The Government's overall view is that these assessments have been based on the Government's established transport modelling and appraisal guidance, which is the result of the Government's assessment of the available research and evidence. The fact that the Government's analysis was criticised by different constituencies for being both too optimistic and too conservative could be seen as an

24 Arup/Volterra (2010) The Economic Case for High Speed Rail to Leeds City Region and Sheffield City Region

25 Eastern Network Partnership (Technical business case work on high speed rail, Arup and Volterra, 2011)



indication that our assessment of these monetised economic benefits strikes the correct balance.

**4.6.22** The existence and extent of any non-monetisable impacts on economic growth beyond those captured by the Department's appraisal, either at a national or regional level, is harder to assess. On the basis of existing reviews of the evidence base, the Department for Transport considers that major transport investments can, in general, be expected to make a difference to the location and nature of economic activity.

**4.6.23** Making any specific assessment of the value of potential impacts of this kind from any individual scheme, such as a high speed line, is more difficult. Both academics and Governments have struggled to separate the regional growth impacts of high speed rail from the effects of wider Government spending, and other regional, national and international factors. It is also very complex to identify where, at the national level, such impacts are additive rather than redistributive. Finally, it is possible in some types of modelling and appraisal that these impacts could be at least partly captured implicitly in the conventional analysis.

**4.6.24** Nonetheless, this does not detract from the fact that a significant body of evidence on the regional impacts of high speed rail has been developed. These studies differ in their view of the level of dispersal of the economic impacts of high speed rail, the relative importance of high speed rail against other factors in driving economic changes and the potential additionality of such effects, but there is nonetheless a high level of consistency in the view that high speed rail is capable of contributing

to valuable regional economic benefits if introduced in the right way.

**4.6.25** The academic evidence consistently identifies a number of key factors in maximising the positive local and regional effects of high speed rail infrastructure and limiting or avoiding any associated negative effects. These are summarised by Harman<sup>26</sup> as: effective integration of high speed rail into city centres and local transport networks, serving corridors where markets are well understood and where demand justifies providing a high frequency service, strong local leadership, and, most importantly, the integration of high speed rail with wider city planning. The Government would seek to ensure that these principles are followed in developing its high speed rail strategy to maximise its local and regional impacts – and some of them, such as city centre stations and a focus on high demand routes, can already be seen in the proposals put forward for consultation. The Government's broader local policy framework, including its support for city mayors, will further facilitate effective delivery in these areas.

**4.6.26** It should also be noted that support for the high speed network extends to many local authorities that would not have a high speed rail station but could potentially benefit from integration with a high speed rail network. It is clear that such authorities view high speed rail as positive for their economic development, not a threat to it.

**4.6.27** Issues relating to the strategic economic impacts of HS2 provoked wide scale, contradictory responses. The Government's

<sup>26</sup> <http://www.greengauge21.net/wp-content/uploads/hsr-regeneration-of-cities.pdf>

conclusion is that the evidence supports the view that a national high speed network could play a valuable role in encouraging economic growth both nationally and, coupled with the supporting measures outlined above, at the regional level. The modelling undertaken by HS2 Ltd indicates that the proposed Y network would deliver benefits for business totalling more than £30 billion including both transport benefits for business travellers and wider economic benefits such as agglomeration. International evidence indicates that high speed rail can, in the right circumstances, facilitate local and regional development. The questions of whether and to what extent those development effects are additional to the monetisable economic benefits, and the precise role played by high speed rail in enabling them, do not fundamentally alter the Government's conclusion that the overall impacts on economic growth of high speed rail are significant in total, valued by stakeholders local to its potential stations and material to the case for new lines of this kind.

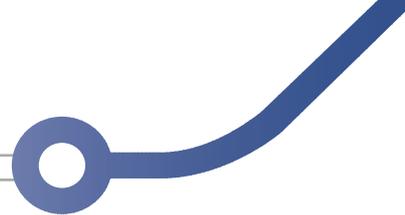
**4.6.28** Furthermore, it is important to note that the choice is not between supporting growth or maintaining the status quo. The Government's view is that the absence of substantial investment in the capacity and performance of Britain's inter-city and commuter rail networks would risk seeing capacity constraints and crowding act as a brake on continuing economic growth. Increasing demand for inter-city rail travel would be increasingly difficult to accommodate in the long term without new infrastructure, which would restrict businesses and the public from undertaking journeys of value to both economic growth and quality of life.

### ***Economic regeneration and jobs***

**4.6.29** A number of respondents supported the Government's view that HS2 could support job creation, with some believing that the forecasts of new jobs which could be supported were underestimates. In contrast, some respondents did not believe that a high speed rail network would have any impact in terms of supporting the creation of additional jobs, or argued that HS2 would not support job creation in the North, with the majority of any new jobs being located in London.

**4.6.30** Evidence from high speed rail projects in other countries suggests that high speed rail services, when combined with well-integrated local transport and planning policies, can act as a catalyst for local regeneration and job creation. On this basis there appear to be good prospects for HS2 to support economic regeneration around the station locations in phase 1, particularly at Old Oak Common and in Birmingham's Eastside District. These views were strongly supported by the relevant local authorities for these areas.

**4.6.31** The Government accepts that there is substantial uncertainty in assessing the potential employment impacts of strategic infrastructure schemes of this kind, particularly where those impacts can be substantially altered as a result of wider factors, such as local and national policy frameworks. However, HS2 Ltd's assessment of jobs around stations are based on published local authority estimates and strategies. These also indicate the importance attached at the local level to employment growth in these areas, which improved transport links could reasonably be expected to facilitate and support. It should be noted that these assessments



have only been made for the first phase of the proposed network, and further employment opportunities might be expected from the completion of the second phase to Leeds and Manchester.

**4.6.32** Taken together with the employment opportunities which would be generated in relation to the construction, maintenance and operation of the new line, the Government therefore remains of the view that HS2 would be likely to have a positive impact on job creation. The Government values support for job creation in all areas of the country, particularly where it is focused on areas of deprivation as at Old Oak Common in West London.

**4.6.33** Furthermore, the apparent discrepancy between London-based and regional jobs reflects the fact that the estimates published so far only relate to the first phase of the network (for which the largest single regeneration opportunity is at Old Oak Common) and do not include any wider job creation potentially supported as a result of the completion of the full Y network. Therefore, it is likely that any apparent regional imbalance in job creation at this stage only reflects a partial view of the potential impacts of HS2 in this area. Even if this were not the case it would not alter the Government's view of the value of these benefits.

### **The North-South divide**

**4.6.34** The view presented by the Government in consultation that a national high speed rail network could make a valuable contribution to addressing regional imbalances in productivity and prosperity ("tackling the North-South divide") provoked a large number of contradictory

views using academic reviews of high speed rail to support both points of view.

**4.6.35** Those opposed to HS2 asserted that there is insufficient evidence to support the case that HS2 will help address the North-South divide, and argued that there was a greater weight of evidence in favour of the opposite conclusion, i.e. that improved transport links would in fact favour London and the South East over the northern regions. A paper submitted by the 51M group of local authorities, for instance, discussed "*the weight of theoretical and empirical academic work which emphasises that high speed rail connections between cities and regions with different levels of development may favour already strong regions at the expense of weaker regions.*"

**4.6.36** That paper also argued that a better way to support northern cities was through investing in transport within and between those cities, and not by transport to London. This view, however, appears to understate the significant connectivity benefits that HS2 would bring between Midland and Northern cities (which those cities themselves see as a key benefit), as well as to and from London. It also assumes that high speed rail would be taken forward instead of, rather than alongside, continuing investment in other elements of the transport network, whereas the Government's view is that high speed rail would only be one element, albeit a significant one, of its overall transport investment strategy.

**4.6.37** By contrast, a number of respondents, including local authorities and other stakeholders in the Midlands and the North, claimed that HS2 would offer

opportunities to lessen the economic gap between the capital and the other major cities of the UK. For example, Sheffield Chamber of Commerce and Industry stated that *"Without a high-speed rail line, 'the north' will just remain too far away to bother with for many potential investors of the future."* Evidence advanced in consultation responses regarding the positive impacts of high speed rail in this area referred to the greater opportunities for businesses to expand their overseas client base and for inward investment in the cities connected by high speed rail, including as a result of improved accessibility from Heathrow Airport.

**4.6.38** The Government accepts that it is difficult to predict the geographic spread of benefits from new infrastructure of this kind. HS2 Ltd has analysed the spread of journeys on the proposed network, which shows a majority of trips originating outside London and the South East, but it is impossible to know with certainty where the largest share of benefits from such journeys would accrue. A business journey from Manchester to London, for example, could bring benefits to both the business traveller and the firms that he or she is meeting. More than a decade before any new line opens there is no robust means of predicting how these benefits would be split.

**4.6.39** The Government does not dispute that a proportion of the benefits of HS2 would be felt in the South, and considers those benefits of value, but believes that it is also reasonable to assume substantial benefits for the Midlands and the North, particularly given the support for HS2 from key regional stakeholders. Research undertaken by the Northern Way suggests

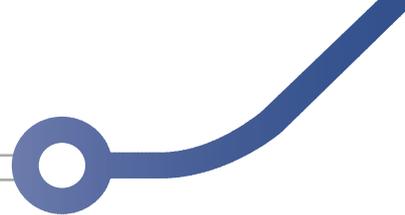
that, given the relatively smaller size of the Northern economies, it is possible that such benefits would have a larger proportionate impact.<sup>27</sup>

**4.6.40** It is clearly the case that new and improved transport links such as HS2 will open up new opportunities for businesses in the cities of the Midlands and the North, as well as for firms in the South East, and that those opportunities are valued by those cities' leaders. The Government believes that those ambitions should be supported. It is, of course, for those cities themselves to ensure that these opportunities are exploited effectively, and certainly not for the Government to decide on their behalf that they will be unable to do so.

**4.6.41** The Government also does not consider that it would be in those cities' interests to fail to invest in the improvements to inter-city transport that they support. To do so would be to accept the risk of increasing crowding and congestion, and continuing poor connectivity – especially between regional cities – acting as a constraint on their long-term economic growth.

**4.6.42** An additional argument made by some respondents was that even if HS2 could help rebalance the economy between cities, the impact would be to redistribute economic activity away from towns not served by high speed trains towards those that were. It is noticeable that this view is not shared by many towns not served by HS2. For example, many stakeholders from across much of the West Midlands support HS2, and not just

<sup>27</sup> *High speed rail for the North – Issues and evidence*  
<http://www.thenorthernway.co.uk/document.asp?id=992>



those in Birmingham itself. Similarly, the Eastern Network Partnership, which has commissioned and submitted evidence in favour of high speed rail, includes not only Sheffield and Leeds, but also the Tees Valley, Nottinghamshire and Derbyshire.

- 4.6.43** The Government's view is that it need not be the case that the benefits of high speed rail links are restricted to the immediate vicinity of the stations served, and that the key to preventing this is effective integration with local and regional planning frameworks and wider policies. The Government and HS2 Ltd will work with local authorities as detailed plans for the proposed high speed rail network are developed, but it will nonetheless be for the authorities themselves to ensure that this integration is achieved.

### **Supply chain benefits**

- 4.6.44** Some respondents argued that a high speed rail network would offer significant opportunities to the UK rail supply industry, which should be maximised. They suggested that the Government must ensure that UK industry is well placed to compete and that the potential benefits to UK companies through the delivery of HS2 are realised. The stable long-term future workload to the industry that HS2 could provide was identified as one of the most effective single contributory factors towards improving efficiency and reducing costs in the UK rail industry.

- 4.6.45** The Government's National Infrastructure Plan describes the importance of a predictable and transparent long-term pipeline of infrastructure projects in enabling the private sector to plan for the future and to invest in technology and skills. HS2 will form a key element of that

long-term pipeline, providing certainty about future contracting opportunities, for example, following the completion of the current Crossrail project in 2017. The Government agrees that it is important that the UK-based supply chain should be in a position to benefit as far as possible from this project. The Government will therefore seek to open a dialogue with potential UK-based suppliers to ensure that they are well-placed to bid competitively for future contracts, including making better use of pre-procurement dialogue to encourage efficiency and innovation, and establish more sustainable supply chains.

- 4.6.46** The international high speed rail sector is continuing to grow, including projects not only in Europe and Asia, but in the Middle East, Africa and the Americas, and British companies are already competing successfully in this market and successfully exporting products and skills. These include companies ranging in size, from world-renowned engineering and consultancy firms, such as Mott MacDonald and Halcrow, to smaller business providing specialist products and services. The additional capital investment and skills development which could be facilitated by the Government's high speed rail strategy would help to ensure UK-based suppliers are increasingly well-placed to bid for contracts on high speed projects abroad.

### **High Speed 1 (HS1)**

- 4.6.47** Some respondents argued that HS1 has delivered only limited economic regeneration benefits to Kent. On the basis of this assessment it was suggested that HS2 would not deliver significant regeneration benefits to the areas it would serve.

**4.6.48** Before the introduction of domestic high speed rail services on HS1, a number of predictions were made about their potential impacts on the national and local economies. For example, a study by Colin Buchanan and Volterra in January 2009 predicted that the total benefit of HS1 to the UK economy would be in excess of £17.6 billion over 60 years, compared to a total cost, including the provision of high speed domestic rail services, of £7.3 billion.<sup>28</sup> The assessment predicted that at least 7,500 more people a year would be able to commute to London as a result of HS1, thereby increasing their earning potential and spending power in the region.

**4.6.49** HS1 domestic services began in December 2009, improving connectivity with the capital, and bringing many more Kent residents within an hour of central London. While it is early to form robust conclusions about their long-term economic impacts, there is emerging evidence to suggest some positive effects on the Kent economy in particular.

**4.6.50** Southeastern argue that HS1 services have increased passenger numbers on their services. They report that passenger numbers grew by 1.4 per cent in the financial year to March 2010, and 5 per cent to March 2011 and estimate that the continued growth of the high speed service is a strong contributor to this growth.<sup>29</sup>

**4.6.51** With regard to the property market, house prices in areas connected by high speed rail services have increased at a greater

pace than those unconnected. For example, residential house prices in Ashford increased at a rate that was above the average of other South East England towns, coinciding with the opening of Ashford International station in 1996. For office developments the economic effect of high-speed rail is also generally positive, with rents having risen in Ashford and elsewhere.<sup>30</sup>

**4.6.52** Furthermore, Kent County Council is convinced of some positive impacts of HS1 on inward investment and job opportunities in the county:

*"In spite of the economic downturn, the developer of the 96-acre Eureka Business Park recently announced that it is to commence work on a second phase of offices after committing all of the office space at the initial 51,000 square foot Northdown development.<sup>31</sup> Additionally, The Document Warehouse – a leading South African-based archiving and document storage specialist operating across eight countries – announced in June 2011 that it is to set up its first UK office in Ashford. The move will create 400 jobs across the country, 200 of which will be in Kent. Commenting on the announcement, the Managing Director of The Document Warehouse stated that Ashford's excellent connectivity to London and the Continent was a deciding factor in the company's decision to locate in the town.<sup>32</sup> As the UK economy emerges from the recession, Kent County Council is confident that many more businesses will follow suit."*

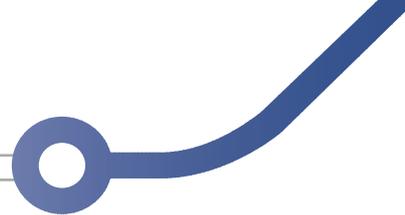
28 Colin Buchanan/Volterra (2009), *Economic Impact of High Speed 1: Final Report*

29 Go Ahead Group, *Annual Report 2011* (p47) <http://www.go-ahead.com/~1/media/Files/G/Go-Ahead/ir/presentations/2011pres/AR-2011.pdf>

30 Greengauge 21(Dec 2009), High Speed Rail in Britain: Early Lessons from Kent

31 See <http://www.insidermedia.com/insider/southeast/43368/>

32 See [http://www.kent.gov.uk/news\\_and\\_events/news\\_archive/ashford\\_stacks\\_up\\_for\\_the\\_docu.aspx](http://www.kent.gov.uk/news_and_events/news_archive/ashford_stacks_up_for_the_docu.aspx)



## 4.7 A Y-shaped national high speed rail network

### **The Y configuration**

- 4.7.1** Only a small proportion of respondents commented on the network configuration, but of those that did there was broad support for the proposed Y-shaped network. Only a very small number suggested that alternative configurations for the network should be given more consideration.
- 4.7.2** These respondents suggested a number of alternative configurations, including:
- a T-shaped network, which would see a high speed rail connection across the North of England in conjunction with a single north-south connection;
  - a P-shaped network (the proposed network with a connection linking Liverpool and Manchester with Leeds);
  - an X-shaped network (with a connection between Birmingham and Bristol);
  - a reverse-S route (swinging east after Manchester to cross the Pennines to the North-East, Edinburgh and Glasgow); and
  - a reverse-E network consisting of a central spine with spurs.
- 4.7.3** Some respondents also suggested variations on the Y network, for example with an additional east-west link between Oxford and Cambridge.
- 4.7.4** Some respondents felt that options for alternative configurations should have been presented for comment in the consultation. Some felt that they could not comment on the suitability of the

Y-network, because no comparators to the Y, nor the process of selecting this configuration, were presented in the consultation material.

- 4.7.5** The Y-network was the result of extensive research and refinement, initially set out in the previous Government's March 2010 Command Paper *High Speed Rail*. The Government decided to consult on a preferred network configuration to reduce the risk of causing generalised blight to significant areas of the country, as happened when a number of detailed route alternatives were published for the Channel Tunnel Rail Link, and because the analysis published by HS2 Ltd in October 2010<sup>33</sup> on the relative merits of the Y and the reverse-S indicated that the Y network provided the very best fit with the Government's strategic objectives. The Government's view remains that the Y network is the right strategy. The network links the major centres of population and productivity, and maximises inter-city connectivity. It allows for benefits from through running-services and the potential for extension of the network in the future.

### **Extent of the network**

- 4.7.6** A number of respondents argued that the proposed Y network was not extensive or ambitious enough; some suggested that the network must have the potential to develop in the future, whilst others argued for firm proposals for extensions to the network now. The most common suggestion was for a high speed rail extension to Scotland (Glasgow and/or Edinburgh), which some believed was the only way to secure the full benefits of a high speed

33 <http://webarchive.nationalarchives.gov.uk/+/http://www.dft.gov.uk/pgr/rail/pi/highspeedrail/hs2ltd/networkoptions/>

rail network. Evidence was presented to suggest that the benefits of high speed rail would increase significantly once the network was extended to Glasgow and Edinburgh. These increased benefits would stem not only from the possibility of reducing journey times but also, amongst other things, from prompting increased modal shift away from aviation. As well as increasing the strength of the case for HS2, it was also argued that Scotland would be placed at a serious competitive disadvantage if it were left off the network for any prolonged period.

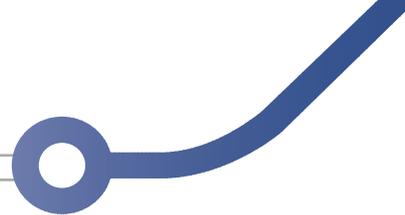
- 4.7.7** Other respondents suggested that the network should make more stops in the North and North East, or include extensions to Wales and the South West.
- 4.7.8** The Government has always signalled its intention for a truly national high speed rail network and this remains the case. The network structure has specifically been designed to allow for future extension if and when justified. The business case for HS2 demonstrates that benefits increase as the network increases so the Government would carefully consider the case for any extensions in the future. However, the current proposals already represent the most significant transport project since the building of the motorways and a commitment of over 20 years. Therefore, we need to be realistic about the capacity to extend the network further and faster.
- 4.7.9** It is important to note that the Government's current proposals would bring significant benefits to parts of Britain not directly served by high speed rail, such as Edinburgh and Glasgow, because high speed trains would be able to continue their journeys on conventional lines. For

Scotland, the first phase of HS2 would see journey times reduced by around 30 minutes from current levels. This saving arises from the quicker journey time on the London-West Midlands section of the route. The second phase of HS2 would see further incremental journey time savings to Scotland of around one hour quicker than today.

- 4.7.10** The Government also welcomes the interests from other areas in having high speed rail as it demonstrates the importance that cities and communities place on the connectivity benefits that high speed rail can bring.

## 4.8 The Government's carbon objectives

- 4.8.1** Many respondents asserted that a national high speed rail network offers the potential for sustainable transport in the long term, with some suggesting that the Government's carbon assumptions were overly pessimistic. This is based on broad support for rail as a comparatively more environmentally sustainable form of transport per passenger mile, and an understanding that the increasing decarbonisation of the grid would act to further increase this advantage. Others commented that carbon neutrality of the project in its first phase was not good enough and that the Government should be setting stricter targets in terms of environmental impact.
- 4.8.2** Some respondents expressed scepticism that HS2 would make any meaningful contribution to the UK's carbon objectives. This view was supported by the recent Transport Select Committee report:



*“HS2 should not be promoted as a carbon reduction scheme, as at best it has the potential to make a small contribution to the Government’s carbon reduction targets. The Government should make rapid progress with reducing carbon emissions from UK electricity generation.”*

**4.8.3** As set out in the consultation document the Government’s view is that phase 1 of HS2 has the potential to make a reduction in carbon emissions but is more likely to be broadly carbon neutral. There would be potential for more significant emissions reductions when the second phase of HS2 is complete due to increased modal shift. However, the project is not being advanced as a means to reduce emissions but as a means of effectively addressing capacity and performance issues on the railway in a manner that is consistent with our carbon objectives.

**4.8.4** The Climate Change Act 2008 commits the UK Government to a reduction of greenhouse gas emissions of at least 80 per cent by 2050. Our approach for achieving this is through a system of five-year, economy-wide carbon budgets. Reduction targets are not set on a sector by sector basis to ensure that the most cost-effective carbon reduction policies can be pursued. It also means that policies that do not reduce or even increase emissions in one particular area are allowable, as long as these are off-set by larger reductions elsewhere to ensure that the overall carbon budgets are met.

**4.8.5** Over 90 per cent of domestic transport emissions come from road transport. This is why the Government’s main focus for reducing emissions in transport in the medium term is through ambitious but

realistic European regulations to reduce the average emissions from new cars and new vans. We have also put in place a significant programme of activity to help build the early market in ultra-low emission electric, plug-in hybrid and hydrogen vehicles to deliver significant emissions savings in the longer term.

**4.8.6** Rail makes a very small contribution to overall domestic transport emissions as it is a comparatively carbon efficient mode. Even allowing for the fact that power usage increases with speed, the high levels of passenger usage that high speed services tend to attract, including passengers shifting from more polluting models like air or road, mean that per passenger carbon emissions remain comparatively low.

**4.8.7** Therefore, on examination there appears a good case that HS2 is consistent with the Government’s climate change strategy. Chapter 7 considers the carbon emissions implications for the interaction between high speed rail and aviation.

# 5 The strategic alternatives to high speed rail

**5.1.1** As part of the suite of consultation documents, the Government published a strategic analysis of a set of options for enhancing inter-city rail capacity and connectivity through enhancing existing networks, as an alternative to the construction of new lines.<sup>34</sup> This built on earlier work carried out by Atkins and published by the Department for Transport in 2010 which looked specifically at the West Coast corridor.<sup>35</sup> The validity of this analysis, and the perceived advantages and disbenefits of enhancements to the existing rail network, emerged as key themes in a large number of consultation responses to Question 2 – both those supporting and opposing the Government’s proposals.

**5.1.2** This chapter explores the main points raised on this issue during consultation. To inform its consideration, and given the strong interest in this issue shown in consultation responses, the Government commissioned updated economic analysis from Atkins. It commissioned additional advice from Network Rail,<sup>36</sup> as the custodian of the existing network, on the costs, deliverability and impact of the main enhancement proposals developed by Atkins or proposed by respondents. The comparative value for money of

enhancing existing lines compared to the construction of a new high speed network is considered in the *Economic Case for HS2: Value for Money Statement*.

## 5.2 The Government’s case

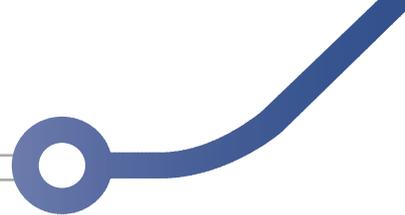
**5.2.1** On the basis of its strategic analysis of alternatives, the Government’s case as set out in consultation was that whilst enhancements to existing routes could deliver valuable increases in capacity these would still be significantly smaller than those provided by new lines. In addition, enhancements of this kind could not provide any improvements in journey times or connectivity comparable with those achievable through high speed rail. As a result, they would not deliver benefits on the same scale as new high speed lines, and nor did the analysis presented indicate that they would provide the same value for money, despite their lower costs.

**5.2.2** In addition, the Government considered that the effects of an approach of this kind in support of its wider strategic goals for job growth, regeneration or sustainable economic growth would be low in comparison with the potential impacts of high speed rail. For these reasons, the Government did not support the large-scale enhancement of existing routes as an alternative to its high speed rail strategy.

34 Atkins (2011), *Strategic Alternatives to the Proposed Y Network*, accessible at: <http://highspeedrail.dft.gov.uk/library/documents/strategic-alternatives>

35 <http://webarchive.nationalarchives.gov.uk/20110202234406/http://www.dft.gov.uk/pgr/rail/pi/highspeedrail/alternativestudy/>, and updated in March 2011 at <http://www.dft.gov.uk/publications/hs2-strategic-rail-alternatives-update>.

36 *Review of the Strategic Alternatives to High Speed Two*.



## ISSUES RAISED DURING CONSULTATION

### 5.3 Capacity

#### **Capacity provided by alternatives**

**5.3.1** The most frequently raised issue in consultation responses from those opposing a new high speed line was that enhancing existing networks could deliver the capacity needed to meet forecast demand and that there was therefore no requirement to incur the costs and environmental impacts associated with building new lines. The detailed discussion of this issue in consultation responses focused mainly on two options for enhancing the West Coast Main Line:

- ‘Rail Package 2’ (RP2): this is a package of enhancements to the West Coast Main Line which would be expected to enable 16 trains per hour to operate on the fast lines into and out of Euston. It assumed that all inter-city services would be operated by 11-car Pendolinos (tilting trains) or their equivalent, as infrastructure works are currently in hand to accommodate the planned introduction of a number of train-sets of this length. This proposal formed part of the suite of rail enhancement packages originally assessed by Atkins to inform the previous Government’s March 2010 Command Paper, *High Speed Rail*, and subsequently updated. It also formed the West Coast Main Line element of Atkins’ network enhancement Scenario B, which was assessed and published as part of the consultation documentation.

- The ‘Optimised Alternative’: this is a revised version of Rail Package 2, commissioned by the 51M group of local authorities opposing HS2, and submitted as part of its consultation response. It argues that further capacity increases can be provided through increasing train lengths from 11- to 12-car (other than on Liverpool services, where infrastructure constraints would prevent this) and through reclassifying at least one first class carriage to standard class. It also set out a new service specification for the West Coast Main Line based on a maximum of 16 trains per hour.

**5.3.2** Before considering the points in relation to capacity put forward in responses to the consultation, it is important to note that while ensuring that the rail network can respond to future demand growth is an important strategic objective for the Government, it is far from the only objective that the proposals for high speed rail seek to achieve. Therefore, issues relating to capacity increases alone should not be considered in isolation from other impacts of the options under consideration, such as their impacts on reliability and connectivity, and their broader economic and environmental effects.

**5.3.3** In respect of both the RP2 and 51M proposals, Network Rail’s report advises that the train service specifications would be deliverable once significant infrastructure enhancements had been completed. Even so, Network Rail’s analysis indicates that neither proposal would provide enough capacity to meet forecast demand. The most significant concern raised in Network Rail’s report in respect of both these

proposals is their potential impact on the ability of the network to accommodate rising demand for commuter and suburban services, particularly at the southern end of the West Coast Main Line.

### **Crowding on suburban services**

**5.3.4** The 51M proposal would provide two additional peak outer suburban services to Northampton per hour, using the fast lines out of Euston, but would also see the number of slow line services reduced by one train per hour. Network Rail's assessment is that this would be insufficient to accommodate forecast peak demand growth, leading to around 2,200 passengers standing in the evening peak hour by 2035. This compares to approximately 800 currently. Even allowing for the use of 12-car trains on additional suburban services (which would require alterations at Euston not included in the 51M proposal), Network Rail's analysis suggests that this number would only fall to 1,900.

**5.3.5** Similar consequences are foreseen by Network Rail as a result of the RP2 proposal, with around 2,000 passengers on suburban services (the current equivalent of the seating capacity of roughly 33 carriages), standing in the evening peak hour by 2035. Implementing 12-car running on the London Euston-Tring route would only reduce this to around 1,500 standing passengers – still almost double current levels.

**5.3.6** In addition, speed differentials between slow and fast trains serving outer suburban destinations could lead to very high levels of crowding on some specific services as passengers are likely to favour the faster services. The most notable

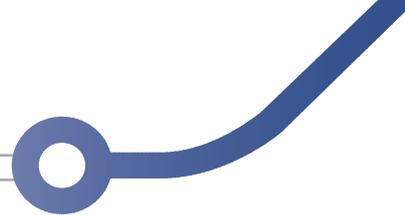
example would be the fast outer suburban service which is proposed in RP2 to call at Tamworth and Nuneaton. On this service, Network Rail's report forecasts a load factor of over 150 per cent by 2026. With a load factor this high, it is likely that some passengers simply would not be able to board this train.

**5.3.7** As a result, Network Rail's report concludes that neither proposal "*would provide sufficient capacity to meet forecast demand on the suburban commuter services at the south end of the West Coast Main Line*".

### **Crowding on long distance services**

**5.3.8** The proposals would also have implications for long distance crowding. Currently, the fast lines of the West Coast Main Line see 13 services in peak hours – 11 long distance and two fast commuter services to Northampton. Both RP2 and the 51M proposal would increase this to 16 trains per hour, but two of the additional paths would be used to increase service levels to Northampton. Therefore, only one additional peak hour long-distance service would be provided under either scenario – with any additional capacity increases only achievable through train lengthening and reconfiguring.

**5.3.9** As a result, the capacity increases on long-distance services provided over committed plans are comparatively low – around 60 per cent overall for the 51M proposal and lower still for RP2. The increases in the peak would be even smaller, potentially as little as around 35 per cent for the 51M proposal, for example.



**5.3.10** Some respondents have argued that this is an inappropriate comparison as they claim capacity increases should be compared to increases in demand from 2007-08 levels used by HS2 Ltd as the basis for modelling. It is important to note that a comparison of this kind ascribes capacity increases to the enhancement options that come about as a result of schemes that have either already been delivered or to which the Government is committed. Nonetheless, the Government has considered these two enhancement packages in this way. It is clear that neither package can provide a capacity increase in peak hours which matches the doubling in long-distance demand over 2007-08 levels underpinning HS2 Ltd's modelling (which itself may be a conservative assumption). The 51M proposal would deliver the highest overall increase in long-distance peak capacity, with only a small shortfall against modelled demand growth, but with smaller increases on some key routes, as discussed below, and at a cost of very high levels of crowding on suburban services. The peak capacity increase under RP2 would be lower again.

**5.3.11** In respect of the 51M proposal, it has also been argued that the increase in standard class seating capacity would be higher than the overall increase, due to the reclassification of one first class carriage to standard. The Government does not agree, however, that standard class capacity can or should be considered in isolation. Although first class travel is currently at a low level, this may reflect recent economic conditions and it is uncertain that these low levels will remain. Even in the present circumstances, some peak services see higher levels of first class usage, and first class will remain a valuable source of revenue for train operators.

**5.3.12** The analysis carried out by Network Rail indicates that these capacity increases would not be sufficient to prevent increased levels of crowding on peak hour services over the long term. For RP2, Network Rail forecast a load factor of 92 per cent across all West Coast Main Line long-distance services out of London in the evening peak by 2035. Peak load factors would not be as high under the 51M proposal, but there would still be passengers standing on some long-distance services and this would be achieved at a cost of higher suburban crowding levels, as discussed above. Any reduction in long-distance services to boost suburban capacity would clearly increase these figures further.

### ***Distribution of extra capacity***

**5.3.13** The limited additional peak hour train paths for long distance services offered by these enhancement options also mean that the capacity implications will vary significantly between routes. For example, the 51M proposal assumes that only Manchester would see any improvement in peak service frequency. The RP2 service specification includes additional services to both Birmingham and Manchester, but at the expense of one service per hour to either Liverpool or Glasgow.

**5.3.14** This limited increment in train paths means that additional capacity cannot be provided evenly and choices must be made as to which city or cities benefit the most. This means that under RP2 peak capacity to Liverpool and Glasgow effectively stagnates, despite forecasts of increasing demand on these routes in Network Rail's Route Utilisation Strategy for the West Coast Main Line of around 50 per cent over the period to 2024-25

alone.<sup>37</sup> The additional train lengthening and reconfiguration in the 51M proposal mitigate this to some degree, along with the different service specification provided, but the capacity increases to Glasgow, Liverpool and Birmingham in this case are still much lower than the increase on the Manchester route. The overall peak crowding figures provided by Network Rail could therefore hide higher levels on some services.

**5.3.15** Similarly, as Network Rail's report on the strategic alternatives notes, because the number of long-distance services calling at commuter destinations such as Milton Keynes would increase under these proposals, and such faster services to London are generally favoured by travellers, the level of crowding at the southern end of the route on these services would be likely to be high.

**5.3.16** The capacity increases described above are substantially lower than those which could be provided through the provision of new high speed lines. The first phase alone of the proposed HS2 network would provide an increase in peak hour capacity on the West Coast Main Line corridor of more than 100 per cent on all key long-distance routes over current levels, once high speed and conventional services are taken into account. The capacity increases with both phases of HS2 in place would be greater still, as additional dedicated high speed, high capacity services would be provided to

Manchester, the East Midlands, South Yorkshire and Leeds.

**5.3.17** In addition, because new services on the high speed line would be likely to attract the majority of travellers to and from the major cities of the Midlands and the North, the interaction of long-distance and outer suburban passenger demand on long-distance conventional services (such as those calling at Milton Keynes) would not present the same crowding and capacity problems.

**5.3.18** It should also be noted that it is not only services into and out of London on which demand growth is forecast. Substantial increases in passenger journeys are also predicted by Network Rail on services between key regional cities, such as between Birmingham and Manchester. It is noticeable that none of the enhancement scenarios under consideration make any allowance for additional services on these routes. Similarly, the lack of any infrastructure enhancement on the Coventry corridor under the 51M proposal would mean that no further services could be accommodated on this route.

### ***Timing of capacity increases***

**5.3.19** It is argued by supporters of these schemes that additional capacity would be provided earlier under their proposals than if HS2 were taken forward as some schemes could be implemented more quickly (most notably the additional Northampton services). The Government does not consider that this would necessarily be the case. If additional capacity is needed on these routes and can be provided in a way that offers good value for money, its strategy for HS2 should not delay this. For example,

<sup>37</sup> <http://www.networkrail.co.uk/browsedirectory.aspx?root=\rus%20documents\route%20utilisation%20strategies&dir=\rus%20documents\route%20utilisation%20strategies\west%20coast%20main%20line>

the Office of Rail Regulation is currently considering a track access application for improved services to Milton Keynes and Northampton.

**5.3.20** It was also argued that these schemes could be introduced incrementally in response to prevailing patterns of demand on different sections of the network. The case was made that this would offer a more flexible and inherently less risky approach than an “all or nothing” project such as HS2. However, the degree to which these enhancements could be introduced incrementally would in part depend on the appetite amongst rail users for prolonged episodes of engineering work, and related disruption, on the network, possibly lasting for well over a decade. There are also potentially significant interdependencies between the different enhancement projects which would necessitate their parallel delivery. However, HS2 would enable a degree of incrementality – for example, the Government’s proposals are that service levels on HS2 are built up over time in response to demand. On the basis of the evidence available, the Government is not persuaded that an approach of incremental enhancements of the existing rail network would alter its overall view of the relative case for high speed rail as opposed to conventional enhancements.

### **Freight**

**5.3.21** A further capacity issue on the West Coast Main Line relates to rail freight. The high frequency of off-peak services on the line under RP2 would constrain the ability of the network to accommodate future freight growth. The off-peak service pattern under the 51M proposal is unclear, but if it assured a similar intensity of usage, the same issue would occur.

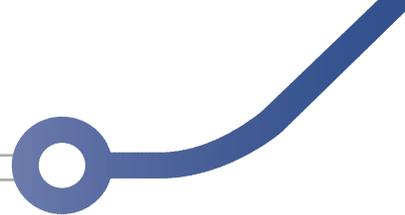
### **Impact on East Coast and Midland main lines**

**5.3.22** Consultation responses in support of RP2 do not in large part focus on capacity issues on the East Coast Main Line and Midland Main Line, although some responses argue that the capacity increases on these lines provided by Atkins’ Scenario B (which builds on RP2) are in excess of what would be needed to accommodate forecast long-distance demand. The 51M response does include sections dealing with these routes, which argue that forecast long-distance demand growth can be met through a combination of planned interventions (such as the introduction of new Inter-city Express Programme rolling stock or the completion of the Thameslink project) plus limited additional infrastructure or rolling stock expenditure.

**5.3.23** The same concerns in respect of the interactions between long-distance and suburban capacity apply on these routes as on the West Coast Main Line. For example, the review carried out by Network Rail of this scenario, although undertaken at a higher level than for RP2 and the 51M proposals, indicates that it is unlikely that there would be sufficient track capacity at the southern end of the Midland Main Line to accommodate the proposed increase in long-distance services together with foreseen levels of Thameslink and freight services. Similarly, the interventions on the East Coast Main Line are considered unlikely to allow any increase in outer suburban services on these routes, leaving crowding issues unresolved. In contrast, a new high speed line could see some long-distance services removed from this route, creating capacity to increase service levels for commuters.

### **Passenger demand forecasts**

- 5.3.24** All forecasts of future demand are subject to a degree of uncertainty, and in considering options for meeting future capacity needs this must always be borne in mind. The approach followed by HS2 Ltd in assessing future growth is to apply a cap at the point at which demand for long-distance services roughly doubles from the 2008 level. On this basis, it is to be expected that the RP2 and 51M proposals would make a significant difference in terms of accommodating long-distance demand growth, but at a cost of very high levels of crowding on suburban services. Even in the long-distance sector there would be a risk of capacity being put under strain during peak hours, particularly on those routes on which the number of peak services does not increase, such as to Liverpool and Glasgow.
- 5.3.25** If the cap level is not reached, then the capacity issues associated with these alternatives would be reduced although not necessarily eliminated. They would still not be able to meet the Government's wider objectives, however, for enhancing the strategic rail network and supporting economic growth.
- 5.3.26** It is equally possible that the cap has been set at too low a level. The Government considers that a conservative approach has been adopted, especially on the West Coast Main Line given recent demand growth. If actual growth in passenger numbers were to be faster than forecast and/or were to continue past the level assumed as the point at which demand might saturate, the strain on capacity could be more immediate and greater still. In this circumstance, there would be unlikely to be any further value for money options to accommodate increasing demand through infrastructure works on existing lines as the West Coast Main Line would be operating at its maximum practical capacity.
- 5.3.27** This is reflected in a number of consultation responses supporting the Government's proposals. These raise concerns about the adequacy of the potential capacity increases provided by enhancements to existing networks, and note that the increase provided by the recent West Coast Main Line upgrade appears only to have provided a temporary, medium-term solution to capacity constraints. Furthermore, it is also noted that if RP2 or the 51M proposal were to be taken forward and were to prove insufficient, no subsequent option has been identified which would offer value for money. As such, to fail to invest in new lines at this point would be seen by these respondents as a missed opportunity.
- 5.3.28** The Government's conclusion is that the additional capacity and flexibility provided by HS2 over and above that which can be achieved through enhancing the existing network is of significant value. Furthermore, its view is that the capacity and crowding risks inherent in the enhancement options presented, particularly in respect of commuter services, mean that enhancing existing lines would be unlikely to generate the level of capacity needed to accommodate growing demand.
- 5.3.29** The Government considers that its decision on the strategic approach to enhancing rail capacity should be robust for the long-term and support improvements in connectivity and reliability, where appropriate. As such, it does not consider



that it would be right to risk a solution which is likely to see capacity put under severe strain on key routes, which would make little, if any, difference to journey times. It could also worsen reliability (discussed in the next section), and would potentially only delay the need for expenditure on new lines.

### 5.4 Connectivity, reliability and frequency

#### **Connectivity**

**5.4.1** Addressing capacity constraints was not the only objective of the strategy for HS2 put forward for consultation by the Government. A second key objective was to improve connectivity between major conurbations, including links to key international gateways such as Heathrow Airport and the HS1 line to the Channel Tunnel, by reducing journey times and enhancing integration between inter-urban, urban and international networks.

**5.4.2** The connectivity benefits in terms of improved journey times, reliability and reduced crowding offered by HS2 were assessed to be significantly greater than those provided by any package of enhancements to existing networks, totalling approximately £40 billion compared to less than £13 billion for even the strongest package of enhancements tested. These figures have since been updated in the light of more recent Office for Budget Responsibility forecasts and other factors, but this has not affected the overall conclusion.

**5.4.3** A particular issue is the slow journey times between regional cities stemming from the historic design of the UK rail network. The

improvements in journey times provided by the second phase of HS2 on many of these routes would be considerable – particularly as a new link would be created between the West Midlands and Leeds, substantially improving connectivity between cities currently served by different main lines. Enhancements to existing lines, in contrast, would not be able to address these historic deficiencies, and so would have only limited benefits for regional connectivity.

**5.4.4** In addition, enhancements to existing lines would not be able to provide the step change in rail access for key regional centres to Heathrow Airport (both through Old Oak Common in phase 1 and directly in phase 2) and the HS1 line to the Channel Tunnel which would be delivered by HS2. These links are seen as valuable by a number of regional stakeholders, particularly where there is currently no access to Heathrow by air and poor journey times by other modes, as from Leeds and Sheffield. Nor would enhancements to existing routes provide the additional connectivity that is achieved through a direct link between HS2 and Crossrail. Under any enhancement scenario, Crossrail would not connect to any of the existing north-south rail arteries.

**5.4.5** The Government's view is that the connectivity and journey time benefits available from new high speed lines would bring significant economic and strategic benefits, and that the 51M and RP2 proposals provide a good indication of the very significant constraints on the additional connectivity that could be generated through enhancing existing lines.

### **Reliability and frequency**

**5.4.6** Improving the performance of the network was also a key part of the Government's strategy so also needs to be considered. Network Rail's report notes that the West Coast Main Line already suffers from comparatively poor train performance. Therefore proposals which might further affect reliability would need to be scrutinised carefully. Network Rail's conclusion is that while both proposals build in some resilience to safeguard performance they would nonetheless introduce high risks to the performance of the route. Where increased service levels are proposed on route sections where no infrastructure works are proposed, for example, this could have a knock-on effect on route reliability. For this reason, Network Rail does not support the proposed removal of timetabling allowances which forms part of RP2 (and whose retention has a significant negative effect on its value for money). Network Rail's report also notes that no estimate is made of any additional costs required to maintain performance levels, given the impact of a more intensive service pattern on network access and maintainability.

**5.4.7** Network Rail also note that the proposed enhancement packages would have implications for the frequency of services at specific destinations, given the trade offs that need to be made in enhancing service patterns if track capacity remains in comparatively short supply. The RP2 and 51M service specifications differ in a number of respects, but in each case there would be both winners and losers. Under the 51M proposal, Stafford would see a reduction in services to London throughout the day, as would the Trent Valley towns of Lichfield, Nuneaton and

Tamworth in peak hours. Other stations including Atherstone and Stone would see all services withdrawn and Rugeley Trent Valley would lose all direct services to London. In contrast, Watford Junction would see an increase in non-stop services to London and Rugby would see an increase in fast services in the off-peak. The impacts of RP2 would be felt differently, with Stafford, Crewe and the Trent Valley towns seeing a slight increase in service levels, but fast services to Watford Junction reducing. Milton Keynes and Watford would also lose fast services to Birmingham, though Watford would gain a direct service to Manchester.

**5.4.8** Therefore, on examination it is apparent that the 51M and RP2 proposals would involve reliability and frequency disbenefits making them considerably less attractive.

## **5.5 Sustainability**

**5.5.1** A central argument in consultation responses arguing in favour of enhancing existing lines as an alternative to HS2 is that such an approach would generally have significantly lower impacts on local environments and communities than new high speed lines.

**5.5.2** The Government accepts that an approach of this kind would have lower impacts in respect of factors such as noise, landscape and townscape, although it notes that the impacts of any major package of enhancements (particularly where these include off-line works such as the proposed Stafford By-Pass) would not necessarily be negligible.

**5.5.3** The Government also accepts that the range of potential impacts of this approach

on carbon emissions would not be as wide as that for new high speed lines. It would, therefore, not carry the same risks of marginal increases in overall transport emissions, but nor would it have the same potential to deliver savings through promoting modal shift that could come from the best-case high speed rail scenarios.

- 5.5.4** The Government's view is that these issues must be considered in the context of the factors reviewed above, and in particular the serious risk of a long-term shortfall in capacity if this approach is followed. Given the significant work that has been done to minimise the sustainability impacts of HS2, and the substantial risk that an approach based on enhancements to existing lines would only delay and not eliminate the need for new lines, the Government does not consider that these potential sustainability benefits alter the overall strategic case for high speed rail.

### 5.6 Disruption

- 5.6.1** The Government's view as set out at consultation was that the potential disruption to travellers while enhancement works were carried out was of significant concern, and was an important factor in its conclusion that enhancements to existing lines should not form the basis of its strategy for improving network capacity and performance, in this case. The Government also noted that the significant increases in usage seen over recent years would mean that such works would be more disruptive, and affect more passengers, than would have been the case previously.

- 5.6.2** This view was supported by a number of consultation responses, which noted the significant disruption caused by the recent modernisation programme on the West Coast Main Line, and its perceived impacts on economic growth in some areas served by the line.

- 5.6.3** It is also supported by the conclusions of Network Rail's report on the key enhancement packages under consideration. This states that:

*"There is a heavy disruption impact to deliver the projects in all three proposals, on routes which are more popular and being used more intensively than ever before, and where a campaign of work similar to that undertaken in the West Coast Route Modernisation would not be considered acceptable by customers."*

- 5.6.4** Critics of the Government's proposals, in contrast, have argued that the level of disruption which would be caused by the proposed enhancements has been overstated, and would be less than the disruption resulting from the very significant redevelopment of Euston station required to deliver HS2.

- 5.6.5** The Government does not consider this criticism to be well-founded. Network Rail's work, as noted above, has confirmed its view of the potentially significant disruption impacts required to deliver any of the packages under consideration. Indeed, Network Rail's work has identified further infrastructure works over and above those identified by Atkins or 51M that would be required. This includes a major programme of platform lengthening at as many as 18 stations on the West Coast Main Line to deliver the 51M proposal, and major additional works on

the East Coast and Midland main lines to deliver the service specification proposed under Scenario B.

**5.6.6** Furthermore, Network Rail's work indicates that more significant works would be expected to be needed at Euston to deliver any of the packages under consideration than had been identified by Atkins. While these may not be as substantial as those required for HS2, neither would they deliver the same level of benefits in terms of enhanced rail capacity and connectivity, or necessarily the same broader improvements to the station environment and access to London Underground.

**5.6.7** For these reasons, the Government's conclusion remains that the disruption to rail users caused by a significant programme of enhancements to existing lines would be greater than that caused by the construction of a new line such as HS2, and should be a material factor in considering the overall case for such an approach.

## 5.7 Costs

**5.7.1** The costs of the proposed enhancement packages and scenarios assessed by Atkins were also the subject of some criticism in a number of consultation responses. The key challenges made were that:

- The packages included infrastructure works which were not necessary to deliver the service patterns or timetables proposed;
- The estimates of rolling stock costs were inflated (particular attention was

drawn to the cost increases between Atkins' original 2010 report and the subsequent update published in March 2011); and

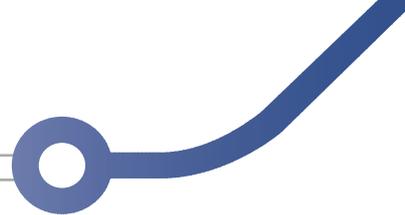
- The estimates of operating costs included inappropriate allowances for optimism bias.

### **Infrastructure costs**

**5.7.2** Infrastructure costs were considered by Network Rail as part of its review of deliverability of the proposed alternatives to HS2. In this case, as well as reviewing the cost estimates that had been developed by Atkins for RP2, Network Rail also made an estimate of the costs associated with the delivery of the 51M proposal (for example, the works at stations and depots to enable them to accommodate 12-car trains). The key conclusions of this review are set out below, with the detailed results available in Network Rail's full report.

**5.7.3** The work carried out by Network Rail has indicated that the infrastructure costs associated with additional platforms and a new viaduct at Manchester Piccadilly could be removed from RP2 without affecting deliverability of the proposed service specification, given the Government's commitment to fund the Ordsall Curve works. However, this must be set against a number of other areas where Network Rail has concluded that costs are understated. This is discussed in more detail below.

**5.7.4** In respect of the other infrastructure works proposed, Network Rail's conclusions were that in the majority of cases these costs were likely to be broadly accurate, although the costs of works at Ledburn



Junction and on the Coventry corridor were assessed to have been understated. The exceptions to this were the Attleborough to Brinklow four-tracking, which Network Rail considered had been over-costed, and the Manchester costs in RP2, which, as noted above, were considered unnecessary.

- 5.7.5** In respect of the Stafford By-pass, the Department for Transport's own analysis has indicated that the same capacity increase, though not the associated journey time improvements, may be achievable through less costly works. This is being considered as part of the value for money assessment of these options.
- 5.7.6** In terms of costs at Euston, Network Rail's analysis indicated that it was likely that the delivery of both the 51M and RP2 proposals would require significant works at Euston, and that the relatively low-cost approach proposed in RP2 would not be feasible, either to lengthen platforms or to provide any additional platforms which would be required. Network Rail's report does not cost this work, given the level of detail available, but notes that any costs would be substantially higher than the c. £60 million estimated by Atkins.
- 5.7.7** In addition, Network Rail identified some additional costs which would need to be incurred to deliver these enhancement packages but which had not been included by Atkins. Depot costs, for example, were excluded from both packages; and the 51M proposal made no estimate of the cost of platform lengthening that would be required to accommodate 12-car Pendolinos. Network Rail estimate this latter at over £300 million (excluding any of the Euston works described above).

**5.7.8** Network Rail also concluded that the 24 per cent allowance made by Atkins for disruption, power supply upgrades and 'other items' was likely to be insufficient.

**5.7.9** Network Rail's review of the East Coast and Midland main line elements of the Scenario B enhancement package was carried out at a higher level than its consideration of RP2 and the 51M proposal, but also concluded that additional works would be required to deliver the proposed service specifications whilst also maintaining local, regional and freight service levels. Hence it is likely that Atkins' cost estimates may be too low.

**5.7.10** On this basis, the Government's view is that the costs of the proposed enhancement packages are unlikely to have been over-estimated. If substantial works at Euston were required, it is likely that the overall costs would increase, potentially significantly, further weakening the case for such an approach.

### **Rolling stock costs**

**5.7.11** In respect of rolling stock capital costs, the Department has reviewed the estimates made by Atkins in both its updated and original reports. A number of the base cost assumptions were updated and unit cost figures were refreshed between the original report and the updated report which accounts for some of the change between them. However, an error was also identified in the original reports in respect of the test in which rolling stock was treated as purchased, and hence as a capital cost. This meant that the capital cost figures for rolling stock used in building the rail packages and the comparator base case model were significantly lower than they should have been for this test. This error was not

replicated in the test where it was assumed new vehicles would be leased, or in the updated report.

- 5.7.12** It has been suggested that the rolling stock capital costs in the updated report, which were provided by the Department to Atkins, are not credible as they are higher than those proposed for HS2 phase 1. The Government has reviewed these costs on this basis and considers that this criticism is unfounded; the delivery of RP2 would require a very significant increase in the size of the Pendolino fleet, as well as the replacement of the outer suburban rolling stock fleet with new 125 mph capable suburban trains. In addition, the use of tilting trains adds extra cost in comparison to non-tilting stock. Therefore it is to be expected that the rolling stock costs would be substantial.

### **Optimism bias**

- 5.7.13** The Government does not agree that an inappropriate allowance for optimism bias was made in calculating operating costs. The proposals developed by Atkins include the procurement of a new fleet of tilting long-distance trains, as well as the use of new 125 mph rolling stock on some commuter routes. They also require the operation of the mixed-use West Coast Main Line at a previously untested level of service intensity. For these reasons, the Government's view is that the calculation of optimism bias as 41 per cent of operating costs is appropriate and in line with the Department's project appraisal guidance.
- 5.7.14** Furthermore, it does not consider that it is inappropriate to use the same level of optimism bias for both HS2 and RP2 operating costs. There is clearly some

precedent for the operating costs associated with RP2 as they relate to an existing line, but, as set out above, they are still subject to considerable uncertainty and risk. The same conclusions broadly apply to HS2 Ltd's operating costs. There is a wide range of evidence and precedent in relation to high speed rail operating costs, both within the UK from HS1 and from high speed lines in other countries, but nonetheless uncertainty and risk still apply to how such evidence would translate to the proposed new line.

## **5.8 Economic growth and wider impacts**

- 5.8.1** Consultation responses argued that in its assessment of its proposed high speed rail strategy, the Government has overstated the potential impacts of HS2 on economic growth. On this basis, it is argued that this should not be a factor in assessing the comparative merits of high speed rail versus enhancements to existing networks.
- 5.8.2** The broader issue of the potential impacts of major investments in new transport infrastructure on economic growth are discussed in Chapter 4. It is noticeable, however, that Atkins' 2010 high-level assessment of the monetisable Wider Economic Impacts of its proposed rail enhancement packages was substantially below that of HS2 (a maximum of £700m compared to around £4bn for HS2). The impacts of the 51M proposal, which has very similar impacts on urban and commuter networks, would be expected to be in the same range. In addition, none of the enhancement options proposed would provide any opportunities to

support growth in identified regeneration areas such as those offered by HS2 at Old Oak Common and Birmingham Eastside.

**5.8.3** The disparity in economic impacts of HS2 and enhancement options is also noted in a number of consultation responses supporting the Government's proposals. Not only is it considered that the enhancement options would fail to deliver the improved connectivity which the major regional cities see as important in supporting their economies, but in some cases they also point to the perceived negative impacts caused by the decade-long upgrade to the West Coast Main Line, particularly in the North West.

**5.8.4** The Government's view is that the disparity in additional wider economic benefits is a further factor weakening the strategic case for enhancing existing lines as an alternative to high speed rail.

### 5.9 Summary

**5.9.1** The proposals from Atkins and the 51M group for providing additional capacity through enhancements to existing lines indicate that there remains scope for the delivery of some level of capacity increase in this way. This would potentially be sufficient to provide relief for the most severe capacity constraints on long-distance services, but at significant financial cost and with high levels of crowding prevalent at the busiest times of the week.

**5.9.2** A more serious disbenefit of an approach of this kind is that it would not provide sufficient scope for additional capacity to address urgent suburban crowding issues, particularly at the crowded southern end

of the West Coast Main Line. As a result, crowding on these services would become an increasing problem, with very high levels of standing passengers over the coming decades. Furthermore there would be no additional capacity for regional inter-city services and rail freight. The result would be a railway operating at its maximum capacity, negative consequences for reliability and a stark choice between prioritising the available capacity for long-distance or regional services.

**5.9.3** The proposals could also have impacts on the reliability and maintainability of the network, and would be highly disruptive to passengers whilst works are carried out. Network Rail's analysis has also indicated that the costs of these proposals and their impact at Euston Station could be understated.

**5.9.4** The advantages of such an approach are that it would be likely to be cheaper than a new high speed line, though costs would still run into the billions for even the cheapest options considered, and it would have fewer sustainability impacts. These advantages, however, are far outweighed by the associated disbenefits: the significant disruption caused to passengers, the sacrifice of connectivity benefits achievable through high speed lines, and the significant risk that the need for new infrastructure would only have been delayed. For these reasons, the Government does not consider that a strategic analysis favours the adoption of such proposals as an alternative to high speed rail.

# 6 Phasing the roll-out of a national high speed rail network

**6.1.1** This chapter reviews the Government's case for the phased roll-out of a national high speed rail network, in light of responses received to Question 3 of the consultation *High Speed Rail: Investing in Britain's Future*:

*Do you agree with the Government's proposal for the phased roll-out of a national high speed rail network, and for links to Heathrow Airport and to the High Speed 1 line to the Channel Tunnel?*

**6.1.2** The most significant issues raised in responses, and the issues raised most frequently, are set out and considered below. This chapter also draws on any subsequent analysis and assessment undertaken by the Department for Transport. Responses relating to Heathrow and High Speed 1 are examined in Chapter 7.

## 6.2 The Government's case

**6.2.1** The Government's proposal was for the Y-shaped network to be delivered in two phases. The first phase would comprise an initial line from London to the West Midlands, including a link to the existing West Coast Main Line to enable high speed trains to serve destinations further north including Liverpool, Manchester and Glasgow. It would also incorporate a direct connection onto the High Speed 1 line to the Channel Tunnel. The second phase would comprise the lines from the West Midlands to Manchester and Leeds, including stations in South Yorkshire and the East Midlands and a direct link to Heathrow Airport.

**6.2.2** The Government's proposed high speed rail strategy as set out in the consultation document incorporated a phased approach to the roll-out of a high speed rail network on the basis of four considerations:

- Ensuring early progress with seeking Parliamentary powers and constructing a network, on the basis that under the previous Government engineering, design and environmental assessment of the London-West Midlands leg was developed to a more advanced stage than the remainder of the network;
- Seeking powers from Parliament for constructing the network would be a more feasible task if split into two separate hybrid bills, covering the proposed first and second phases, respectively;
- Ensuring the annual rate of spend from the public purse for HS2 is kept within the constraints of overall affordability, particularly during the peak years of construction; and,
- Providing a clear and long-term programme of investment which will support industry in its planning.

## ISSUES RAISED DURING CONSULTATION

### 6.3 Phasing

- 6.3.1** There was recognition in consultation responses of the case advanced in the consultation document for phasing the roll-out of a national high speed rail network. Two issues in particular appeared to resonate.
- 6.3.2** First, there was a widespread desire to see a national high speed rail network introduced in Britain at the first available opportunity. Responses recognised that making early progress with seeking Parliamentary powers for, and then constructing, the London-West Midlands leg of the network was the most viable way of achieving this.
- 6.3.3** Second, responses from the rail industry in particular, but also from other businesses, argued that the supply chain which could potentially be involved in the delivery of the network would benefit from a clear and long-term pipeline of Government investment. There was support, therefore, for the Government's intention to provide such a pipeline through its proposed phasing of the network.
- 6.3.4** However, some consultation responses expressed concern that phasing the roll-out of the HS2 network could slow the overall delivery of high speed rail in the UK. The main reason presented in support of this view was that phasing would create "break points" that would allow future governments to delay, amend or scrap future phases of the network. Experience of previous major infrastructure projects – particularly Crossrail and HS1 – were cited as instances where "stop-start" political support had dogged progress, introducing uncertainty and ultimately delay.
- 6.3.5** A second reason for concern about slow delivery of HS2 was that phasing, by its very nature, would be an unnecessarily laborious process, implying a protracted approach even if the overall programme were followed. For example, it was argued that construction teams would be stood-down between phases, and that experience would be lost as workers were moved to other projects.
- 6.3.6** Two solutions to these concerns were variously proposed. The first would be for the current Government to implement a form of commitment – whether fully binding or not – upon future administrations to continue to develop the entire network as currently envisaged. It was felt that this would not be difficult to achieve given the current strong consensus across the three main political parties. The Transport Select Committee's November 2011 report included a recommendation that such a commitment should be made ahead of seeking any Parliamentary powers for HS2:
- "The Government should firmly commit to the Y network before seeking Parliamentary approval for HS2. It should clarify those works that would be included in Phase 1 to enable Phase 2 to proceed, including any works for interim arrangements."*
- 6.3.7** The Government is committed to ensuring, as far as possible, that both phases of the proposed national high speed rail network are constructed. The likelihood of this is very much strengthened by the strong political consensus that

currently exists across the three main political parties, and with the Scottish Government, on the merits of high speed rail. On major infrastructure projects such unanimity is rare and should not be taken for granted. It presents an ideal context for achieving a much needed project whilst avoiding disruption and delay from the intervention of political processes. This convergence should be exploited and the project progressed at the earliest opportunity, to ensure the benefits of HS2 are secured as early as possible.

**6.3.8** Nonetheless, as the consultation responses demonstrated, there is still concern at the perceived risk of future phases of the network being delayed or ultimately never being completed. The main source of reassurance, however, should be the greater strength of the case for the full Y network, compared to the initial link from London to the West Midlands alone. This is likely to make it politically unattractive for any future administration to scale back from current ambitions – particularly given the strength of support in the North and Scotland for HS2.

**6.3.9** Consultation responses supported this view that the benefits of high speed rail would increase as the network is enlarged. In addition, not only are the costs of the second phase less than those of the first phase, the costs are also less *per mile* and the stations could potentially be constructed at less expense than some of those in the first phase (as the regional high speed rail stations would be expected to be less costly than the London terminal).

**6.3.10** The strength of the case for developing the lines to Leeds and Manchester, coupled with the strong support of the cities and regions concerned, promote

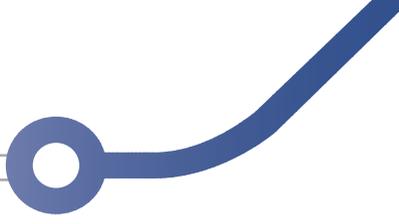
the overall case for the project being prosecuted in its entirety, particularly once the first phase is in place.

**6.3.11** Notwithstanding, the Government is actively exploring options for what type and level of commitment could be made to the second phase of the network ahead of the seeking of any formal powers for these lines. One option would be through a purpose clause in the hybrid Bill for phase 1 of the project as recommended by the Transport Select Committee in their November 2011 report:

*“The Government should include a purpose clause in the hybrid bill authorising the construction of the HS2 line from London to the West Midlands, which provides statutory force to its commitment to continue the high speed rail network at least as far as Manchester and Leeds.”*

**6.3.12** This purpose clause would, for example, state that the purpose of the hybrid Bill was to provide the powers for the first phase of a national Y-shaped national network to serve Manchester and Leeds. Such an approach could not fetter the discretion of a future administration, but it might be seen as a symbol of the Government's commitment to the full network. The Government is confident that a solution can be developed that provides the measure of certainty for which many stakeholders in the North and Scotland are calling. We will be exploring all options, including the purpose clause recommended by the Transport Select Committee.

**6.3.13** The second solution proposed in consultation responses to concern about the delivery timetable for HS2 was for the Government to seek powers for the entire



Y network under a single hybrid bill rather than under two bills as currently proposed. However, this is considerably less viable. As set out in the consultation document, there are clear disadvantages to adopting a single hybrid bill approach, which can be effectively summarised as delaying both the start of construction of the project and the realisation of its benefits.

**6.3.14** A single bill would delay the start of construction because the detailed route engineering and assessment work for phases 1 and 2 is being carried out to distinct timetables. Under the approach adopted by the previous administration to develop the London-West Midlands route engineering and assessment to an earlier timetable than the remainder of the network, this is the only section on which it would be possible to complete the necessary work to introduce a hybrid bill during this Parliament. To introduce a single bill for the whole Y network would require the detailed route assessment and consultation to be completed for the route north of Birmingham, something that has taken almost two years to achieve for the London to West Midlands route. This would then need to be followed by the detailed design and environmental assessment required to allow a hybrid bill to be introduced, which is also necessary for the London to West Midlands phase.

**6.3.15** A single hybrid bill would also take considerably longer to pass through Parliament, covering a route almost three times the length of the London to West Midlands section. This, coupled with the delay caused by preparation for a single hybrid bill, means that construction would be unlikely to start until towards the end of the next Parliament (2020). Given the

need to manage public finances the actual construction of the railway would not be able to be progressed any faster than currently planned, meaning that passengers would not experience the benefits of HS2 until considerably later than under the Government's current plans.

**6.3.16** For these reasons the Government believes that there is a strong case for a phased approach to the delivery of a national high speed rail network, in order to implement to network at the first available opportunity.

## 6.4 Project timetable

**6.4.1** Consultation responses included concern at the overall length of the proposed timetable for implementing high speed rail. It was felt that a period of over 20 years until the Y network would be operational was excessive. It was noted that other countries have been able to deliver new high speed rail lines (and other major pieces of infrastructure) to a much quicker timetable.

**6.4.2** In most responses, this concern at the delay in implementing HS2 was based on a desire to secure the benefits for the country earlier. However, others were concerned at the prolonging of uncertainty and blight for those affected by the proposed lines. Other responses noted that the costs of the project would inevitably rise if it was to be implemented over such a long period.

**6.4.3** The Government's timetable for implementing HS2 as outlined in the consultation document has been prepared with the intention of implementing HS2 at the earliest possible opportunity, whilst

effectively managing the parliamentary, cost and construction implications, and ensuring appropriate consultation with those affected.

**6.4.4** However, it should not be ignored that HS2 would be the most significant transport infrastructure project since the building of the motorways and such projects necessarily require detailed and, therefore, lengthy preparation. Large amounts of engineering and environmental assessment are necessary in preparing the plans. As noted, the public must be given a full opportunity to be consulted on the resulting proposals. The process for seeking powers for constructing the lines requires an Act of Parliament. Once Parliamentary powers are received it is necessary to appoint construction organisations and then mobilise for construction.

**6.4.5** The construction phase of a project of this scale will be in the order of seven to eight years, after which full safety testing and commissioning will be necessary, taking up a further two years. For the London to West Midlands phase, the proposed station at Euston will be one of the most complicated areas to construct. There will be a staged construction process to limit disruption to existing services at Euston, meaning that works at the station would take place throughout the construction period for phase 1.

**6.4.6** Even though the Government has sought to accelerate as far as is reasonably possible every element of its proposed timetable, it does still mean that the first phase would not open until 2026. The Government will continue to explore mechanisms to achieve further efficiencies, and will continue to draw on the experience

of comparable recent projects to maximise the pace and momentum of the project. Infrastructure UK will particularly be involved in taking forward this agenda.

**6.4.7** The Government is also mindful of the blight implications of a prolonged timetable. However, it is also the case that uncertainty and blight are at their most widespread when routes are in the public domain, but there has been no firm decision on which is to be pursued, or even an expression of Government preference. The Government will manage this project so as to carefully minimise the extent and impact of blight. Principally this will involve ensuring prompt communication of its preferred route options and clear decisions, following public consultation, on which options are then to be taken forward.

**6.4.8** A final consideration in the project timetable is the affordability of HS2. The phased approach to the roll-out of HS2, and the planned construction timetable, helps to ensure that each stage of the project is affordable. This approach is vital to protecting the flow of investment available to the existing rail network and to other transport projects, as well as to HS2 itself.

## 6.5 Constructing phase 1 (London to the West Midlands)

**6.5.1** Consultation responses included the suggestion of starting the roll-out of a national high speed rail network in the North. Two main reasons were advanced. First, that the need for economic stimulus is greatest in the North. Second, that these lines are cheaper and have higher

benefits. The Transport Select Committee's November 2011 report included a recommendation to this effect:

*"A full assessment of the case for building north to south has not been undertaken and should be done as a priority."*

**6.5.2** As the consultation document makes clear, the Government believes that HS2 would bring substantial benefits on a range of fronts to the North. However, as noted previously, the proposed approach to phasing has been developed in part to address inter-city rail capacity challenges where and when they arise. This points to the need to take earliest action on the southern section of West Coast Main Line, which is forecast to be full by the mid-2020s.

**6.5.3** The work that HS2 Ltd has undertaken on the network as a whole points to the fact that the largest benefits for the North accrue through the connections to London and the wider South East. Without these connections in place, the case for the lines would inevitably be significantly weaker. In particular, it is important to be aware that the benefits of phase 2 would be considerably lower than those currently published if the phase 1 lines were not in place.

**6.5.4** Two further factors are relevant here. First, the Northern cities have also presented a clear desire for better connections to London and the South East. For many this is seen as a key benefit of HS2. This would, of course, not be delivered by a network that only reached down as far as the Midlands, given the capacity constraints on lines into London. Second, opting to start the roll-out of HS2 in the North would delay the project by several

years. As noted above, the route and station options are still under preparation for the northern legs of the network. It would, therefore, be challenging to prepare and impossible to pass a hybrid bill during this Parliament. The Government considers that there is very little merit in introducing this sort of delay into the process.

**6.5.5** Therefore the Government believes that there is a strong case for starting construction of a national high speed rail network from London to the West Midlands, and does not perceive a need for any further assessment beyond that presented above of the case for starting construction in the North.

## 6.6 Constructing phase 2 (West Midlands to Manchester and to Leeds)

**6.6.1** Responses which supported the Government's proposal to construct the phase 2 legs to Leeds and to Manchester in parallel most frequently argued that these cities, their wider regions and the proposed intermediate stations along the line, should share in the benefits simultaneously. Responses perceived an unfair competitive advantage presented by one region gaining high speed rail ahead of the other.

**6.6.2** However, the argument was also advanced that, as Manchester and the wider North West region will receive connectivity benefits even from the first phase of HS2 (the London-West Midlands line), there is a case for constructing the Leeds branch of the Y network first. Amongst others, Nottingham and

Sheffield city councils supported this in their consultation responses.

- 6.6.3** Parallel delivery of the Leeds and Manchester branches is a feasible undertaking and the Government believes that this is the right approach. These lines, forming the second phase of the proposed network, would cost less than that of the London-West Midlands phase. Equally, the scale of the delivery and engineering challenges, even given the necessarily dispersed nature of the construction proposition and the fact that route and stations have not currently been determined, do not at this stage suggest any grounds for the Government to alter its assessment of the feasibility of undertaking these links in parallel.

### 6.7 Project scope

- 6.7.1** A limited number of responses proposed that a cheaper national high speed rail network could be developed that did not include, in its initial phases at least, any city centre stations but served out of town parkway interchanges only. This would remove the considerable cost of running lines into city centres (which often involves tunnelling) and the construction of city centre stations (also expensive in some cases, particularly given high land prices and complexity of integrating new developments on this scale into the existing high density urban fabric).
- 6.7.2** This proposition would enable potentially valuable cost savings, at least in the short term before the city centre links were constructed, but would be unlikely to have a strong economic or wider strategic case. The demand forecasts produced by HS2 Ltd suggest that the market for high

speed rail services will be predominantly between city centres. An approach that required passengers to interchange and face a longer journey would reduce the benefits of and demand for HS2.

- 6.7.3** Looking specifically at London, not providing a city centre station would present a number of particular challenges. First, the provision of both an interchange with Crossrail at Old Oak Common and with the London Underground and bus network at Euston, means that HS2 traffic would be more dispersed, helping to minimise capacity and other pressures at any one station. Second, it would be extremely challenging to construct the tunnel from the Old Oak Common interchange to Euston once the interchange was handling services. Third, HS2 passengers arriving into London would have no onward connectivity options in the event that services on Crossrail were disrupted. This would be an unacceptable resilience risk for HS2.

### 6.8 When to begin the roll-out of HS2

- 6.8.1** A limited number of consultation responses proposed that it would be more appropriate to undertake a further round of upgrading and enhancing of the existing network to address the capacity challenges forecast over the coming decades, rather than pursuing HS2 in the first instance. These responses argued that at a future point it would be possible to review whether these upgrades had provided sufficient capacity. It was advocated that this might well be sufficient if the Government's forecasts, as some responses argued, prove overstated. If the

need should emerge for HS2 in the future, it would be possible to simply pursue the project at that point.

- 6.8.2** The Government has reviewed the alternatives to high speed rail, and commissioned significant technical input to assist in this. The findings of this work are reported in Chapter 5. This explains why the Government has reached the view that the alternatives considered would be unlikely to be able to accommodate forecast growth in demand across the long distance, commuter and freight markets. The Government does not consider that it would be appropriate to take forward these major packages of upgrades when there would be a significant risk that they would only delay and not eliminate the need for new lines, particularly given that this would mean foregoing in the intervening period the connectivity and wider economic benefits that new high speed lines could bring.

### 6.9 Hybrid Bill

- 6.9.1** In its response to the consultation one of the campaign groups opposed to the Government's high speed rail proposals questioned whether a hybrid bill was the right approach for a project that was likely to continue to be controversial.
- 6.9.2** The Government has considered the range of different approaches that could be pursued to secure the powers to construct HS2 and remains of the view that a hybrid bill is the most appropriate route.
- 6.9.3** Hybrid bills are the customary route for providing powers for new railways, having been used for Crossrail, the Channel Tunnel Rail Link and the Channel Tunnel

in recent years. A new railway requires changes to primary legislation relating to the way that railways are regulated as well as planning permission for the railway itself. A hybrid bill allows both of these things to be achieved in a single bill and so for the railway and its impacts to be properly considered in totality. Under any other route for securing planning permission, a separate piece of primary legislation to change railway regulation would also be required. This would either mean that the two processes would have to take place in sequence, delaying progress with the scheme and extending the uncertainty for those people affected by the project, or they would have to happen in parallel, which would mean that it would be harder for the implications of the railway in totality to be considered.

- 6.9.4** All of the recent railways that secured their powers via a hybrid bill had significant impacts on individuals that made them controversial, but the hybrid bill process, through the Select Committee stages, is responsive to the impacts on people affected by the railway. Such individuals, businesses and local authorities can petition against the project and appear before the Select Committee to have their case heard. The Select Committee can then make recommendations to change the railway in light of the evidence heard. Therefore, we believe that a hybrid bill has a proven track record for use with controversial rail projects, is responsive to the needs of those affected by the scheme and allows the full implications of the railway to be considered together.

# 7 Serving Heathrow Airport and the High Speed 1 line to the Channel Tunnel

**7.1.1** This chapter reviews the Government's case for providing links between a national high speed rail network and Heathrow Airport and HS1, in light of responses received to Question 3 of the consultation *High Speed Rail: Investing in Britain's Future*:

*Do you agree with the Government's proposal for the phased roll-out of a national high speed rail network, and for links to Heathrow Airport and to the High Speed 1 line to the Channel Tunnel?*

**7.1.2** The most significant issues raised in responses, and the issues raised most frequently, are set out and considered below. This chapter also draws on any subsequent analysis and assessment undertaken by the Department for Transport. Responses relating to the phased roll-out of a national high speed rail network more generally are examined in Chapter 6.

## 7.2 The Government's case

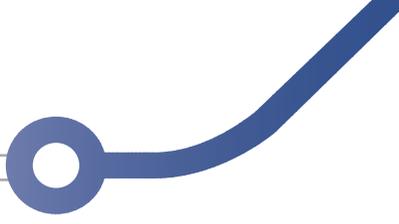
**7.2.1** The consultation document set out the Government's proposals for providing direct links from HS2 to Heathrow and HS1. The Government's view set out in the consultation was that a strong strategic case exists for directly integrating these important pieces of transport infrastructure. Ensuring that the best possible opportunities exist for efficient and easy travel around Britain, and to its

most important international gateways, is important to support economic growth.

**7.2.2** As well as the economic benefits associated with improved and integrated travel options, the consultation document also presented the possibility that these connections would support the Government's objectives for reducing carbon emissions associated with transport. Providing a potential alternative to domestic aviation through direct rail services to Heathrow could see opportunities for modal shift to rail, a generally less carbon-intensive mode.

**7.2.3** The proposals for a Heathrow link outlined in the consultation were for a direct spur from the main HS2 line serving a new high speed rail station within the airport. This option would mean that passengers could travel from stations on the HS2 network directly to Heathrow, without the need to change trains.

**7.2.4** The consultation document proposed a phased approach to integrating Heathrow into the HS2 network. The direct spur from the main HS2 line to Heathrow would be constructed in phase 2 of the project. The spur would be designed to enable it to be extended into a loop back onto the mainline in the future. This would effectively increase the capacity of the trunk section of the HS2 network by enabling more HS2 services to access Euston than would be possible with the spur alone. In the first phase of the



network HS2 passengers would access Heathrow via the Old Oak Common Interchange Station.

**7.2.5** The consultation document also proposed a direct link between HS1 and HS2, enabling trains to run directly from the Channel Tunnel to destinations in the Midlands and the North. This infrastructure would mean that it would be possible for passengers to make these journeys without the inconvenience and journey time penalties associated with transferring from Euston and other stations to St Pancras International. The journey via HS2 from Birmingham to Paris on a direct service, for example, could take just over 3 hours. By contrast, to make this journey by rail today involves a walk, tube or bus journey between stations. This link would be included as part of phase 1 since it would not be possible to construct a link later without significant disruption to the railway.

**7.2.6** With the continued expansion of high speed rail across Europe, the journey options for international services running from HS2 through the Channel Tunnel are continuing to expand.

## ISSUES RAISED DURING CONSULTATION

### 7.3 Heathrow

**7.3.1** The consultation recorded high levels of support and relatively little opposition for linking HS2 to Heathrow. There was a widespread recognition of the strategic benefits that a direct connection would bring to the country – particularly from

ensuring integration of these two major elements of the country's transport infrastructure. As the UK's international hub airport and the busiest airport in Europe by passenger traffic, the Government recognises Heathrow's status in providing international connectivity, supporting an open and competitive trading economy in Britain, promoting growth and providing a substantial number of direct and indirect jobs. A large number of economically valuable journeys are made to and from Heathrow, and the Government sees a strong strategic case for enhancing the airport's surface connectivity with all parts of the UK and particularly with its major cities. The areas of concern raised in consultation responses are discussed below.

#### ***The economic case for a high speed link to Heathrow***

**7.3.2** Responses argued that serving Heathrow, either by the Government's favoured spur option or by running the main HS2 line via the airport, would have a relatively weak economic case. This is based on the view that there would be insufficient demand for HS2 services to Heathrow and therefore insufficient benefits to justify, first, the additional infrastructure expenditure and, second, the loss of capacity on HS2 for serving central London, which would be the main market for HS2 passengers.

**7.3.3** As with every potential transport project, the Department for Transport assessed the case for HS2 against a number of criteria. The Department's decision making procedure is an ongoing process of evidence gathering and review, which evolves as a project progresses through its different stages of development. The economic case for a project, based on a quantified ratio of benefits and costs, is

only one of five components that contribute to this assessment, the remaining four being the strategic, commercial, financial and management cases.

**7.3.4** It is inadequate to attempt to judge the case for a direct link to Heathrow on the basis of its economic case alone. The Government must also consider how a project supports its wider strategic objectives – for example, in relation to tackling carbon emissions or supporting economic growth. The proposal to link Heathrow and HS2 scores highly across a number of strategic objectives, not least enhancing the connectivity and inherent value of Heathrow to the UK. The Government supports the link as part of ensuring the sustainable development of the airport and also to provide an attractive alternative to short haul aviation. As discussed below, the promotion of economic activity in the Midlands and the North is a further valuable benefit.

### ***Demand for surface access to Heathrow***

**7.3.5** The second area of concern raised in consultation responses about a direct connection to Heathrow related to assessments of the geographic location of demand. Responses noted that the majority of the demand for surface access to Heathrow comes from London and the wider South East, which would be less likely to use HS2 to access Heathrow (since Crossrail will provide a new direct link from central London to Heathrow Airport).

**7.3.6** Whilst it is the case that existing patterns of economic activity mean that London and the South East constitute the main markets for Heathrow, this may not always be the prevailing pattern. In particular, if HS2, amongst other factors,

promotes economic activity in the Midlands and the North then this would serve to increase demand from those regions.

**7.3.7** Current demand for accessing Heathrow from the regions comprises passengers arriving by surface access modes – particularly by road – and also those flying into Heathrow. Although there has been a steady decline in domestic flights to Heathrow in recent years, with a continued shift towards serving long-haul destinations, there remain a significant number of regional air services from Heathrow; in 2010 there were around 382 flights per week between Heathrow and Edinburgh or Glasgow.<sup>38</sup>

**7.3.8** Some consultation responses developed this point to argue that improving conventional rail and other public transport links to Heathrow from its core markets should be treated as the priority, rather than HS2. The Government supports the improvement of public transport surface access to Heathrow, in particular to tackle existing congestion and air quality challenges. In addition, the Government welcomes the work that Network Rail and BAA have underway on radically enhancing rail access from the west of the airport. An HS2 link would not be an alternative to getting these things right.

### ***Supporting economic growth***

**7.3.9** Consultation responses recognised the importance of international connectivity for Britain's economy – in particular in supporting economic opportunities in the regions – and the specific benefits that

<sup>38</sup> In 2010 there was an average of 962 flights per week between London airports and Glasgow or Edinburgh airports (Civil Aviation Authority statistics).

enhanced connections to Heathrow from the regions could present for these economies.

- 7.3.10** The ability to operate fully and competitively in international markets relies on high-quality international connectivity. Businesses across a range of service and manufacturing sectors that compete in international markets are likely to be dissuaded from locating and investing in regions that are perceived as poorly integrated with key markets across Europe and, increasingly, around the world.
- 7.3.11** Britain's regional airports serve a range of destinations, providing European and, to a lesser extent, long-haul connectivity for the cities and regions that they serve. However, Heathrow currently offers the greatest number of long-haul destinations and is widely perceived as the main international business gateway to Britain making distance from Heathrow a perceived business disadvantage.
- 7.3.12** HS2 would put Manchester within one hour and 16 minutes of the terminals at Heathrow and Leeds within one hour and 28 minutes. A station in South Yorkshire would be approximately 1 hour and 9 minutes from Heathrow by HS2, and Birmingham Interchange just 33 minutes away. This proposition, as recognised by a number of local authority and business responses to the consultation, would help to tackle perceptions of the relative isolation of these regions.
- 7.3.13** The Government believes aviation will continue to play an important role in supporting economic growth across the UK. At present Heathrow is relatively difficult to access by high quality, fast and frequent public transport options from most of the UK, with the exception of

London. Rail connectivity into the airport in particular is, by European standards, limited. This is a problem clearly recognised by both the Government and the airport's owner, BAA.

- 7.3.14** HS2 would go a long way to improve the accessibility of Heathrow. Not only is reducing journey times into the airport extremely important, but the simple perception of Heathrow's proximity and ease of access from a location could potentially help to create new opportunities and support growth.

### ***Aviation strategy and maintaining the UK's international connectivity***

- 7.3.15** Consultation responses raised a number of issues concerning Heathrow's role in the aviation sector in Britain and, on this basis, the best approach for handling HS2. There were three clear themes in consultation responses on this matter.
- 7.3.16** First, the need for any high speed rail proposition for Heathrow to be integrated with a wider strategy for the airport and for aviation in Britain more generally. It was felt to be particularly important that these two strategies – but others also – should not be drawn up in isolation and that consistency would be important, not only to avoid “unintended consequences” but also to maximise any scope for synergies. The Transport Select Committee's November 2011 report included a recommendation to this effect:
- “The Government needs to make clear how HS2 fits into a wider aviation strategy.”*
- 7.3.17** The Government's approach is to develop its aviation and high speed rail strategies in close consultation with each other given the many and complex interactions

between them. Aviation and high speed rail both stand to offer very significant benefits to Britain over the coming decades, supporting economic growth and enabling the fulfilment of people's leisure aspirations. The Government's Sustainable Framework for Aviation, due to be published for consultation in March 2012, will make clear these strategic links.

**7.3.18** Second, there was some discussion of the opportunities that HS2 might present for Heathrow and the country. In particular, it was noted that a high speed rail link to Heathrow could help to maintain the UK's international connectivity. HS2 could release runway capacity at Heathrow by providing an alternative to some domestic aviation. This released capacity could enable Heathrow's international route network to develop to serve, for example, new destinations in emerging economies. Consultation responses also suggested that released slots could be left unused, thereby potentially bringing resilience and carbon-reduction benefits.

**7.3.19** The Government believes that HS2 has real potential to complement and support Heathrow. For example, the opportunity for airlines to switch domestic and other short-haul flights to other types of service could allow them to develop new direct connections around the world. It could also allow Heathrow to enhance the service provision to existing destinations, providing more competition and choice for passengers. However, as the spur to Heathrow would not open until 2032/33, it would be more appropriate to re-examine the options for handling the impact of HS2 on Heathrow in detail in the light of prevailing circumstances nearer the time, including environmental factors.

**7.3.20** The final theme raised in consultation responses was that linking Heathrow to high speed rail could present the potential for the airport to become an increasingly important public transport interchange hub, particularly if further surface access initiatives were pursued in relation to the airport.

**7.3.21** In testing the case for a direct link to Heathrow the Government has worked with the airport's owner and with the airlines to assess all the relevant issues. In particular, the Government has engaged on the airport's plans and wider aspirations for enhancing its surface access connectivity, in terms of both road and rail. There is strong support in the airport for high speed rail connectivity as a part of this mix, and there is a clear recognition that HS2 would complement the wider surface access objectives in place.

**7.3.22** The Government welcomes the work underway between Network Rail and BAA on providing a link into Heathrow from the Great Western Main Line, which serves the Thames Valley, Wales and the South West. This connection would work well with a HS2 connection into the airport serving stations in the Midlands and the North. Analysis undertaken to date suggests that significant journey time savings to the Midlands and the North from places on the Great Western Main Line could be achieved by interchanging onto HS2 at Heathrow. And that is besides the benefits of opening up the airport itself for passengers from the Great Western Main Line.

**7.3.23** Consultation responses also identified a number of wider aviation issues that would need to be addressed as part of

the Government's development of a sustainable framework for UK aviation, including the role of a hub airport, the UK's international connectivity and the role of regional airports. As previously discussed the Government is committed to publishing a draft framework for consultation by March 2012 and to the adoption of the framework by March 2013. The framework will take full account of the implications and opportunities offered by HS2.

**7.3.24** Whilst through-running services onto the existing network will spread the market for and benefits of high speed rail well beyond the extent of the network itself, it will still be the case that some domestic journeys will be best undertaken by air. The Government wants to see regional airports flourish and is considering their role in the context of developing the aviation framework. It is clear that regional airports will continue to be very important components of the UK's transport system and that their role can be directly complementary to that of HS2.

### ***The Government's carbon objectives***

**7.3.25** The broader carbon case for HS2 and the material presented in consultation responses is discussed in Chapter 4. This section focusses on carbon issues in relation to the Government's proposed Heathrow link. Responses to the consultation included extensive recognition of, and support for, the potential carbon benefits identified in the consultation document arising from a direct link between HS2 and Heathrow.

**7.3.26** However, other consultation responses expressed concern or scepticism in relation to the carbon-saving opportunities to which HS2 could give rise. These

focussed on two main themes – the level and type of demand there would be for Heathrow services on HS2, and a range of issues relating to the runway capacity that could be released at Heathrow as a result of HS2.

**7.3.27** On the demand issue, responses noted that there are relatively few scheduled flights between Heathrow and the cities proposed for the Y-shaped high speed rail network. It was also felt that HS2 would be unlikely to attract the entirety – or even substantial proportion – of the aviation market between any given airport and Heathrow. It was argued that the proposed service frequency to Heathrow (two trains per hour) would be insufficient to generate the maximum potential mode shift. Responses considered that this would lead to travellers continuing to hub via continental European airports.

**7.3.28** The Government's phased proposals for high speed rail would encourage gradually increasing levels of modal shift from aviation, as well as from road transport. Modal shift from air would be likely even from the first phase of HS2 (the London-West Midlands line) due to the ability of HS2 trains to serve a range of destinations off the main HS2 network. Using through-running services would enable passengers from a range of destinations to access London more quickly, including from cities which currently have direct air services to Heathrow and other South East airports. Travellers could therefore be motivated to make the shift due to the reduced journey times to cities such as Glasgow, Liverpool and Manchester. The 30 minute reduction in the rail journey time would be sufficient for some air passengers to make the switch, particularly if the current trend of

reduced capacity for domestic services at Heathrow continues.

- 7.3.29** The second phase of HS2 (the lines to Leeds and Manchester, including connections from there onto the East Coast and West Coast main lines) would further reinforce and expand this modal shift, by enabling additional journey time savings to these and other destinations. The rail journey would be as much as one hour faster than today and without the need to change trains.
- 7.3.30** On the basis of international experience, any future phases of HS2 – in particular to Scotland – would be likely to see rail's mode share between the relevant cities increase still further. The potential carbon savings from the second and any subsequent phases of a national high speed rail network would be quantified as part of later phases of HS2 Ltd's appraisal work.
- 7.3.31** In relation to runway capacity, the view was expressed that any reduction in domestic or other short-haul flights to which HS2 could give rise would lead to the freed up runway capacity being utilised for additional long-haul flights. The outcome, it was noted, would be increased overall carbon emissions. Prompted by this concern, some responses sought a commitment from the Government that any slots freed-up at Heathrow as a result of HS2 would not be reused, thus locking-in carbon savings.
- 7.3.32** It is not within the power of Government to regulate the use of slots in this way, nor would we wish to do so. HS2 Ltd has considered this issue in its assessment of HS2 carbon emissions, including a best

case scenario that no freed-up slots are used for long-haul flights, and a worst case scenario that all freed-up slots transfer to long-haul use. However, the European Union Emissions Trading System would mean that any increase in aviation emissions would be offset by corresponding reductions in other sectors, through the trading of permits. The effect of this would be that any increase in long-haul aviation would not lead to overall carbon emissions growing. Therefore the approach taken to allocating slots would not fundamentally change the Government's conclusions.

### ***Configuration of a high speed rail connection to Heathrow***

- 7.3.33** The Transport Select Committee's report on high speed rail recommended that the Government re-examine the case for a through-route to Heathrow, rather than HS2 serving Heathrow by a spur from the mainline as the consultation document proposed. BAA and the airline community at the airport, particularly British Airways, argued in similar terms in their responses to the consultation. In particular, they noted that the example of several European airports demonstrate the attractiveness of such a proposition to travellers.
- 7.3.34** Some consultation responses which expressed this preference were uncertain of the precise nature of the Government's HS2 proposals in relation to Heathrow, either with regard to the phasing or the broad configuration of the link.
- 7.3.35** HS2 Ltd has conducted further work on the relative merits of routing the main HS2 line via Heathrow to supplement its initial



analysis.<sup>39</sup> Its conclusions, which continue to point to the superiority of a spur serving Heathrow from the main HS2 line, are detailed in the *Review of HS2 London to West Midlands Route Selection and Speed*.

**7.3.36** This approach was supported by the review of options for accessing Heathrow from HS2, which was commissioned by the previous administration and undertaken by Lord Mawhinney.<sup>40</sup> He explicitly rejected the option of a through route via Heathrow.

**7.3.37** It is certainly the case that running the main HS2 line via Heathrow would bring some incremental benefit to those wishing to access Heathrow by HS2 relative to the Government's proposals. Primarily these benefits would be from a higher frequency of services and marginally quicker journey times to the airport. However, a far greater proportion of HS2 passengers would be using the service to access London rather than Heathrow Airport. For this reason the benefits of a main HS2 line via Heathrow to a minority of passengers travelling to Heathrow would be far outweighed by the disbenefits to the majority of passengers wishing to access London; journey times on a London to West Midlands line via Heathrow would be longer both due to the longer routing of the line necessary for serving Heathrow and the time lost through train deceleration, platform dwell time and acceleration through an additional stop. Therefore the Government

does not believe that there is a strong case for serving Heathrow on the main HS2 line. A through-route to Heathrow would also be more expensive than a spur approach, further weakening the case for such an approach.

### **Phasing of a high speed rail connection to Heathrow**

**7.3.38** A limited number of consultation responses suggested that a direct link to Heathrow should be constructed as part of the first phase of the HS2 network – the line from London to the West Midlands. The main argument advanced to substantiate this proposal was that this would be of benefit to those accessing Heathrow in the interim period between the first and second phases opening.

**7.3.39** The Government considered a range of phasing options for Heathrow in drawing up its proposals. As the consultation document noted, whilst there would be benefits to passengers wishing to access Heathrow from the provision of a spur as part of the London-West Midlands phase, the case for building this direct link is only likely to offer sufficient strategic benefit once the network stretched as far as Leeds and Manchester. This is due to there being lower demand for HS2 services to Heathrow before the network extends to those cities. The relatively low level of demand for access to Heathrow during phase 1 would create a conflict between running a viable frequency of service into Heathrow and ensuring that those trains achieved a reasonable level of passenger loading. The higher the number of trains serving Heathrow each hour, the lower the passenger loading would be expected to be.

<sup>39</sup> <http://webarchive.nationalarchives.gov.uk/+/>  
<http://www.dft.gov.uk/pgr/rail/pi/highspeedrail/proposedroute/routesupplement/pdf/routesupplement.pdf>

<sup>40</sup> *High speed rail access to Heathrow: A report by Lord Mawhinney*: <http://webarchive.nationalarchives.gov.uk/20110131042819/http://www.dft.gov.uk/pgr/rail/pi/highspeedrail/lordmawhinneyreport/>

**7.3.40** Therefore, the Government believes that there remains a strong case for implementing a high speed rail connection to Heathrow in phase 2 and for using the proposed Old Oak Common station in West London as a Heathrow interchange in phase 1, as an interim measure. Passengers would alight from an HS2 train at Old Oak Common and make a simple cross-platform change onto a Heathrow Express service into the airport. The journey time is expected to be around 11 minutes from Old Oak Common to the Central Terminal Area, and two minutes longer to Terminal 5. This connecting service would be high frequency and high volume.

### ***Extension of a high speed rail Heathrow connection to other destinations***

**7.3.41** Suggestions were advanced in consultation responses for extending or otherwise amending the spur proposition to provide connectivity with other railway lines, such as the South West Main Line and down to Southampton, Bournemouth and other places.

**7.3.42** The cases for some of these proposals are worth testing further, particularly where they are able to open-up HS2 to new potential markets, thereby spreading the benefits of HS2 to additional areas. Further work would be required to examine these options in more detail and we will explore this with HS2 Ltd.

## **7.4 High Speed 1 (HS1)**

**7.4.1** As with the proposed connection to Heathrow, there was strong and extensive support in consultation responses for a direct link between HS1 and HS2. Integrating major elements of Britain's

transport infrastructure, opening up the connectivity benefits of HS1 to wider parts of Britain and providing an alternative to short-haul European aviation were seen as particular strategic benefits. The areas of concern raised in consultation responses are discussed below.

### ***The economic and strategic cases for a high speed link to HS1***

**7.4.2** There was some doubt over the strength of the economic case for providing a direct link to HS1. The argument was made that passenger demand for using a direct link between HS1 and HS2 would be insufficient to justify the expense of constructing the link and operating the services, particularly as running an HS2 train through HS1 would mean that capacity would be lost for serving Euston, which is expected to be the main market for HS2 passengers.

**7.4.3** This chapter has already discussed the role of the economic case of a project in the decision making process, noting that it is only one of five components which comprise the overall business case of any project. A project does not have to score strongly against all five elements of the business case to be justified.

**7.4.4** The strength of the strategic case for providing a link between HS1 and HS2 contributes towards the robustness of the overall case for making this investment. The Government believes that not to connect a high speed rail network to the European high speed rail network at some point would risk sacrificing a wide range of opportunities for the UK.

**7.4.5** The Confederation of British Industry noted in its response that businesses support a direct link to HS1 route, and



that better connecting the country to international networks will be important for ensuring that Britain remains an attractive and competitive business location.

**7.4.6** It is clear from the responses received that a large number of businesses recognise and support the growth potential that would come from a direct high speed link from the Midlands and the North into HS1. This rationale is only likely to strengthen given the plans that many European countries have for expanding their high speed rail networks. With high speed rail becoming an increasingly prominent mode for medium and long distance travel across Europe, there is a strong strategic case for ensuring that a high speed rail network in this country connects directly into the many thousands of miles of network in operation across Europe.

**7.4.7** Concerns were expressed over the potential impact of the HS2-HS1 link on London overground services using the North London Line. HS2 Ltd is working with Network Rail and Transport for London to mitigate any potential impacts of an HS2-HS1 link on London overground services. This issue is discussed in detail in the *Review of possible refinements to the proposed HS2 London to West Midlands route*.

**7.4.8** A direct link between HS2 and HS1 would also create an attractive alternative for many journeys that would otherwise be undertaken by short-haul aviation. Today there are a significant number of flights daily between airports in the regions outside of London that would be served by HS2 and cities that are within two hours of the Channel Tunnel by rail. Whilst it is unlikely that high speed rail would

have the competitive advantage in relation to all of these journeys, given the long-term need to reduce carbon emissions, making journeys by rail wherever the possibility reasonably exists is likely to become increasingly desirable.

**7.4.9** On this basis the Government sees a strong case for constructing a link to HS1 in the first phase because this is the only operationally viable opportunity to do so, due to the necessity for tunnelling at Old Oak Common Station. This issue was assessed in detail in HS2 Ltd's report of September 2010 *High Speed Rail London to the West Midlands and Beyond: Supplementary Report*.<sup>41</sup>

### **Supporting economic growth**

**7.4.10** A number of responses, particularly those from businesses and local authorities in the Midlands and North, supported the Government's view that there would be economic benefits from providing better access to the Channel Tunnel from more areas of the country. HS1 is currently relatively difficult to access by rail from much of the country, except for places on the Midland Main Line, which shares St Pancras station in London with HS1. As with the perceived distance of most of Britain from Heathrow, this isolation from HS1 is also considered to act as a barrier to promoting opportunity and growth.

### **Using the HS2/HS1 link to serve other destinations**

**7.4.11** As well as the general recognition of the benefits that a link to HS1 could offer to the economies of the Midlands and the North, some responses also set out

41 <http://webarchive.nationalarchives.gov.uk/+/http://www.dft.gov.uk/pgr/rail/pi/highspeedrail/proposedroute/routesupplement/pdf/routesupplement.pdf>

proposals for amending or adding to the proposals for the HS2/HS1 link in order to generate further benefits for the regions. In particular, the argument was made that the existing Stratford International station should be incorporated into the service pattern. This could allow access to north-bound HS2 services from Stratford, increasing the market reach of HS2.

**7.4.12** The proposals in consultation responses for ensuring HS2/HS1 services call at Stratford and elsewhere could bring benefits to those areas and spread the market for HS2. It would be possible for HS2 Ltd to examine the feasibility and options for incorporating Stratford into the proposed service pattern. This work would be undertaken over the coming months and would need to consider the implications of such services on other international and domestic services using HS2 and the HS1 link.

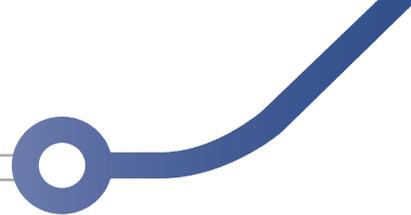
### **HS2/HS1 service frequency**

**7.4.13** There was some concern over whether the proposed service pattern for HS2 services to HS1 would provide sufficient frequency to make this an attractive service to potential users. HS2 Ltd's work indicates a maximum capacity via this link of up to three trains per hour in each direction.

**7.4.14** There is clearly a need to ensure that international services running off HS2 onto HS1 operate at a sufficient frequency to make them a viable and attractive proposition to passengers. This is particularly the case if this service is going to be in competition with aviation for these passengers. Equally, any service provider would not wish to provide excess capacity. As the consultation document makes clear, no decisions have yet been

taken on the service specification for HS2 or for precisely how the HS1 link would be served as part of this. Decisions on the service pattern will not be made until much nearer the proposed opening date, and in the light of the prevailing demand patterns and other considerations at that time. However, the service specification developed would be intended to offer the best possible proposition for passengers. And, given the strength of support for an HS2/HS1 link from the consultation, the Government would look to ensure that the HS2/HS1 link was used to its maximum possible advantage for passengers.

**7.4.15** Some concern was also expressed in relation to the potential diminution of service levels on both the Midland Main Line (which shares St Pancras station with HS1) and on HS1 itself as a result of running HS2/HS1 services. However, these concerns are unlikely to materialise. In relation to the Midland Main Line, as the HS2/HS1 services would not share any infrastructure with trains running on the Midland Main Line – in particular HS2/HS1 services would not use St Pancras station – there would be no infrastructure capacity reason for altering the prevailing service pattern. It is similarly the case for existing services on HS1 itself. HS2 Ltd's assessment is that the HS1 line has sufficient unused line capacity to accommodate the envisaged three trains per hour in each direction that would run onto HS2, without the need to remove any existing services. In summary, these developments would only have the effect of increasing choice and the levels of service for passengers.



### ***International security and HS1***

**7.4.16** Queries were raised over whether the extant security regime for international borders would present prohibitive difficulties in relation to the proposed link. In particular, if international HS2 services had to be entirely segregated from domestic services, how would this work in relation to station design. And if it were necessary to segregate services in this way and not have any mixing of passengers, would it be possible to generate sufficient demand for international services to justify running them.

**7.4.17** The advice prepared by HS2 Ltd recognises that it may be necessary to incorporate additional security infrastructure and other measures at those stations on the HS2 network that would offer international services. The high-level station plans that have been prepared at this early stage in the project recognise this need. If the project progresses these issues would need to be tested further, but there does not appear to be any compelling reason to suggest that this could not be achieved. It is also clear that in operational terms it would be feasible to run dedicated international services, with total segregation of domestic and international passengers. However, were it possible in the future to identify an operating model to enable combined domestic-international services, this would only strengthen the case for the link and increase operating flexibility for the operator of HS2.

# 8 Consultation process

**8.1.1** Although not a formal question in the consultation, a significant number of respondents made comments on the consultation process, offering a number of different views. This chapter addresses the main issues raised.

## 8.2 The Government's approach to consultation

**8.2.1** The *High Speed Rail: Investing in Britain's Future* consultation was launched on 28 February 2011 and closed on 29 July 2011. The Government's ambition was to deliver a high quality consultation that was fully in accordance with the *Code of Practice on Consultation*.<sup>42</sup> The consultation period lasted five months, exceeding the minimum of twelve weeks recommended in the *Code*, to allow people plenty of time to reach an informed opinion of the detailed proposals.

**8.2.2** The consultation invited anyone to submit their views on the proposals and provided an appropriate basis for Government decisions. 54,909 responses to the consultation were received. All the responses were analysed by an independent company, Dialogue by Design, which produced a consultation summary report.

<sup>42</sup> This report is available at: <http://webarchive.nationalarchives.gov.uk/+http://www.berr.gov.uk/files/file47158.pdf>

## ISSUES RAISED DURING CONSULTATION

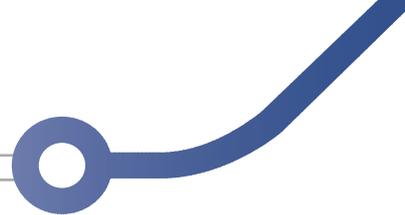
### 8.3 Scope of the consultation

**8.3.1** The Government consulted on both the strategy for a national high speed rail network and the detailed route proposals for the first phase of such a network between London and the West Midlands.

**8.3.2** Some respondents commented that they thought the scope of the consultation should have been limited to the strategy only, and for a decision to be taken on that before consulting on a line of route. Alternatively, some felt that the consultation should have included detailed route proposals for the second phase of the network, from the West Midlands to Manchester and Leeds and a spur to Heathrow. Some respondents would also have liked to have seen more detailed information on the alternative route options, or for the consultation to present all the alternative routes without proposing a preferred route.

**8.3.3** The Transport Select Committee in their November 2011 report also questioned the scope of the consultation, recommending that:

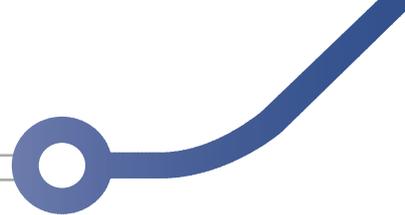
*"There should be an urgent strategic appraisal of Phase 2 before a final decision is made on Phase 1. No decision should be taken before strategic information on Phase 2 is published, appraised and consulted upon."*



- 8.3.4** The Government has considered these views but remains of the belief that it was appropriate to consult simultaneously on both the Government's proposed strategy for high speed rail and the proposed route for phase one.
- 8.3.5** Once a strategic decision about high speed rail is taken, it is important that the Government has the option to move forward with the proposals as quickly as possible. Consulting on the strategy alone would, given the long development and construction periods, have meant delaying delivery of the project. It was also important to hold consultation on the proposed route at an early stage of its development process so that there was an early opportunity for people to give their views and changes could still be made if necessary. Furthermore, leaving route proposals uncertain for another year or more might have increased the effects of blight for property owners close to the published line.
- 8.3.6** The Government made clear in the consultation document that it favoured a phased approach to delivering the network to prevent delay in delivering the benefits that a new high speed rail network would bring. The consultation had a clear remit in relation to the lines beyond Birmingham and to Heathrow. It was a consultation on the case for serving these destinations via a Y-shaped network and a spur. It was noted in the consultation that if the Government opts to continue with the project there would be subsequent rounds of consultation on the detailed route and local impacts of these parts of the national high speed network. Detailed options for the routes to Manchester, Leeds and a Heathrow spur are still being developed so these could not have been consulted on at the same time as phase 1. There would be a full consultation on the second phase of the network, which is planned for 2014, and every effort would be made to ensure that people affected by the proposal are aware of and able to respond to the consultation.
- 8.3.7** Information was provided as part of the consultation on the alternative routes which had been considered but which the Government viewed as inferior to the proposals it put forward. Annex B of the main consultation document explained the alternative options for stations and routes which were reviewed, and the main factors considered in determining the preferred route. Factsheets were also produced for each of the main alternative routes. The route design and selection process as detailed in the consultation material has been re-examined in the light of consultation responses. More information on this can be found in the *Review of HS2 London to West Midlands Route Selection and Speed*.
- 8.3.8** It was important for the Government to be as clear as possible about the proposed route, so that people could understand exactly what was being suggested and its possible effects. To have consulted on a range of route options could have led to widespread confusion and uncertainty about the Government's plans. Previous experience from the HS1 (Channel Tunnel Rail Link) project demonstrated that consulting on a wide range of route options could potentially lead to blight over a wide area. The risk of widespread blight was an important factor in the rationale for presenting a single, preferred option.

## 8.4 Provision and accessibility of information

- 8.4.1** Some respondents commented on the level and amount of information presented as part of the consultation, and its availability. There were comments both that the amount of information was too much and a lot of detail had to be absorbed, and also that not enough detail was provided about certain aspects of the scheme, particularly around environmental impacts. Some of these comments were linked to views about the scope of the consultation as discussed in the previous section.
- 8.4.2** For a consultation of this scale on an issue with much national and local interest it was important to find a balance between providing enough information for people to make an informed response while ensuring the key information was accessible and potential respondents were not overwhelmed by the level of detail. The Government believes all best efforts were made to get this balance right, by providing as much detailed information as was available, but by also providing the information in summarised and non-technical forms.
- 8.4.3** The Government published a range of evidence and documents as part of the consultation exercise, including a consultation document and summary, and a number of supporting technical reports. These were made available to download from the consultation website and on a DVD. Hard copies of the main documents and the DVD could be ordered online or from the consultation telephone order line.
- 8.4.4** The key information presented in the consultation was summarised on a series of over 50 factsheets, which were designed to present the information in a clear, non-technical way. These were popular and proved useful in allowing people to access information without needing to study the consultation documents in detail.
- 8.4.5** The consultation documents and the factsheets were made available for discussion at a series of roadshows; 41 events were held in 31 locations, attended by staff who explained the Government's proposals and answered questions.
- 8.4.6** In many cases where people commented that more information should have been provided, they were seeking information that would only be available once an Environmental Impact Assessment (EIA) had been carried out. The *Review of HS2 London to West Midlands Appraisal of Sustainability* sets out why an EIA was not possible or appropriate at this stage of the HS2 proposals.
- 8.4.7** People could also direct queries about the information provided in the consultation to HS2 Ltd in a variety of ways, including an enquiry line, email, letter, or speaking to staff at roadshows.
- 8.4.8** Having considered the consultation responses and reviewed the consultation, the Government's view is that the information presented at consultation was appropriate for a project at this stage of design, sufficiently widely available, and presented in an accessible way through a variety of formats.



### 8.5 The consultation questions

**8.5.1** A variety of comments were made about the seven consultation questions, most of them critical. Comments on the questions were often linked to views about the scope of the consultation, with some respondents feeling that asking questions on the detail of the proposed route was premature before a decision on the strategy was made, as discussed above. Other respondents expressed views that the consultation questions were either too restrictive or too wide, or that they were misleading in favour of the proposals. The Government has reviewed the consultation questions in light of these comments.

**8.5.2** The consultation questions were developed in discussion with the independent response analysis company, Dialogue by Design, to ensure they were appropriate to the consultation material and would allow for fair and objective analysis of responses. The questions did not lead respondents towards expressing any particular view. The questions were phrased to allow respondents to give a one-word answer if they wanted to. However, it was important to allow and encourage people to give us all their views and comments and not feel restricted in their answers, hence the consultation also allowed for more detailed answers.

**8.5.3** The consultation included a lot of detailed information both about the Government's strategy and the proposed line of route for the first phase (London to West Midlands). This meant that the questions had to be reasonably broad in order to encourage respondents to comment on all these

issues, while at the same time not putting people off by posing a long list of questions.

**8.5.4** The questions for the consultation were carefully developed to be as clear and easy to understand as possible, without using technical language or uncommon terminology, while still being representative of the scope and content of the consultation, some of which was quite technical in nature.

**8.5.5** People were also able to submit responses that did not directly reference or answer the questions if they preferred that approach; such responses were still read and analysed in full.

**8.5.6** Having reviewed consultation responses, we remain confident that the questions asked were appropriate, were not misleading or restrictive, and allowed people to fully express their views and provide evidence.

### 8.6 Public events

**8.6.1** Some respondents commented about consultation events, mainly about the locations chosen, the ease of public access and how they were publicised in local areas.

**8.6.2** As discussed, public roadshows were held along the proposed route to ensure local people had the opportunity to find out more about the project and to discuss specific concerns with those involved in developing the scheme. HS2 Ltd carefully considered the placement of events along and around the proposed route, and the programme of events was shared and discussed with local authorities.

- 8.6.3** The initial selection of locations was based on areas where HS2 Ltd was already aware of concerns and interest in the proposals, where there were impacts from the proposals, or where there were large population centres. The roadshows were either static exhibitions, which took place in halls and community venues, or mobile exhibitions, which made use of a trailer to reach smaller locations. In response to feedback during the consultation, a free bus service was provided for a number of events so that residents from nearby communities could easily attend. On average there was an event about every five miles along the line of route.
- 8.6.4** While it was not possible to hold an event at every location along the proposed route, and it is understandable that some communities were disappointed that the roadshow could not visit their village, HS2 Ltd made every effort to ensure that as many people as possible could visit an event near them. With 41 days of events and over 28,000 visitors, this was one of the largest programmes of consultation events ever undertaken by Government and we are confident that the programme of events provided an appropriate level of access for interested parties.
- 8.6.5** HS2 Ltd undertook a range of activities to raise awareness of the road shows events. Adverts were placed in around 60 local newspapers in areas immediately around the proposed route and also further afield. HS2 Ltd also issued press releases as part of a proactive media engagement process to raise awareness of the consultation and the events, with many newspapers publicising details of the events.
- 8.6.6** Details of all of the events were also sent out to more than 172,000 properties within 1km of the proposed route (250m for tunnelled sections) to inform those closest to the proposed route about the proposals, the consultation and the roadshows.
- 8.6.7** Local councils were provided with details of the events. They were also given posters and event cards giving dates and locations of events, which we asked them to place in the most appropriate locations for the local community (such as libraries or community centres). Some councils also included details on their own websites. Details of the consultation events were also provided on HS2 Ltd's own consultation website and on Twitter.
- 8.6.8** To further raise awareness of the consultation, HS2 Ltd and the Department for Transport visited 15 stations along the West Coast Main Line and on the Y network to provide information to the public. The stations were chosen for their particular interest in the project.
- 8.6.9** The Government's view is that the events were a very worthwhile part of the consultation process, and that the way in which they were delivered was appropriate for a consultation of this nature. All reasonable steps were taken to ensure that people were aware of and had access to the events and the information provided.

## 8.7 Influence of the consultation

- 8.7.1** Some respondents stated that they believed that this was not a genuine consultation exercise or that the decision had already been made. Some respondents also commented that the way the

information in the consultation was presented supported this opinion.

- 8.7.2** The public consultation was a genuine exercise for the Government to listen and respond to people's views. Whilst the Government presented the case that high speed rail is in the national interest, it sought to make those arguments with an open mind, and was committed to carefully considering any alternative assessments or analysis of the case for high speed rail put forward. The consultation provided the opportunity for members of the public to provide their own views, comments and evidence on the Government's proposals. All consultation responses were analysed by Dialogue by Design, and its consultation summary report has helped inform the Secretary of State's decisions. Significant additional work has been undertaken and commissioned by HS2 Ltd and the Department for Transport in the light of consultation responses.
- 8.7.3** The Government strongly believes that the consultation exercise was a genuine opportunity for people to have their say on and influence the development of the high speed rail proposals at an important stage of policymaking. The consultation was prepared and carried out, and the responses analysed, in line with the *Consultation Code of Practice*. The consultation document made clear the Government's views on the proposals and presented the facts to the public so that they had an opportunity to make an informed response. At all times the consultation process was carried out openly and fairly.

## 8.8 Further information and consultation

- 8.8.1** Some respondents commented that they wanted to see further information and consultation on other aspects of the scheme; most notably on the environmental impacts of the proposals, issues around property, blight and compensation, and the proposed second phase of the network to Manchester, Leeds and a direct connection to Heathrow.
- 8.8.2** The level of information provided as part of this consultation was appropriate for a project at this relatively early stage of development. However, the Government recognises the level of interest in these issues and there is significant further engagement and consultation planned on all of these areas to ensure that people have access to more detailed information as it becomes available.
- 8.8.3** The next stage of the project is to undertake a full Environmental Impact Assessment (EIA) for phase 1, to engage with local people on the impacts and to prepare an Environmental Statement, which would reflect the assessments and agreements made. The Environmental Statement would then be submitted to Parliament as part of the hybrid Bill to obtain legal powers to build the route.
- 8.8.4** As part of the EIA there would be engagement with key environmental stakeholders on the scope of the assessment, and public consultation on the Environmental Statement during the spring/summer of 2013. Throughout the EIA process, HS2 Ltd would undertake an extensive programme of local engagement, listening to the concerns and views of

those most affected by the London to West Midlands route and views and preferences developing community-focused solutions. This engagement would cover a range of issues, including construction and operation of the route, design development and mitigation.

**8.8.5** On property, blight and compensation, a further public consultation would be held in Spring 2012. The objective of this consultation would be to gather views from statutory authorities and the public on detailed discretionary support arrangements for those whose properties are unlikely to be compulsorily purchased, but who may still experience a significant loss in value to their property as a result of proximity to the line of route. This would be held alongside a statutory consultation on safeguarding directions for the line of route.

**8.8.6** On the second phase of the proposed network, the previous Secretary of State asked HS2 Ltd to develop options for routes to Manchester and Leeds, and a connection to Heathrow by March 2012. The Secretary of State would consider the route options and begin a process of engagement with local authorities in the cities served by the network and along the routes during 2012. Once a preferred option has been developed there would be public engagement and a formal consultation on the proposed route. This is expected to be in early 2014.