



House of Commons  
Transport Committee

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# High Speed Rail

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## Tenth Report of Session 2010–12

### *Volume I*

*Volume I: Report, together with formal minutes*

*Volume II: Oral and written evidence*

*Additional written evidence is contained in Volume III, available on the Committee website at [www.parliament.uk/transcom](http://www.parliament.uk/transcom)*

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## The Transport Committee

The Transport Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of the Department for Transport and its Associate Public Bodies.

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The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the internet at <http://www.parliament.uk/transcom>. A list of Reports of the Committee in the present Parliament is at the back of this volume.

The Reports of the Committee, the formal minutes relating to that report, oral evidence taken and some or all written evidence are available in a printed volume. Additional written evidence may be published on the internet only.

### Committee staff

The current staff of the Committee are Mark Egan (Clerk), Jessica Montgomery (Second Clerk), David Davies (Committee Specialist), Tony Catinella (Senior Committee Assistant), Edward Faulkner (Committee Assistant), Stewart McIlvenna (Committee Support Assistant) and Hannah Pearce (Media Officer).

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## Summary

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The UK is sometimes accused of failing to invest sufficiently in its transport infrastructure and of not planning for the long term. Whether or not this is accurate, the Government is now proposing what is probably the largest single investment in UK transport infrastructure in modern times—HS2.

Unlike policies for major roads and airports, this proposal has all-party support. It is not, however, universally supported by Members of Parliament or the public. We acknowledge the deeply held and often well-informed views on both sides of the debate. Through our inquiry we have sought to examine the strategic issues and to put information into the public domain. We have reached conclusions and recommendations on what we believe are key issues.

We support a high-speed rail network for Britain, developed as part of a comprehensive transport strategy also including the classic rail network, road, aviation and shipping. We believe that the Government's HS2 proposal could form part of this network and provide substantial improvements in capacity and connectivity for inter-urban travel between our major cities. Furthermore, the released capacity on the classic rail network would also enable widespread improvements on local and regional rail services.

Alternative proposals to upgrade the existing West Coast Main Line would provide additional capacity but, given the substantial recent growth in rail passenger numbers, it seems that the alternatives might prove inadequate. They do not offer the step-change or the wider benefits to passenger and freight that HS2 would do. Whether these alternative proposals would be adequate turns on the accuracy of demand forecasts, which are a substantial part of the case for HS2.

Although the impact of high-speed rail on regional economies is harder to predict, we note the substantial support for high-speed rail from businesses and local authorities in the regions. We note too that, once implemented, some major transport schemes have proved to have had greater economic impacts than their pre-implementation appraisals predicted. We believe that high-speed rail could have strategic economic benefits and should be planned on a strategic basis. It should be integrated with economic development planning.

Many issues about the Government's proposal for HS2 and about high-speed rail in general have been raised in the course of our inquiry. We have pointed to a number of areas that we believe need to be addressed in the course of progressing HS2. These include the provision of greater clarity on the policy context, the assessment of alternatives, the financial and economic case, the environmental impacts, connections to Heathrow and the justification for the particular route being proposed. We call on the Government to consider and to clarify these matters before it reaches its decision on HS2.

Our inquiry has dealt with the strategic case for high-speed rail. If the Government decides to proceed with HS2, a hybrid bill will provide the opportunity for detailed matters, including those of environmental impact and mitigation, to be addressed.



# 1 Introduction

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My Government will [...] enable the construction of a high-speed railway network.<sup>1</sup>

## High-speed policy development

1. UK policy on high-speed rail has come a long way in four years. The Rail White Paper 2007 made no proposals for new high-speed rail lines:

[... ] it would not be prudent to commit now to ‘all-or-nothing’ projects, such as network-wide electrification or a high-speed line, for which the longer-term benefits are currently uncertain and which could delay tackling the current strategic priorities such as capacity.<sup>2</sup>

The view of the then Government was that high-speed rail was a solution looking for a problem.<sup>3</sup> Our predecessor Committee expressed its deep disappointment with this policy but noted some subsequent signs of movement in the then Government’s position.<sup>4</sup>

2. Less than two years later, in January 2009, a new Secretary of State for Transport<sup>5</sup> announced an investigation into a high-speed line between London and the West Midlands and potentially beyond the West Midlands. This formed part of a statement on major transport infrastructure measures, including a third runway at London Heathrow Airport and a £6bn programme of managed motorways. The rail policy shift was justified on the basis that medium-term priorities were being addressed and that long-term planning for expansion needed to begin.<sup>6</sup> The high-speed rail policy was supported by all three major parties; the only significant policy differences seemed to be over how soon it could be built, the extent of the network and how Heathrow should be served.<sup>7</sup> In March 2010, shortly before the General Election, the Government published its conclusions, based on the feasibility study by High Speed 2 (HS2) Ltd,<sup>8</sup> in the White Paper *High Speed Rail*.<sup>9</sup> This found a good case for high-speed rail and identified its preferred route for a line between London and the West Midlands. The case for direct links to Heathrow and to the

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1 HM Queen, 25 May 2010 <http://www.number10.gov.uk/news/queens-speech-high-speed-rail/>

2 DfT, Rail White Paper, *Delivering a Sustainable Railway*, Cm 7176, July 2007, p 9

3 Oral evidence to the Transport Committee: *Delivering a Sustainable Railway: a 30-year strategy for the railway?* Tenth Report of Session 2007-08, HC 219, Qq 810-814

4 Transport Committee, *Delivering a Sustainable Railway: a 30-year strategy for the railway?* Tenth Report of Session 2007-08, HC 219, para 28

5 Rt Hon Geoff Hoon MP

6 DfT, *Britain’s Transport Infrastructure: High Speed Two*, January 2009, p 11

7 For example, speeches by Lord Adonis, Teresa Villiers and Norman Baker at the *Transport Times* “Time for High Speed Rail” conference, London, 25 March 2009. See also HC Deb, 11 March 2010, c450.

8 High Speed 2 (HS2) Ltd is a company set up by the DfT to advise the Government on high-speed rail. It was incorporated on 14 January 2009 and was subsequently classified as an Executive Non-Departmental Body.

9 DfT, Rail White Paper, *High Speed Rail*, Cm 7827, March 2010

existing high-speed line to the Continent (now known as HS1) were not clear cut and further studies were commissioned.<sup>10</sup>

3. The Coalition Government of May 2010 has pursued this proposal with equal vigour. Its *Programme for Government* included a commitment to developing a high-speed rail network (though not necessarily HS2), highlighting the low-carbon benefits:

We will establish a high speed rail network as part of our programme of measures to fulfil our joint ambitions for creating a low carbon economy. Our vision is of a truly national high speed rail network for the whole of Britain. Given financial constraints, we will have to achieve this in phases.<sup>11</sup>

The Department for Transport (DfT) subsequently made delivery of this commitment the first priority within its departmental business plan.<sup>12</sup> Following further detailed work, in February 2011 the then Secretary of State for Transport, Rt Hon Philip Hammond MP,<sup>13</sup> launched a major public consultation exercise on this Government's proposal for HS2.<sup>14</sup>

## Remit for HS2 Ltd

4. HS2 Ltd was established as a Government company to examine the case and develop proposals for a new high-speed railway line between London and the West Midlands, and potentially beyond. Its remit was to identify a route between London and the West Midlands with the primary aims of increasing passenger capacity on the corridor and optimising journey times. It was a requirement of the remit that the route should include an interchange between HS2, the Great Western Main Line and Crossrail, with convenient access to Heathrow. The nature and scope of the interchange were for HS2 Ltd to advise on. A further requirement was that there should be no intermediate stations between this interchange station and the West Midlands. It was for HS2 Ltd to advise on whether stations should be city centre or parkway or both. The remit also invited HS2 Ltd to consider how transport and land use planning could be properly integrated in respect of the new line, particularly in relation to housing and economic regeneration in the West Midlands. The remit required the company to “pay close attention” to the environmental impacts of the new line.<sup>15</sup>

## The HS2 proposal

5. The proposal is for a new, dedicated “Y”-shaped high-speed rail network, initially between London and the West Midlands (Phase I) and then with “legs” to Manchester and Leeds (Phase II). The London–West Midlands line would run to the west of the current

10 DfT, *High Speed Rail Access to Heathrow: A Report to the Secretary of State for Transport by Rt Hon the Lord Mawhinney Kt*, July 2010

11 HM Government: *The Coalition: our programme for government*, 20 May 2010, p 31

12 DfT, *Business Plan 2010-11*, November 2010, (updated May 2011) <http://transparency.number10.gov.uk/transparency/srp/view-srp/39>

13 On 17 October 2011 Rt Hon Justine Greening MP replaced Rt Hon Philip Hammond MP as Secretary of State for Transport.

14 DfT and HS2 Ltd, *High Speed Rail: Investing in Britain's Future, Consultation*, February 2011

15 Letter from Sir David Rowlands, Chairman, HS2 Ltd to Lord Adonis, Minister of State for Transport, 13 February 2009



West Coast Main Line (WCML), bisecting the Chiltern Hills, with a connection to the WCML north of Birmingham. New stations serving HS2 Phase I would be constructed at:

- London Euston—requiring a complete rebuild of the existing station;
- Old Oak Common, four miles west of Euston—to provide an interchange with Crossrail, the Heathrow Express and the Great Western Main Line;
- Birmingham International interchange—for the National Exhibition Centre, Birmingham International Airport, the existing rail station and the M42 catchment, and
- Birmingham City Centre—in Birmingham’s Eastside district, on the site of the old Curzon Street station.

At the time of the Government’s consultation and our inquiry, route proposals for and evaluation of the new lines to Manchester and Leeds had not been published.<sup>16</sup> A link to HS1 (from Old Oak Common, via the North London Line) would be constructed in Phase I; a spur or loop to Heathrow is proposed as part of Phase II but no route or station details have been made public.

6. Up to 18 trains per hour, each carrying up to 1,100 passengers<sup>17</sup> and operating at speeds of up to 250 mph, are planned to run between these cities and serve other destinations via links to the existing “classic” rail network. HS2 would reduce journey times between London Euston and central Birmingham from 84 to 49 minutes. Phase II would bring Manchester and Leeds within 80 minutes of London; times to Glasgow and Edinburgh would be reduced by one hour.<sup>18</sup> The Government has estimated the total cost of the scheme at £32bn (2009 prices). £750m was allocated for preparatory work in the Spending Review 2010. The construction cost for Phase I (London–West Midlands) alone is estimated at £16.8bn.<sup>19</sup>

## Timetable

7. The Government hopes to open the line between London and the West Midlands in 2026, with lines to Manchester and Leeds opening in 2032–2033.<sup>20</sup> This requires legislation in the form of a hybrid bill. For reasons of practicality, the Government is proposing to seek approval for only the London–Birmingham phase initially. It has set the following provisional timetable for Phase I, subject to the outcome of the consultation:

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16 HS2 Ltd is due to provide these to the Secretary of State before the decision in December 2011. See letter from Philip Hammond to HS2 Ltd 26 July 2011.

17 HS2 trains would be up to 400 metres long, comprising one or two units each of 550 seats. Classic compatible trains would be shorter. By comparison, a 9-car Virgin Trains Pendolino is approximately 225 metres in length.

18 DfT and HS2 Ltd, *High Speed Rail: Investing in Britain’s Future, Consultation*, February 2011, pp 19–20

19 DfT, *Economic Case for HS2*, February 2011, p 37

20 The overall construction timescale would be determined by the Euston station works which would take seven to eight years. The prospective opening dates are given in *HS2 Consultation*, February 2011, pp 16 and 106. Mr Hammond said that the target date for completion of the Y network was 2032 and he confirmed that the legs to Manchester and Leeds would be built simultaneously. See Q 535.

- February–July 2011: Public consultation on the strategic case for high-speed rail and the details of the London–West Midlands route;
- December 2011: Decision by Secretary of State for Transport on the outcome of the consultation;
- December 2011–September 2013: Completion of outline engineering design, Environmental Impact Assessment and Environmental Statement, and
- October 2013–May 2015: Take hybrid bill through Parliament.

The DfT would propose to start formal public consultation on Phase II in January 2014 and engineering design, environmental impact assessment and preparation of the second hybrid bill in January 2015.<sup>21</sup>

## Public opinion

8. The Government’s proposal for HS2 has generated strong reactions, both for and against.<sup>22</sup> The rail industry has increasingly backed HS2, albeit with some reservations about the possible implications for other rail investment. National business organisations have also generally backed the proposal.<sup>23</sup> Local authorities and business organisations in the West Midlands, the north of England<sup>24</sup> and Scotland have, on the whole, enthusiastically backed the scheme, with some of them joining the Yes to HS2 campaign.<sup>25</sup>

9. Further south, 18 local authorities, including Staffordshire, Coventry, Warwickshire, Leicestershire and Hillingdon, have opposed the scheme under the “51m” coalition led by Buckinghamshire County Council.<sup>26</sup> Many local “stop HS2” residents groups have sprung up along the line the route, forming the Action Groups Against High Speed Two (AGAHST) federation.<sup>27</sup> Most environmental groups are supportive of high-speed rail in principle but have raised concerns about, if not outright objections to, HS2.

10. The position of local authorities in London is more ambivalent. The Mayor of London supports HS2 “in principle” but believes that, once Phase II is operational, London Underground will be unable to accommodate the additional passengers using Euston station without the construction of a new underground line.<sup>28</sup> The London Borough of Camden opposes HS2 due to the impact on the Euston area.<sup>29</sup> By contrast, the boroughs of

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21 DfT, *Business Plan 2010-11*, November 2010, (updated May 2011)  
<http://transparency.number10.gov.uk/transparency/srp/view-srp/39>

22 Qq 102-111. David Begg, Director of *Yes to HS2*, said that he was concerned about the level of opposition and that he did not believe it was inevitable that HS2 would go ahead.

23 David Frost, Director General of British Chambers of Commerce is a strong supporter of HS2. The CBI, however, was unable to provide written evidence or a witness for our inquiry.

24 Mr Hammond said that some of the strongest supporters of HS2 were in Manchester, Q 540.

25 Ev 296

26 Ev 154

27 Ev 165

28 Qq 164 and 172

29 Ev 185

Hammersmith and Fulham and Newham are strong supporters due to the regeneration potential of stations at Old Oak Common and Stratford International.<sup>30</sup>

11. Professional and academic commentators are divided in their views on HS2 but many have questioned the Government's appraisal techniques and the claims regarding economic rebalancing.<sup>31</sup> Although there is cross-party support for HS2, it is not universally supported by Members of Parliament. Unusually for a select committee inquiry, we have received correspondence and evidence from members of the Government, including evidence from one Member of the Cabinet drawing our attention to correspondence opposing HS2.<sup>32</sup>

## The Government's case for HS2

12. In launching the consultation<sup>33</sup> on HS2, Mr Hammond said:

I believe that a national high-speed rail network from London to Birmingham, with onward legs to Leeds and Manchester, could transform Britain's competitiveness as profoundly as the coming of the railways in the 19th century. It would reshape Britain's economic geography, helping bridge the north-south divide through massive improvements in journey times and better connections between cities – slashing almost an hour off the trip from London to Manchester.

But the proposed high-speed rail network would do more. It would address Britain's future transport capacity challenge-providing a huge uplift in long-distance capacity and relieving pressure on overstretched conventional lines. It would bring around £44 billion of net monetised benefits and support the creation of thousands of new jobs, as well as delivering unquantifiable strategic benefits. And it would help us to build a sustainable economy-by encouraging millions of people out of cars and off planes onto trains. Our competitors already recognise the huge benefits of high-speed rail and are pressing ahead with ambitious plans. Britain cannot afford to be left behind.<sup>34</sup>

In essence, the Government believes that substantial additional rail capacity is required, that a new high-speed rail network is the best way to provide it and that this will bring substantial economic and environmental benefits. Of all the justifications for HS2 advanced by the Government (transport, economic and environmental), Mr Hammond said that he “start[s] with capacity.”<sup>35</sup> The Government's case is set out at length in the consultation documents<sup>36</sup> and its written evidence.<sup>37</sup> We have examined key aspects of it in the course of our inquiry.

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30 Ev 119 and Ev w448

31 See, for example, Professor Nash (Ev 115) and Professor Tomaney (Ev 106). Ian Davidson, an expert on transport modelling, concluded that the DfT's modelling was unsuitable for decision-making on HS2. See *Local Transport Today*, 12 August 2011, p 1.

32 Ev w260, Rt Hon Cheryl Gillan MP, Secretary of State for Wales

33 The consultation was undertaken jointly by the DfT and HS2 Ltd.

34 HC Deb, 28 February 2011, c15WS

35 Q 511-512

36 <http://highspeedrail.dft.gov.uk/library/documents>

## The case against

13. The major critics of the HS2 proposal claim that:

- the lack of context and the absence of cohesive plans for transport strategy generally (and the rail network more specifically), mean that there can be no certainty that high-speed rail is the most pressing transport need facing the country;
- the opportunity cost is high: other schemes offering better value for money will be passed over;
- a new line is not needed: sufficient passenger capacity can be provided by lengthening trains and improving existing lines;
- the economic case is flawed and the benefits are overstated;
- the claims for economic regeneration and rebalancing are unfounded;
- the new line will damage local environments and has little or no carbon reduction benefit;
- the proposal to operate 18 trains per hour is technically unproven, and
- the proposal is rushed and alternative routes should be considered.

The arguments are explored in more detail later in this report.

## Our inquiry

14. The decision on whether and how to proceed with the HS2 proposal is of major economic, social and environmental long-term import to Britain. We recognise that there are valid, strongly held views and technical expertise on both sides of the debate. We have received over 200 submissions, most of which we have published, as well as petitions, letters and emails, expressing views or questioning HS2. In addition, we have taken oral evidence from many experts and representatives of interest groups. In order to observe the impacts of established high-speed rail systems, we visited Lille, Paris and Frankfurt, travelling by high-speed rail, and met with business people, politicians, rail industry professionals and economic development practitioners. We were assisted throughout the inquiry by our specialist rail advisers Bob Linnard, a former Director of Rail Strategy at DfT, and Richard Goldson, a former non-executive board member at the Office of Rail Regulation.<sup>38</sup> Because of the technical nature of some of the material, we commissioned consultants Oxera to assess the business case for HS2 and to advise us.<sup>39</sup> We published this assessment before the first oral evidence session, in order to assist the public debate, and include their report as Annex 1 to our Report. We are grateful to all those who assisted us in this inquiry.

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37 Ev 249

38 Bob Linnard and Richard Goldson made declarations of interests which can be found in the formal minutes of the Transport Committee, Session 2010-2012, Appendix B.

39 Annex 1: Oxera, *Review of the Government's case for a High Speed rail programme*, Report prepared for the Transport Select Committee, 20 June 2011. See also letter from HS2 Action Alliance to Oxera, Ev 220.

15. Our inquiry has dealt with the strategic case for high-speed rail. If the Government decides to proceed with HS2, it would seek the necessary powers through the hybrid bill process, as happened with HS1 and Crossrail. A hybrid bill would allow those affected by the proposals to petition Parliament directly to seek amendments or assurances and undertaking. It would provide the opportunity for detailed matters, including those of environmental impact and mitigation, to be addressed.

## 2 Government transport policy

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Our most ambitious project is the delivery of a new high speed rail network that could transform the way Britain works as profoundly as the coming of the original railways.<sup>40</sup>

### Strategic policy context

16. Since taking office in May 2010, the Government has published relatively few transport policy documents.<sup>41</sup> The HS2 proposal has been criticised by a wide variety of organisations for what they see as the lack of an adequate policy context.<sup>42</sup> The critics call for a strategy setting out overall transport objectives (not just schemes) and a multi-modal plan for major transport infrastructure priorities. Some also want to see a regional development strategy to accompany the HS2 proposal.<sup>43</sup> For example, in its response to the Government's official consultation on HS2, the Conservative Transport Group commented:

It is important to be very clear that these objectives require a co-ordinated policy landscape and appraisal methodology, which allows proper assessment of proposals on a network-wide, intermodal basis. This does not yet exist and it is therefore impossible to properly evaluate the current proposals for HS2.<sup>44</sup>

17. The National Trust,<sup>45</sup> the Campaign to Protect Rural England<sup>46</sup> and other environmental bodies that are generally supportive of investment in rail have opposed HS2 on similar grounds. The RAC Foundation does not oppose high-speed rail *per se* but argues that both this and the previous Government committed to HS2 prematurely:

This is for three reasons: the lack of a National Policy Statement on roads and railways, adopted in Parliament; the incomplete state of Infrastructure UK's (IUK) development of their National Infrastructure Plan; and a failure to specify how the funding and economic regulation of HS2 would fit with the current arrangement for the "classic" railway.<sup>47</sup>

Aviation and business interests, whilst generally supportive of high-speed rail, are critical of what they perceive to be a lack of long-term strategy for airport capacity in the south east of England, which has particular implications for the planning and funding of links

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40 DfT, *Business Plan 2010-11*, November 2010, (updated May 2011) <http://transparency.number10.gov.uk/transparency/srp/view-srp/39>

41 DfT, *Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen, 2011*, which introduced the Local Sustainable Transport Fund, is the only transport White Paper to date.

42 For example, ATOC, Q 28.

43 Q 202

44 Conservative Transport Group, *Response to the Government's Consultation on High Speed Rail*, July 2011

45 Ev 117

46 Ev 191

47 Ev 151

between HS2 and Heathrow, the UK's international hub airport.<sup>48</sup> The European Commission's Transport White Paper 2011 calls for the tripling in length of the existing high-speed rail network in Europe by 2030 with all "core" airports connected to the rail network by 2050, preferably by high-speed services.<sup>49</sup>

18. In our report, *Transport and the economy*, we called on the Government to publish a White Paper on transport strategy, setting out its objectives for major transport spending and how funds would be prioritised.<sup>50</sup> The Government has, so far, declined to do so,<sup>51</sup> saying that its transport policy is set out in its departmental business plan.<sup>52</sup> The business plan, however, is a schedule of proposed actions, not a strategy. We also noted the Government's apparent support for national policy statements and drew attention to the importance of these for the planning and co-ordination of major transport infrastructure. Some eight months further on, we note that the DfT appears to have made little progress with publishing a national policy statement for road and rail networks, the key policy statement for transport.<sup>53</sup>

19. When Mr Hammond first gave evidence to us, in July 2010, he said that the Government had three clear objectives for transport:

- to help to reduce the fiscal end of deficit;
- to support sustainable economic growth, and
- to contribute to the Government's 2020 carbon reduction targets.<sup>54</sup>

The DfT argues that "High-speed rail is integral to [the Government's] aims for a transport network that is an engine for growth but is also greener and safer and improves the quality of life in our communities."<sup>55</sup> However, some objectors have claimed that HS2 would contribute little to these three objectives: HS2 involves substantial public expenditure;<sup>56</sup> the evidence for HS2's wider impacts on economic growth is disputed; and HS2's impact on carbon emissions is, according to the Government, "broadly neutral" and would have no impact prior to 2020.

48 Ev 167

49 European Commission, *Transport White Paper - Road map to a single European transport area. Towards a competitive and resource efficient system*, 2 June 2011

50 Transport Committee, *Transport and the economy*, Third Report of Session 2010-11, HC 473, 2 March 2011, p 18

51 Transport Committee, *Transport and the economy: Government response to the Committee's Third Report of Session 2010-12*, Fourth Special Report of Session 2010-12, HC 962, 6 May 2011

52 Ev 262

53 The DfT has said that it will not publish a NPS for airports, which the previous Government had planned to do. See *Transport and the economy*, pp 17-18. The Government has recently published the revised NPS for Ports (October 2011) and, in its response to the Committee's earlier report, stated that it will not undertake consultation on a draft NPS for National Networks until after the consultation on HS2 is complete, "towards the end of this year [2011] at earliest". See Transport Committee Tenth Special Report of Session 2010-12, HC 1598, 27 October 2011, p 6.

54 Transport Committee, *The Secretary of State's priorities for transport*, Oral evidence, 26 July 2010, Q 3

55 Ev 249

56 £750m is included in the current spending review period for the planning and consultation on HS2, most of which is classified as "resource" rather than "capital" expenditure. If HS2 proceeds, most expenditure will be capital and incurred in future spending review periods.

20. The absence of a transport strategy makes it hard to assess how HS2 relates to other major transport infrastructure schemes, regional planning and wider objectives, such as bridging the north-south divide. This seems to have deterred some groups, which might otherwise have supported HS2, from doing so. The biggest single transport investment proposed in this Parliament should be grounded in a well thought-through strategic framework and we are disappointed that the Government has not developed a strategy for transport, particularly after it rejected our earlier recommendation to publish a White Paper on transport and the economy.

21. The Government is due to publish several important policy documents soon, including a White Paper on its proposals for controlling costs in the rail industry; a 'sustainable framework' for aviation; a National Policy Statement for road and rail networks; and a revised National Policy Statement for Ports. The development of what could emerge as separate strategies for rail and aviation again highlights the absence of an overall transport strategy: this is a lacuna which must be filled. We recommend that if the Government decides to proceed with HS2 it should, in announcing that decision, set out in more detail than is available in the DfT's business plan not only why HS2 is desirable but also how it fits within an overall transport strategy. We also recommend that the forthcoming White Paper on rail and the sustainable framework for aviation fully reflect the impact on both modes of the creation of a high-speed rail network in the UK. This country has often failed to invest in transport infrastructure because all party agreement could not be reached. We have one of the lowest motorway densities in Western Europe, insufficient airport capacity in the south east with inadequate road and rail connections and our rail network is mainly a legacy of Victorian investment. Having all-party support should be seen as an advantage for this scheme.

### Opportunity cost

22. The absence of a comprehensive policy context and the scale of the HS2 spending proposal caused some witnesses to raise concerns about the opportunity cost—the other projects that may be forgone—should HS2 go ahead. Christian Wolmar argued that other rail projects would inevitably suffer, not only in terms of capital investment but also due to what he claimed would be a need for operating subsidy in the early years of HS2.<sup>57</sup> The Association of Train Operating Companies (ATOC), West Coast Rail 250 and other organisations made it clear that, in their view, the need for investment in other rail projects remained undiminished and might even increase as a result of HS2. Their support for HS2 depended upon the current level of investment being maintained and ATOC said that it was reassured by the recent spending review in which rail investment received a favourable settlement.<sup>58</sup>

23. Some witnesses contended that HS2 was not necessarily the highest priority among rail investments. Mark Barry, representing the Cardiff Business Partnership, pointed out that services into London Paddington, not Euston, showed the highest levels of overcrowding and argued that those were more deserving of investment than HS2.<sup>59</sup> HS2 Ltd's forecasts

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57 Q 9

58 Ev 243

59 Q 431



show crowding increasing in the long term on WCML, particularly on the southern section into Euston.<sup>60</sup> Currently, however, as shown by a recent survey by the Office of Rail Regulation, peak period services into and out of Euston are less crowded than those at several other London terminals, notably Paddington.<sup>61</sup>

24. Other witnesses were concerned that the opportunity costs of HS2 might extend beyond rail to other transport investments. David Bayliss, representing the RAC Foundation, argued that:

At the moment we have this proposition to spend £30 billion or so of money on rail. National rail carries 7% of the passenger market in this country and 9% of the freight market. Of that 7%, only about a third is long distance rail. Here we are, at a time when we have barely sufficient funds to keep the existing system going, committing huge amounts of money to try and solve the problems on a tiny part of the travel market. It seems to me that in the absence of a proper thought-through national transport strategy that is foolhardy.<sup>62</sup>

The Chief Executive of Next, Lord Wolfson of Aspley Guise, argued that HS2 was “a very low-return project” and that roads—many of which were “already at full capacity”—should be a higher investment priority.<sup>63</sup>

25. Mr Hammond responded that HS2 was affordable and would not impact on other transport investment, provided that it was phased over the 17-year timescale he proposed. He pointed out that the construction of HS2 amounted to an average of £2bn per annum—very similar to the current expenditure on Crossrail. He added that the current Government had prioritised long-term investment in transport infrastructure and that it had maintained support for rail schemes in the 2010 spending review, despite the cutbacks in other budget areas.<sup>64</sup> He also said that the Government would be looking more favourably on investment in road schemes once a low carbon-emissions future for motoring had become “unstoppable”.<sup>65</sup>

26. It is clearly a potential concern that, with the current economic difficulties, a long-term spending commitment to HS2 might impact adversely on investment in other valuable transport infrastructure projects.<sup>66</sup> We have already highlighted the importance we attach to schemes such as the Northern Hub; others, such as improvement to the Great Western Main Line and the strategic freight network, would also seem to be of high priority. However, the signs so far are encouraging and levels of rail investment have been maintained despite the concurrent spending on major projects such as Crossrail. Maintaining those levels in the future is likely to depend more on improving the efficiency

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60 Ev 267

61 Office of Rail Regulation, *National Rail Trends 2010-2011 Yearbook*, August 2011 - <http://www.rail-reg.gov.uk/server/show/ConWebDoc.10512>

62 Q 202

63 Q 197

64 Qq 541-542

65 Q 523

66 Our predecessor Committee considered this issue in its report *Priorities for investment in the railways*, Third Report of Session 2009-2010, HC 38, 15 February 2010.

and value for money of today's railway (as discussed in the industry's initial plan for the next control period) than on whether or not HS2 goes ahead. In fact, this and previous governments have separated funding for very large capital projects from "routine" investment. In our view it is extremely unlikely that the £32bn proposed for HS2 would be available for other transport schemes and, if not spent on HS2, this money would probably be lost to transport.<sup>67</sup> **It would be unacceptable and counterproductive if investment in HS2 led to a diminution of investment in other parts of the rail network. The previous Secretary of State for Transport has told us that, assuming the costs are spread over some 17 years, HS2 is affordable and that current levels of investment in the "classic" network can be maintained into the future. We expect the Government to uphold this statement. The Government has the opportunity to secure future levels of rail spending in the next spending review period by means of the commitments it makes in the forthcoming High Level Output Specification and Statement of Funds Available for Control Period 5 (2014–19). These are due by July 2012 and will be an acid test of the Government's commitment to investment in today's railway as well as in high-speed rail.**

**27. We recommend that, if the Government decides to go ahead with HS2, it should, in announcing that decision, publish a summary of the financial case including the assumptions which persuade Ministers that the scheme will be affordable alongside sustained investment in the classic network. We consider that this could usefully include details of the projected capital and revenue expenditure profiles; how these compare with assumed DfT spend profiles for the rest of the rail network and for the rest of transport; and any underlying assumptions about financial contributions to HS2 from non-DfT sources. We further recommend that alongside the summary financial case the Government should announce its priorities for funding in Control Period 5 (2014–19) as part of its High Level Output Specification and Statement of Funds Available in order to meet anticipated passenger and freight capacity constraints on the classic network up to the projected start of HS2 in 2026.**

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67 HS2 and Crossrail were the only transport infrastructure schemes specifically listed in the Coalition Agreement 2010.

## 3 Meeting future transport needs

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Demand for travel between major British conurbations is expected to increase significantly over the next twenty to thirty years. High speed rail appears best placed to provide significant and sustainable additional capacity to meet that demand, whilst also improving journey times.<sup>68</sup>

It [HS2] would address Britain's future transport capacity challenge-providing a huge uplift in long-distance capacity and relieving pressure on overstretched conventional lines.<sup>69</sup>

### Passenger demand

#### Recent trends

28. The growth in rail passenger demand since the mid 1990s is one of the successes of UK transport policy,<sup>70</sup> reversing the previous long-term trend of decline.<sup>71</sup> The number of long-distance journeys made by rail passengers more than doubled in the 15 years to 2009.<sup>72</sup> Despite the economic downturn since 2008, passenger numbers have continued to grow strongly, partly fuelled by a switch from car use due to the increase in petrol prices. This growth seems to have been widespread and not restricted to certain parts of the country or to specific journey types.<sup>73</sup> Some of the highest recent growth has been on the WCML where journeys have increased by around 10% per annum for the past three years, partly as a result of the completion of the WCML upgrade with its new “very high frequency” timetable and reliable weekend services. The downside to this growth, on WCML and elsewhere, is that many services are overcrowded, particularly some peak-hour services into major cities such as London, Leeds, Birmingham and Manchester, where improvements, such as more frequent or longer trains, cannot be made cheaply or easily.

#### Forecasts

29. Growth in rail passenger demand is forecast to continue, based on projections for growth in the UK population, economy and personal incomes. The industry’s view is that by 2035 the railway will be carrying twice as many passengers as today.<sup>74</sup>) Improvements in communications technology (high-speed broadband, video-conferencing etc) are not

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68 Number 10 Downing Street website, <http://www.number10.gov.uk/news/queens-speech-high-speed-rail/>

69 Rt Hon Philip Hammond MP, HC Deb, 28 February 2011, c15WS

70 *Transport 2010, The 10 Year plan* (DETR, July 2000) set a target of 50% increase in rail use, measured in passenger kilometres, by 2010.

71 TSO, *Transport Statistics Great Britain 2010*, Table 6.1, p 115, September 2011

72 Ev 249

73 Office of Rail Regulation, *National Rail Trends 2010-11 Yearbook, 2011*, Table 1.1.b

74 ATOC/Network Rail/Rail Freight Operators' Association/Railway Industry Association, *Initial Industry Plan England and Wales Proposals for Control Period 5 and beyond*, September 2011

expected to reduce demand for travel and may even increase it.<sup>75</sup> In addition, demand for rail freight is expected to double by 2030.<sup>76</sup>

30. For the WCML, HS2 Ltd has forecast that “background” growth for rail trips over 100 miles will be 95% between 2008 and 2043, an average of 2% per annum.<sup>77</sup> HS2 Ltd also estimates that HS2 will generate 37% additional passenger demand (above the background growth forecast) due to the attractiveness of faster journey times.<sup>78</sup> For modelling purposes only, HS2 Ltd has “capped” demand at 2043 but it does not anticipate that demand growth will cease after this point. The Mr Hammond described these forecasts as “conservative” and was confident that it HS2 Ltd had not overstated them.<sup>79</sup>

Due to the scale of the High Speed Two proposal it is imperative that the economic case is built on robust forecasts of future rail patronage and revenue and we are comfortable that this is the case.<sup>80</sup>

31. Opponents of HS2 challenge these demand forecasts. HS2 Action Alliance argues that, amongst other things, the link between wealth and travel demand has weakened and that it is unsound to forecast 35 years ahead.<sup>81</sup> 51m criticises not only the forecasts but also the way in which the Government has presented them:

Both the Secretary of State and HS2 Ltd argued that the project assumed forecast growth in demand of 2% a year, and that this was conservative. However, the HS2 Business Case in fact assumes c209% growth by 2043, an average demand growth of 3.3% a year, reflecting significant forecast generated demand as a result of journey time improvements. This is a tripling of demand on the route – we don’t believe this can be considered “conservative”, particularly bearing in mind the massive over-estimation of demand for HS1.<sup>82</sup>

The original passenger demand forecast for HS1 did indeed prove much higher than actual demand.<sup>83</sup> However, HS2 Ltd says that that a more appropriate forecasting model has been used for HS2. Oxera concluded that HS2 Ltd’s passenger demand forecasts are, except for the length of period forecast, based on industry standard guidance<sup>84</sup> which has tended to underestimate demand over the past seven years.<sup>85</sup> Others, including those in the rail industry, have supported HS2 Ltd’s passenger forecasts and also pointed out that the recent

75 Q 358. Improved telecommunications seem to stimulate additional travel mileage but may reduce the number of trips.

76 Q 27 Lord Berkeley. The ATOC/Network Rail *Planning Ahead* document shows rail freight going from 23bn tonnes in 2006 to 45bn in 2030.

77 Ev 267. HS2 Action Alliance says this is closer to 102% and 2.4% per annum. Ev 220

78 HS2 Ltd, *A Summary of Changes to the HS2 Economic Case*, April 2011, para 6.2 <http://www.HS2.org.uk/assets/x/77820>

79 Q 522

80 Ev 254

81 Ev 202

82 Letter from Cllr Martin Tett, Chairman of 51m, to Mrs Louise Ellman, 16 September 2011. See also HS2 Action Alliance Ev 202.

83 Annex 1, para A2.18

84 ATOC, *Passenger Demand Forecasting Handbook v4.1*, 2005

85 Annex 1, para 3.14

high growth rates are not reflected in the forecasts.<sup>86</sup> Indeed, the WCML passenger demand levels forecast by HS2 Ltd for 2021 have already been overtaken. This suggests that growth is not following previous demand patterns and may have entered a new, higher trajectory, though it is uncertain for how long this might last.

## Capacity

32. The view of the DfT is that some of the country's key rail routes are forecast to be “completely full in peak hours in the next 20 years”<sup>87</sup> and the necessary capacity increases cannot be achieved through enhancements to the existing lines or services. The rail industry has endorsed the view that a major increase in capacity is desirable and should be provided through a new high-speed network.<sup>88</sup> Network Rail was unequivocal in its evidence to us:

On the West Coast Main Line in particular, strong growth on intercity services and continued growth on commuter and regional services to towns including Milton Keynes and Northampton, will soon mean that capacity on the line will be effectively exhausted and it will be impossible to do anything to further increase capacity on the existing line. Our *New Lines Study* (published in August 2009) and West Coast Main Line Route Utilisation Strategy (RUS: published in December 2010) predict that this point will be reached around the end of this decade.<sup>89</sup>

Network Rail clarified that its reference to the line being “full” meant that, at certain times of the day, it would not be possible to provide train paths for additional services—passenger or freight—which train operators wanted.<sup>90</sup>

33. AGAHST challenged Network Rail's conclusion, saying that Network Rail had made a number of recent statements on the capacity of the WCML which were inconsistent and failed to account for realistic possible increases in capacity on WCML.<sup>91</sup> They also argue that Evergreen 3, the recent upgrade to the Chiltern Line between London and Birmingham, has been wrongly excluded from the Government's assessment of future capacity.<sup>92</sup> Christian Wolmar accused Network Rail of having vested interests in this matter in that a major expansion of the rail network presented Network Rail with more business opportunities than enhancements to existing trains and services.<sup>93</sup> HS2 Action Alliance says that Network Rail's WCML RUS has started from the position that HS2 will go ahead and therefore had not investigated possible alternative capacity enhancements.<sup>94</sup> The analysis by Network Rail is clearly important in this matter and we would expect them to advise us and the Government impartially. Ultimately, of course, the Government, as

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86 Ev 132

87 *HS2 Consultation*, February 2011, p 10

88 Qq 27-28

89 Ev 292

90 Q 52 Richard Eccles

91 Ev 166

92 Ev 154

93 Q 5

94 Ev 216

prospective promoter of HS2, must satisfy itself on these issues through independent analysis rather than taking the word, however authoritative, of a third party.

## Alternatives to HS2

34. Opponents of HS2—notably 51m and HS2 Action Alliance—have proposed that the capacity of the existing WCML be enhanced through a combination of lengthening the existing Pendolino fleet from 9 to 11 or 12 cars, converting some cars from first to standard class, introducing smart ticketing and demand management to “spread” peak demand and selective infrastructure enhancements. They further propose that services between Milton Keynes and London be improved with a new fleet of Javelin-type trains. 51m has claimed that these enhancements, an “optimised alternative”, would treble existing capacity, providing an additional 211% standard-class seating capacity, more than meeting the Government’s background growth forecast. They argue that these changes could be introduced incrementally, more quickly, with less risk and at considerably less cost (around £2bn) than HS2.

35. The Government’s general response to suggestions that the existing line should be upgraded is to refer to its consultants’ report which concluded that such alternatives would either fail to provide adequate capacity or would be poor value for money.<sup>95</sup> 51m and others claim that the best alternatives to HS2 were not assessed<sup>96</sup> and that those options that were assessed were inferior to their proposal which the Government has not discussed with them or tested:

Neither DfT nor HS2 Ltd has made any attempt to engage with us directly on our proposed approach or the Optimised Alternative.<sup>97</sup>

The DfT acknowledges this situation:

The Government has not at this stage carried out a full analysis of the 51m Group’s proposals, but at the strategic level, its current view is that no package of upgrades to existing lines could offer the same level or range of benefits as a new high speed line.<sup>98</sup>

In relation to Evergreen 3, HS2 Ltd says it has not modelled its impact but will be “exploring this further.”<sup>99</sup>

## Disruption during construction

36. Many witnesses were concerned that capacity improvements to the existing WCML would involve significant disruption to services which had only recently recovered from

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95 Atkins, *High-Speed Rail Strategic Alternatives Study: Strategic Alternatives to the Proposed Y Network*, February 2011

96 Ev 154

97 Ev 161

98 Ev 254

99 Ev 267

the previous major upgrade programme.<sup>100</sup> The Government also took the view that a further upgrade to the WCML would involve unacceptable disruption to passengers.<sup>101</sup> Other witnesses, however, pointed to the disruption to services which, in their view, would be likely to arise from the proposed demolition and reconstruction of Euston station.<sup>102</sup> HS2 Ltd has not assessed the relative degree of planned disruption between HS2 and strategic alternative options.<sup>103</sup>

### **Load factors and peak demand**

37. The standard measure of crowding on passenger rail services is the load factor—the number of passengers relative to the capacity of the train. For commuter and regional services, the capacity includes an acceptable allowance of standing passengers, whereas for long distance services, the capacity is the number of seats. HS2 Ltd provided forecast load factors for the long-distance WCML services (all-day), in the absence of HS2 or a strategic alternative. On the services currently operated by Virgin West Coast, these show averages at the southern end of the line of 56% in 2008 growing to 75% in 2043. Such levels are not unusually high on the inter-urban rail network.<sup>104</sup> HS2 Ltd says, however, that on busier sections and at peak times, “very significant levels of crowding” would occur.<sup>105</sup>

38. The crucial aspect is not all-day capacity but capacity in relation to demand during peak periods. 51m has argued that standard-class capacity is the critical factor as there is no shortage of first-class seating. However, HS2 Ltd’s forecasting has not looked separately at how peak and off-peak demand would grow; it has forecast only the overall growth.<sup>106</sup> This seems inadequate. We therefore asked our specialist advisers to examine some of the capacity calculations; their analysis can be found in Annex 2.

39. Annex 2 shows that alternatives to HS2, such as 51m’s proposal, might meet the background passenger growth forecast to 2043 at peak times, depending on assumptions about peak demand and future rates of passenger growth. The recent dramatic growth in WCML passenger demand, which does not feature in HS2 Ltd’s modelling, makes it less likely that the alternatives would be viable. Annex 2 shows the dramatically higher capacity that would be provided by HS2 relative to the existing situation or the alternative proposed by 51m. HS2 would provide a step-change in capacity, not only on the new high-speed line but also on the existing classic lines where additional services could be provided as a result of improved efficiency from a greater separation of local, intercity and freight services.<sup>107</sup> For example, faster journeys could be provided to and from larger regional centres such as Lichfield Trent Valley, Tamworth, Nuneaton, Rugby and Milton Keynes.<sup>108</sup> ATOC,

100 Ev 123

101 Ev 249

102 Ev w296

103 Ev 267

104 *HS2 Consultation*, February 2011, para 1.55/56, compares WCML with MML and ECML: by 2043 the all-day load factor on MML will be about the same as WCML without HS2 or an alternative.

105 Ev 267

106 Q470 Alison Munro

107 Centro sets out in detail the opportunities for enhanced regional rail services in the West Midlands, Ev 145.

108 Ev 243

Passenger Focus and other bodies have also pointed to the enhanced reliability that such an increase in track capacity could bring, whereas squeezing more services onto existing lines would have the opposite effect.

## Managing demand

40. Sir Roy McNulty’s report on rail value for money<sup>109</sup> calls for a move away from “predict and provide” (i.e. calculating future passenger demand and attempting to provide for it in full) to “predict, manage and provide”, whereby the high cost of meeting peak demand is reduced by fare structures and other methods that shift demand from the peak to the off-peak. 51m and others have argued that increased demand management should be part of a package of alternatives to HS2. They point out that, currently, some of the worst crowding on WCML occurs in *off*-peak periods, particularly at Euston at 7pm on Friday evenings, when off-peak tickets become valid. 51m and others say that this is an anomaly of the fare structure and could be addressed by more sophisticated pricing.

41. The DfT seems to reject attempts to manage demand over the long term:

Whilst there may be a case for employing demand management as a tactical response to managing demand on the railways, it is unlikely to significantly alter the case over the medium-to-long term for the provision of additional capacity.<sup>110</sup>

It argues that demand management is already employed to a substantial extent and that, commuters and others travelling at peak times, currently paying higher fares, find it hard to switch to off-peak periods.<sup>111</sup> Mr Hammond, citing the above case at Euston station has, however, accepted the need to adjust the fares structure in order to address overcrowding and avoid “perverse incentives”.<sup>112</sup>

42. In response to the suggestion, made by opponents of HS2, that fares would be so high that it would be used exclusively by the rich, Mr Hammond said:

Uncomfortable fact perhaps No. 1 is that the railway is already relatively a rich man’s toy—the whole railway. People who use the railway, on average, have significantly higher incomes than the population as a whole. [...] the assumption is that the socio-economic mix of passengers [on HS2] will be broadly similar to those currently using the West Coast Main Line.<sup>113</sup>

The fares strategy for HS2 has not been decided (the modelling has simply *assumed* current fares levels). It would have been helpful if the DfT had provided a more comprehensive account of the options and implications.<sup>114</sup> It seems likely, however, that, should HS2 go ahead, the current yield-management system of high peak-time fares and low off-peak and

109 DfT, *Realising the Potential of GB Rail – Final Independent Report of the Rail Value for Money Study*, 19 May 2011

110 Ev 254

111 Oxera suggests that season-ticket holders are becoming more responsive to fares rises and that the current RPI+3% rises may have a downward influence on passenger numbers and may not increase revenues as much as the Government expects. Oxera, “Fares fair? The economics of setting ticket prices”, *Agenda*, July 2011.

112 HC Deb, 27 January 2011; Vol. 522, c. 426

113 Q 553

114 Ev 267 and Qq 471-473



advanced fares would apply. In our view, the significant expansion in capacity that HS2 would bring, on both HS2 services and the classic lines, would make it highly likely that cheaper fares would be offered in order to maximise passenger numbers and revenues. This would, potentially, make rail travel more equitable.

**43. Demand management, such as peak and off peak pricing, is already an integral element in the way that train services are planned and operated. It is, however, in our view, largely a tactical approach and not a long-term solution to serious mismatches of supply and demand. If capacity is seriously constrained, growing demand can be managed only by means of ever higher ticket prices or increasing restrictions such as compulsory seat reservations, neither of which are acceptable as a long-term approach to rail service provision.**

### **Planning for the long term**

**44. The debate on capacity seems to us to reveal two contrasting views. On one view, rising demand on the West Coast corridor is essentially a problem, to be tackled by least-cost incremental improvements coupled with measures to suppress demand. On the other view, rising demand is, for strategic reasons, to be welcomed and indeed fostered. As noted in Chapter 2, we consider that the Government needs to explain more clearly this strategic case and in particular why such arguments do not apply to road and air transport. Provided this is done, we support the step change that a high-speed rail link between London, the Midlands, the North and Scotland could bring to the capacity, quality, reliability and frequency of rail services between our major cities, and to those served by the existing WCML. Whilst the alternatives proposed by groups such as 51m offer substantial additional passenger capacity, they are not of the same scale as HS2. The rapid growth in passenger numbers over the past 15 years shows the need to plan on a larger scale and for the long term. We do not wish our successors to be faced with a situation in ten years' time where demand has continued to grow but insufficient time remains to provide the necessary capacity. We call on the Government to set out a clear and comprehensive long-term strategy for transport and the place of high-speed rail within it.**

## 4 Economic impacts

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I believe that if we are really serious about rebalancing our economy and ensuring that we get growth across the country, and not just in the south-east, the time for high-speed rail has come. That is why it has my strong support.<sup>115</sup>

I believe that it is not possible for Britain to maintain its prosperity in the 21st century in an increasingly competitive global economy unless we can close the growth gap between north and south. Governments for the past 50 or 60 years have wrestled with this challenge and we have not succeeded yet. This approach of investing in strategic infrastructure is the last best chance to achieve that.<sup>116</sup>

### National impacts

45. Mr Hammond said that, while he “starts with capacity”, the broader purpose of HS2 is to support economic growth, particularly in the Midlands and the North of England.<sup>117</sup> According to the Government, HS2 would not only create significant direct employment but would also benefit the UK economy as a whole through wider long-term economic impacts and strategic benefits. The HS2 business case, which we analyse later in this chapter, concluded that the Phase I, from London to the West Midlands, would generate £20bn in economic welfare benefits, principally as a result of time savings to business travellers. This estimate also includes £4 billion in wider economic impacts (WEI) which would result from improved competition (£1bn), larger labour markets and concentrations of specialised firms, key markets and suppliers (£3bn). The total benefits for the Y network were estimated at £44bn, including WEI estimated at £6bn, on a *pro rata* basis, as a detailed appraisal has not yet been undertaken.

### Impact on employment

46. The London–West Midlands leg of HS2 would, according to the Government, result in the creation of some 40,000 jobs—a potential 30,000 in “planned employment growth” around the high-speed rail stations (with two-thirds at Old Oak Common), 9,000 in construction of the line and 1,500 in the operation and maintenance of the trains.<sup>118</sup> Some of the jobs around the stations would be relocated from elsewhere.

### Strategic benefits

47. The Government and supporters of high-speed rail, such as Greengauge 21, point also to the strategic advantages that HS2 would offer.<sup>119</sup> A new line would improve capacity and reliability—for services both on the new line and the classic lines that it relieves and the

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115 The Prime Minister, Rt Hon David Cameron MP, HC Deb, 22 June 2011, c322

116 Rt Hon Philip Hammond MP, HC Deb, 23 Jun 2011, c458

117 Q 511

118 Booz & Co, *HS2 London to the West Midlands. Appraisal of Sustainability Non Technical Summary*. A report for HS2 Ltd, February 2011, p 27

119 Further details are set out by the (then) Government in *High Speed Rail*, Cm 7827, March 2010.

opportunity for greatly improved journey times, depending on the design speed chosen. Journey times are an important aspect, particularly for those cities lying furthest from London. Lower journey times improve connectivity between the major cities in England and with Scotland and make it easier to get “there and back in a day” which Eddington identified as valuable to business and tourism. For example, on completion of the Y network, journey times between Birmingham and Liverpool would be 60 minutes and 65 minutes between Birmingham and Leeds. Better journey times would provide an increasingly competitive alternative to road and, for some longer journeys, to air. (See Chapter 5.) Improved access to Heathrow from the regions is another strategic economic benefit much emphasised by the Government<sup>120</sup> and business organisations and one that is likely to reinforce the trend away from domestic flights to Heathrow.<sup>121</sup> The proposed link between HS2 and HS1 would also make possible direct services between the regions and the European mainland, although the commercial viability of these remains to be established.

### **Alternative assessments**

48. Supporters of high-speed rail have argued that the economic benefits of HS2 would be far greater than those identified by HS2 Ltd in its business case. They contend that there would be significant additional impacts on productivity, measured as increased Gross Value Added (GVA). Figures vary considerably, depending on the assumptions and methodology. In a study for Greengauge 21, KPMG estimated that “a comprehensive high-speed rail network, could boost Britain’s annual GVA by up to £29bn, including re-use of the existing lines.”<sup>122</sup> The Northern Way estimated that the increase in GVA could be three times greater than the welfare benefits calculated by the DfT.<sup>123</sup> Most recently, the Core Cities Group, representing the eight largest English cities outside London, has published a study by consultants Volterra and Arup, which suggested that “Investment in a full high-speed rail network and electrification will underpin the creation of 400,000 jobs in Core Cities, and 1 million jobs in total across their wider urban areas.”<sup>124</sup>

49. Although Mr Hammond has sometimes cited such studies in support of HS2, the DfT has remained wary about the validity of such methods and does not include these additional GVA impacts in its own formal appraisal methodology (WebTAG).<sup>125</sup> Indeed, even some sponsors of these studies recognise the appraisal techniques used as being “in their infancy”.<sup>126</sup> On the other hand, some have argued that even DfT’s figures are too optimistic. Professor Vickerman said that the calculations of employment that would result from HS2, including those by the DfT, took little account of jobs that were displaced or

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120 Q 529

121 Qq 363-367. See also Transport Committee, *The future of aviation*, First Report of Session 2009-2010, HC 125, 7 December 2009, pp 24-30.

122 Ev 132

123 Ev w356

124 Volterra and Arup, *Understanding the transport infrastructure requirements to deliver growth in England’s Core Cities, interim report*, July 2011. See also comments by HS2 Action Alliance, Ev 229.

125 Ev 249

126 Ev w356

relocated and were, therefore, gross rather than net figures.<sup>127</sup> The Taxpayers' Alliance has claimed that HS2 is a highly inefficient way of creating jobs and that the wider economy would create four times as many jobs with the same level of capital expenditure.<sup>128</sup>

## Regional impacts—rebalancing and regeneration

50. The Government has claimed that HS2 would change the economic geography of Britain, rebalance the economy and reduce the north-south divide.<sup>129</sup> The Prime Minister has made it clear that HS2 is a major component of the Government's regional policy:

[...] we have to have our own dedicated regional policy here in the UK—not just money, but things like high-speed rail.<sup>130</sup>

The campaign Yes to HS2 is supportive of this view and asserts that HS2 would bring economic benefits, particularly to the Midlands and the North, “helping to rebalance the country's current south-eastern centric economy.”<sup>131</sup> Regional business organisations are also supportive. Mr Geoffrey Piper, Chief Executive of the North West Business Leadership Team, believes that HS2 is “vital for the long-term prosperity of the region.”<sup>132</sup>

51. The cities in which new HS2 stations would be built and those which would be served by HS2 trains running on the “classic” network were very positive about the potential economic regeneration benefits for the cities and, to varying degrees, the surrounding regions. Birmingham City Council saw HS2 services and a new station at Curzon Street as a major catalyst for regeneration of the eastern part of Birmingham city centre. The West Midlands Integrated Transport Authority (Centro) commissioned a study from KPMG which concluded that HS2, plus a programme of regional rail enhancements, would increase GVA in the West Midlands by £1.5bn, the equivalent of a £300 rise in average wages.<sup>133</sup> The London Borough of Hammersmith and Fulham was strongly supportive of the proposal for a station at Old Oak Common because of the potential benefits to the local economy, although TfL<sup>134</sup> and others<sup>135</sup> pointed out the constrained nature of the site and the lack of access by road. Manchester and Leeds local authorities and business organisations also saw considerable regeneration potential from HS2.

52. We saw for ourselves the regeneration of Lille that has been achieved through sustained economic development efforts integrated with the Euralille TGV (high-speed rail) station and international high-speed rail services. We heard also from business and economic development professionals in Frankfurt how the new high-speed rail (ICE) line between Frankfurt and Cologne had helped to strengthen the regional economy and to spread

127 Q 359

128 Ev w430

129 HC Deb, 28 February 2011, c15WS

130 House of Commons Liaison Committee, *Evidence from the Prime Minister*, Oral evidence, 6 Sept 2011, Q 241

131 Ev 296

132 Ev 113

133 Ev 140

134 Q 169 Daniel Moylan

135 Ev 132

growth.<sup>136</sup> SNCF Director, Pierre Messulam, described how, over time, the Paris–Lyon TGV line had brought economic benefits to both cities. He also described the TGV as a catalyst for growth but not a guarantor of it:

In some areas where local authorities did not pay attention to connection with roads, taxation and training the work force, frankly speaking, nothing happened and TGV could not save them.<sup>137</sup>

Other experts whom we met in France and Germany confirmed that regeneration and economic growth required sustained and integrated planning and additional public investment in order to take advantage of the potential offered by high-speed rail. Professor Vickerman said how hard it was to predict the economic impacts of high-speed rail on individual cities and that the results to date had been mixed. He was reluctant to speculate on the impacts of HS2 on Birmingham or Manchester.<sup>138</sup>

53. It seems clear that high-speed rail can have beneficial economic impacts in the areas immediately around the stations. The extent to which the benefits of high-speed rail might be felt over a broader area would seem to depend on the quality of local and regional transport networks and the extent to which the development of high-speed rail is integrated with wider economic development planning. The Centro / KPMG study of HS2, though positive overall, concluded that the benefits would be concentrated in central Birmingham and around the new Birmingham Interchange station.<sup>139</sup> We were told in France that the economic impacts of TGV services extended *up to* 40km from the stations. The most obvious impacts were on financial services and tourism, with increased commuting in both directions. The full effects of high-speed rail took many years to be felt.

54. To what extent HS2, on its own, would rebalance the north-south divide is harder to assess. On the basis of studying high-speed rail in continental Europe, Professor Tomaney found that “the impacts of high-speed rail on local and regional development are ambiguous at best and negative at worst.”<sup>140</sup> Where there had been development gain following the arrival of high-speed rail, this had also involved large-scale economic development planning by the regional authority.<sup>141</sup> high-speed rail. Whilst he supported investment in public transport infrastructure to provide better connectivity between the major northern cities, he warned that HS2 may benefit London and the south east disproportionately and work against rebalancing.<sup>142</sup> Ironically, the London Borough of Camden (in which Euston Station is located) is opposed to HS2, partly due to the blight and other impacts on local businesses; and the Mayor of London is less than enthusiastic,

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136 See also Ev w20 for contrasting view.

137 Q 90

138 Qq 319-323

139 KPMG, Report for Centro, *High Speed Rail and supporting investments in the West Midlands*, 24 June 2010 [www.centro.org.uk](http://www.centro.org.uk)

140 Ev 106

141 Q 277

142 Ev 106

insisting that a new tube line to relieve pressure on existing Euston underground stations is required before the Y network is completed.<sup>143</sup>

55. Oxera's report for the Committee found that the Government's business case had limited evidence regarding the scale of the wider economic impacts or which regions would gain or lose.<sup>144</sup> HS2 Ltd confirmed that it had not assessed the regional impacts and distributions of benefits or losses associated with HS2.<sup>145</sup> The Government's economic case shows that two-thirds of the transport-user benefits accrue to passengers who start their journey outside London. These are primarily time-saving benefits to business people travelling to London, which is not necessarily comparable with economic growth or increased employment in these regions. More than half of the 40,000 jobs associated with HS2 will be in London, including 20,000 at Old Oak Common. It is likely that secondary employment arising from the HS2 supply chain, for example in the manufacture of high-speed trains, would be spread across a wider area.

56. Some areas feared that they might lose out as a result of HS2, in terms of the relative quality of rail services and, as a consequence, in investment and employment. Coventry and Stoke had particular concerns. Mark Barry of the Cardiff Business Partnership told the Committee that, according to Greengauge 21, HS2 would have a negative impact on the economies of Wales and the south-west of England, with the loss of 60,000 jobs in these areas.<sup>146</sup> He argued that, for reasons of regional equity, economic mitigation measures were needed and should be an integral part of the HS2 project, as environmental mitigation would be.<sup>147</sup> We heard in France how some towns, such as Amiens and Reims, had lost out, in relative economic terms, as a result of not being served by TGV services.

57. The UK already has some experience of the impacts of high-speed rail. HS1—previously known as the Channel Tunnel Rail Link—was opened to St Pancras International station in 2007. It carries Eurostar international and Javelin high-speed regional services. The NAO has undertaken two value-for-money assessments of the scheme. According to the DfT, the economic net benefits were some £1billion. The NAO concluded that the project would not have gone ahead without public sector grants and that the economic justification was heavily dependent on the wider benefits envisaged by the Government and its assumptions about regeneration impacts. A study for London & Continental Railways in 2009 concluded that the net project costs were matched by additional earnings and transport user benefits. In addition, it estimated there were wider economic benefits of £3.8bn and regeneration benefits of £10bn. The NAO is due to publish a final report in early 2012.

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143 Q 164. See also the Mayor of London's response to the DfT's HS2 consultation, 29 July 2011.

144 Annex 1, paras 3.31-3.41, 3.47-3.52

145 Ev 87 q30. HS2 Ltd did, however, undertake work with Professor Vickerman and Reg Harman on international experience. See *Economic Case for HS2*, p 34.

146 Ev 298 and Q 416

147 Q 417. See also Exeter City Council, Ev w179.

## Capacity to exploit opportunities

58. The evidence we have received and our visit to France and Germany lead us to two conclusions about the potential of HS2 to stimulate national and regional growth. First, it is obvious that the economic impacts of high-speed rail can vary and are not easily predicted: only time will tell whether or not HS2 will, for example, help to rebalance the economy and reduce the north-south divide. Our judgement is that HS2 could indeed be the catalyst for these economic benefits. Our second conclusion, from the experience of France and elsewhere, is that if high-speed rail is to realise its full potential the Government's plans for HS2 must be accompanied by complementary regional and local strategies for transport, housing, skills and employment. Under current Government policies, the responsibility for producing such plans rests with local economic partnerships, integrated transport authorities and combinations of such bodies. Support—not least with funding—will be needed from the Government. We call upon the Government to recognise this as a priority.

## Economic case

59. In order to be considered for Treasury funding, a major transport scheme proposal must be accompanied by a business case, comprising five parts conforming to the Treasury's five case model for major projects.<sup>148</sup> As the promoter of HS2, it falls to the DfT to provide the business case for HS2. A key part of the business case is the economic case<sup>149</sup> which provides an appraisal of the scheme in terms of the welfare benefits to society and the costs to Government.<sup>150</sup> In the HS2 debate, the economic case is commonly (and confusingly) referred to as the business case.<sup>151</sup>

60. As we have seen, HS2 Ltd estimates that the Y network will deliver £44 billion of net benefits at present values<sup>152</sup> (including Wider Economic Impacts) and £17bn of net costs to government.<sup>153</sup> This gives a benefit to cost ratio (BCR) of 2.6, i.e. £2.60 of benefit for each £1.00 invested. The BCR for London–West Midlands only is lower, at 2.0—see Table 1 below. They are classified as “high” value for money.<sup>154</sup>

**Table 1 HS2 economic case: benefit:cost ratios**

Appraisal date:	March 2010	February 2011	
	London-West Midlands	London-West Midlands	Y network
BCR without WEI	2.4	1.6	2.2
BCR with WEI	2.7	2.0	2.6

Note: No BCR calculation was published for the Y network in 2010.

148 Ev 260

149 DfT, *Economic Case for HS2*, February 2011

150 The “economic case” is a key component of the wider “business case”. See DfT, *Economic Case for HS2. The Y Network and London – West Midlands*. February 2011, p5

151 The business case for HS2 is also examined in Ev 202, Ev w38 and Ev w86.

152 Future costs and benefits are converted to a common date (in this case 2009) using a discount rate of 3.0/3.5%.

153 *Economic Case for HS2*, p12

154 HM Treasury classifies a BCR above 1.5 as “good” while a BCR above 2.0 as “high”.

### *Assumptions and sensitivity*

61. Because of the importance of the economic case and its technical nature, we engaged Oxera to advise us on its technical validity and critical assumptions (Annex 1). Oxera concluded that the appraisal complied with standard methodology; although the methodology was designed to rank options it has increasingly been used to give an overall view of the value for money of individual schemes. They noted that assumptions about passenger growth and fares were critical to the overall economic case and that the passenger forecasts had been subject to detailed testing by HS2 Ltd.<sup>155</sup> They explored the sensitivity of the case to changes in values of key variables, including passenger growth, fares, scheme costs and opening year, and showed that quite different outcomes were possible, although not necessarily more probable. They concluded that the case for the Y network appeared to be much stronger than the case for London–West Midlands only, but the Y network figures were only indicative as the detailed work on the Leeds and Manchester legs had not been undertaken. For example, the number and location of stations had not been identified. Oxera posed various questions which the DfT and HS2 Ltd answered in supplementary evidence.<sup>156</sup>

62. Table 1 also demonstrates the sensitivity of the economic case to changes in variables. The BCR (without wider economic impacts) for London–West Midlands was revised from 2.4 in 2010 to 1.6 in 2011. (With WEI the BCR fell from 2.7 to 2.0.)<sup>157</sup> These revisions were a result of lower GDP forecasts and consequently slower growth in rail demand; the inclusion in the Y network of a spur to Heathrow; errors in the calculations; and other factors.<sup>158</sup> Mr Hammond instructed HS2 Ltd to produce an updated business case by the end of the year.<sup>159</sup> He told us that:

As rail projects go, a BCR of 2.6 [for the Y network] is quite reasonable. If it were to fall much below 1.5, I would certainly be putting it under some very close scrutiny.<sup>160</sup>

Rail schemes tend to have lower BCRs than road schemes and, whilst the DfT takes account of the economic case, it does not allocate funds on this criterion alone.<sup>161</sup> Some major transport schemes that have proved highly successful, such as the Jubilee Line Extension, were initially appraised as having relatively low BCRs.<sup>162</sup>

**63. The case for investing in a high-speed line between London and the West Midlands depends largely on the assumption that the full Y network will be completed. Whilst we can see that the benefits of a more extensive high-speed rail network, embracing Manchester and Leeds, are likely to be greater than those of the London–West**

<sup>155</sup> Ev 267

<sup>156</sup> Ev 254 and Ev 267. See also further written evidence from HS2 Action Alliance (Ev 220) and 51m (Ev 162).

<sup>157</sup> According to HS2 Ltd opening later would improve the economic case for HS2 as passenger demand would be higher, though of course it would defer the benefits of the new line.

<sup>158</sup> *Economic Case for HS2*, pp 6-7

<sup>159</sup> 29 July 2011 letter to HS2 Ltd

<sup>160</sup> Q 554

<sup>161</sup> The Committee investigated the economic appraisal of transport schemes at length in its inquiry *Transport and the economy*, Third Report of Session 2010-11, HC 473, 2 March 2011.

<sup>162</sup> Annex 1, A2.29



Midlands line alone, it is disappointing that even basic information on the Y network, such as the number and location of stations, was not available during the public consultation or during our inquiry. We believe that there should be an urgent strategic appraisal of phase II before a final decision on phase I is taken. It is also disappointing that as a major justification for HS2 phases I and II is the rebalancing of the economy, a full assessment of the case for building north to south has not been undertaken. This work should be carried out as a priority.

### *Time savings—how valuable?*

64. The economic benefits, according to the DfT's methodology, arise mainly from transport user benefits of which time savings are the major component.<sup>163</sup> The basis of this appraisal is that time spent travelling is deemed unproductive and, therefore, time saved, particularly for business travellers, is of economic benefit. The £44bn total includes benefits of £25bn to business users, £13bn to other transport users and £6bn WEIs (explained above). No quantified costs or benefits are included for carbon or landscape impacts (see Chapter 5).

65. Time savings are a long-established part of the economic case for transport investment. However, as we showed in our inquiry into transport and the economy, there is much debate and disagreement as to whether this is the best method to assess large schemes which are intended to bring about long-term economic growth.<sup>164</sup> With regard to HS2, the issue is hotly contested. Objectors, such as AGAHST, 51m and HS2 Action Alliance, contend that, as a result of changes in mobile communications and information technology, time spent travelling by rail is increasingly productive for business people. On this basis, they challenge the high values attached to time savings in the DfT's economic case for HS2. Professor Lyons and Dr Steve Atkins, who designed the 2004 and 2010 surveys of how rail passenger spend their time, found that the proportion of passengers who considered that their travel time was very worthwhile had gone up by a quarter in six years. They concluded that, in relation to the economic case for HS2, the "core assumption" that travel time is unproductive was "flawed".<sup>165</sup> Professor Nash was also critical:

The most suspect part of current appraisal methods as applied to high-speed rail is the valuation of business travel time.<sup>166</sup>

66. HS2 Ltd acknowledges the debate and says that, if rail travel time is deemed productive, the reduction in crowding should be given more weight than is currently the case, as passengers who previously stood would be able to use their time productively. It has evaluated HS2 on both bases and says the BCR is very similar. 51m and others point out that, on this appraisal basis, the BCR for alternative schemes, such as the one they put forward or those assessed by Atkins, improve significantly.

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<sup>163</sup> *Economic Case for HS2*, p 31

<sup>164</sup> *Transport and the economy*, HC 473, 2 March 2011, pp 30-34

<sup>165</sup> Ev w553

<sup>166</sup> Ev 115

### ***The need for speed?***

67. CPRE and others have pointed out that the high value attached to time savings by HS2 Ltd has influenced the scheme design: very high speed, a straight alignment and few station stops tend to improve the economic case whilst lower speeds and deviations (to reduce landscape, noise or energy impacts) tend to weaken it. Other witnesses have argued that the focus on the economic case, based on time savings, has discouraged consideration of wider objectives and the potential of HSR, particularly the strategic economic importance to the regions of access to Heathrow.<sup>167</sup> We sought to clarify if very high speed was a policy objective and how the design speed of 250 mph had been arrived at. The announcement of the HS2 project in 2009 noted that the accepted definition of “high speed” was trains travelling at over 150 mph.<sup>168</sup> Mr Hammond told us that he had not specified a design speed for HS2.<sup>169</sup> HS2 Ltd explained that the economic case (and advice from the President of SNCF) had led them to recommend the 250 mph design speed.<sup>170</sup>

**68. A high-speed line offers potential economic and strategic benefits that a conventional line does not. These include a dramatic shift in connectivity between the UK’s major cities and improved access from the regions to Heathrow and continental Europe. These are in addition to the time savings and crowding benefits outlined in the Government’s economic case. It seems clear, therefore, that if a new line is to be built, it should be a high-speed line. It is possible however, that very high speed (250 mph) may have been given an undue emphasis as a result of the particular appraisal method used as part of the economic case. It may be that a high-speed line operating at less than 250 mph may offer greater opportunities for noise and environmental impact mitigation, as well as an opportunity to follow existing transport corridors. We are concerned that the decision to build a 250 mph line has prematurely ruled out other route options such as building HS2 alongside an existing motorway corridor such as the M40 or M1/M6.**

**69. The economic case for HS2 has a double importance. Not only does it purport to assess whether HS2 is a good investment, but it also significantly influences the scheme design. The robustness of the methodology is therefore critical. We note the debate over whether it is appropriate to attach so much weight to travel time savings and whether other approaches, including a higher valuation of reduced crowding or impacts on Gross Value Added, should be used as well or instead. We conclude that it is disappointing that a major strategic scheme, with the potential to grow and rebalance the economy and to address major capacity issues, is being designed and assessed to a large extent on the basis of the value of travel time savings, which are not universally accepted. When HS2 Ltd provides the updated economic case to the Secretary of State for Transport later this year, it should provide a comparative assessment on the basis of reduced crowding, with a lower value attached to time savings. The implications for the scheme design should be made explicit. This should also be applied to any assessment of alternatives to HS2.**

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167 Ev 191

168 DfT, *Britain’s Transport Infrastructure: High Speed Two*, January 2009, p 27

169 Qq 518-520. The letter from Sir David Rowlands to Lord Adonis, 13 February 2009, setting out HS2 Ltd’s remit, discussed speed criteria and suggested that the design speed for HS2 was likely to be “at least the maximum speed for HS1” [186mph]. However, no specific speed was specified.

170 Qq 435-438, 444-447

## 5 Environmental impacts

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I have always believed that our beautiful British landscape is a national treasure. We should cherish and protect it for everyone's benefit.<sup>171</sup>

We will establish a high speed rail network as part of our programme of measures to fulfil our joint ambitions for creating a low carbon economy.<sup>172</sup>

70. As with any major piece of transport infrastructure, HS2 would have significant impacts on the environment. These are described at a high level in the Appraisal of Sustainability.<sup>173</sup> The changes to the 2009 design for the London–West Midlands route, intended to reduce and mitigate negative impacts, are also explained. If the Government decides to proceed with the scheme, a detailed environmental impact assessment and environmental statement will have to be undertaken prior to introduction of a hybrid bill.

### Carbon

71. One of the Government's principal objectives for transport is that it should contribute to the UK's climate change targets. There is a lack of clarity in the debate about whether high-speed rail will make a positive or a negative contribution. Two very different propositions tend to get mixed up. The first is that HS2 will *of itself* significantly reduce carbon emissions by encouraging people to switch from road and air. The second proposition is that *given a strategic objective* of dramatically improving connectivity and capacity of inter-urban transport, high-speed rail is a relatively low-carbon option.

72. Mr Hammond hinted at the first proposition by saying that high-speed rail will help the Government to meet its climate change targets by “encouraging millions out of their cars and off the planes onto the train.”<sup>174</sup> HS2 Ltd forecast that, for London–West Midlands in 2043, 6% of HS2 passengers will have switched from plane and 7% from car, with 65% from classic rail and 22% new trips generated by HS2.<sup>175</sup> “A national network could see as many as 6 million air trips and 9 million car trips switching to high-speed rail each year.”<sup>176</sup> Supporters of HS2 have tended to endorse the view that it will of itself have substantial carbon benefits.<sup>177</sup>

73. Despite some shift from more carbon-intensive modes to rail, the Government's official assessment is that the overall impact of HS2 on carbon emissions is hard to predict but likely to be very small. A substantial amount of carbon would be emitted in the construction of the line and HS2 would generate additional travel (some 30,000 trips per

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171 Prime Minister David Cameron, letter to National Trust, 20 September 2011 <http://www.telegraph.co.uk/earth/hands-off-our-land/8777913/David-Camersons-letter-to-National-Trust-in-full.html>

172 HM Government: *The Coalition: our programme for government*, 20 May 2010, p 31

173 Booz & Co, *HS2 London to the West Midlands. Appraisal of Sustainability*. A report for HS2 Ltd, February 2011

174 *HS2 Consultation*, February 2011, p 5

175 *Economic Case for HS2*, p 19

176 *HS2 Consultation*, February 2011, p 50

177 For example, Network Rail, Ev 292.

day).<sup>178</sup> Any reduction in domestic flights into Heathrow would almost certainly be offset by additional international flights, although these would be within the EU emissions trading scheme and could be diversions from Gatwick. HS2 would be powered by electricity, so the carbon emissions would be determined by the extent to which the UK's energy supply is "decarbonised". The Appraisal of Sustainability concludes that the overall carbon impact of HS2 would be "broadly neutral". At worst it could increase emissions by 24m tonnes; at best it could reduce emissions by 27m tonnes. "Whichever scenario takes shape, the contribution of HS2 would be insignificant when compared to other transport emissions in the UK [at about 0.3%]."<sup>179</sup> The percentage of UK car trips that might transfer to HS2 is, in overall terms, very small; we discuss the impact on aviation below.

**Table 2: High-speed rail and CO<sub>2</sub> emissions in selected European countries**

Country	Population (2010)	Area	High-speed lines in operation (2011)	Rail passenger use (2009 <sup>1</sup> )	Nuclear and renewables as % of total electricity production (2010)	CO <sub>2</sub> from domestic aviation (2009)
	(million)	(km sq)	(miles)	(million passenger kilometres)	(%)	(million tonnes)
France	64.7	547,660	1,185	88,610	89.6	4.5
Germany	81.8	348,630	803	81,206	41.0	2.1
Italy	60.3	294,140	577	49,524	26.5	2.2
Spain	46.0	499,110	1,285	23,056	53.9	3.6
United Kingdom	62.0	241,930	71	52,765	23.6	1.8

Note: <sup>1</sup> Rail passenger figure for Italy is for 2008

*Sources:*

*Eurostat demo\_pjan*

*The World Bank*

*Union Internationale des Chemins de fer (UIC)*

*Eurostat rail\_pa\_total*

*Eurostat nrg\_ind\_33a*

*House of Commons Library (SN/ISC/5533) EU ETS and Aviation*

74. In Paris, we heard from the French Transport Minister, Mr Thierry Mariani, that promoting high-speed rail over road and air transport was part of the Grenelle Environment Roundtable carbon-reduction agreement.<sup>180</sup> However, as Table 2 shows, France and other European countries with high-speed rail generate substantially higher proportions of electricity from non-fossil sources (mainly nuclear) than does the UK. Switching from road or air to rail therefore has a significant carbon benefit. The Committee on Climate Change has recommended a radical decarbonisation of UK

<sup>178</sup> *HS2 Consultation*, February 2011, pp18-19 (based on London-Birmingham, 2043)

<sup>179</sup> Booz & Co, *HS2 London to the West Midlands. Appraisal of Sustainability Non Technical Summary*. A report for HS2 Ltd, February 2011, p 15 and Ev 262

<sup>180</sup> Grenelle is also discussed by CPRE, Ev 191.

electricity generation by 2030 and the DfT refers to the Government's "clear commitments to progressively decarbonise power generation."<sup>181</sup> Currently, however, the scale and pace of the programme is uncertain.<sup>182</sup> Table 2 also shows there is no simple link between high-speed rail and carbon emissions from domestic aviation.

### **Impact on aviation**

75. The impact of HS2 Phase I on domestic aviation is likely to be insignificant as there are no flights between Birmingham and Heathrow and there will be no direct Heathrow HS2 service. More impact is forecast for the Y network as rail would compete more effectively with aviation for journeys between Scotland, the north of England and London. Whilst this would have some carbon benefits and improve the choice of mode for passengers, the Airports Operators Association says that the potential for HS2 to attract air passengers "should not be overestimated". Flybe, which operates from 38 UK airports but not Heathrow, says the Y network would have "no impact whatsoever" on its services.<sup>183</sup> Where high-speed rail has been introduced and provided a journey time of less than four hours, it tends to attract a high proportion of the air/rail market; however, this is often in the context of a much increased total passenger market and the air services sometimes continue.<sup>184</sup>

76. Heathrow Airport Ltd, Manchester Airports Group and Birmingham International Airport are more positive about the contribution that the HS2 might make to reducing UK domestic flights but still anticipate a substantial overall growth in demand for aviation. Indeed, they expect the Y network to improve the regional attractiveness of Birmingham and Manchester airports (assuming airport high-speed rail stations are built). HS2 may also attract a significant proportion of UK passengers who currently fly to Heathrow from Manchester, Newcastle or Scotland, or those who fly from UK regional airports and take onward connections from Paris (taking HS2 to Heathrow and flying onwards instead). Much of this depends on the quality of connectivity (speed, frequency, transfers etc) between HS2 and Heathrow and regional airports such as Birmingham, East Midlands and Manchester. **The Government needs to make clear how HS2 fits into its wider aviation strategy. It is not clear that even the Y-network will substantially reduce demand for domestic aviation. We note that Lord Mawhinney's report into whether Heathrow should be on the high-speed network only found against the idea when assessing it on the basis of it ceasing at Birmingham: "... a direct high-speed link to Heathrow fully funded from public expenditure, in the context of a high-speed rail network extending only to the Midlands, is not likely to provide a good return on the public expenditure entailed." We would encourage the Government to reassess this proposal based upon the assumption that the network will extend to Manchester and Leeds.**

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181 *HS2 Consultation*, February 2011, p 53

182 The Energy and Climate Change Select Committee, in its report, *Electricity Market Reform*, said that "the Government needs to be more explicit about its ambitions" and that "It should set out an intended pathway of gradually reducing carbon intensity to 2030". (Fourth Report of ECC Committee, April 2011). The Government is shortly due to publish proposals and policies for meeting the fourth carbon budget (2023-27).

183 Q365 Niall Duffy

184 For example, London-Paris: briefing note provided by House of Commons Library, unpublished.

77. Some supporters of HS2 have argued that it would have substantial carbon-reduction benefits. These claims do not stand up to scrutiny. At best, HS2 has the potential to make a small contribution to the Government's carbon-reduction targets. Given the scale of the expenditure and the official assessment, HS2 should not be promoted as a carbon-reduction scheme. However, if the Government's primary aim is to meet and reinforce demand for inter-urban travel, HS2 will produce less carbon than an expanded motorway network or a reliance on domestic aviation. It is important that the Government makes rapid progress with reducing carbon emissions from UK electricity generation.

## Local environment

Of course, we must ensure the appropriate protections for our magnificent countryside. This is why our reforms will maintain protections for the green belt, for National Parks and Areas of Outstanding National Beauty.<sup>185</sup>

78. The DfT acknowledges that it would be impossible to eliminate local environment impacts from HS2 but believes that sensitive design and mitigation measures could ensure that such impacts will be minimised.<sup>186</sup> HS2 Ltd has proposed a London–West Midlands route that avoids any significant demolition of property except for the Euston station area; about half the route would be in deep cutting or tunnel, to reduce noise and visual intrusion on adjacent areas.<sup>187</sup> HS2 Ltd suggests that the impacts on sensitive local sites will be quite limited:

No Grade I or Grade II\* listed buildings would be demolished, and no internationally protected sites of ecological interest would be adversely affected, while impacts to nationally protected sites are restricted to a few locations. The proposed route crosses the Chilterns AONB, with all but about 1.2 miles (2km) of the line in tunnel, deep cutting or in the corridor of the existing A413 main road.<sup>188</sup>

79. Despite these reassurances, HS2's possible impacts, on the natural environment, buildings and people, have generated much concern and opposition, not only to the proposed route but also to HS2 as a project. There are particular concerns about the impact on the Chilterns (a designated AONB), the Colne Valley and parts of Warwickshire. Many local "stop HS2" groups have formed to protest about what they fear would be increased noise, visual intrusion, severance and disruption in their locality, both during construction and when the line is in operation. Some organisations, such as CPRE, suggested that a route close to the M1 might be less environmentally-damaging and therefore preferable;<sup>189</sup> the M40 corridor was generally considered to be unsuitable although a lower operating line speed and the use of tilting high-speed trains could make this option viable. Overall, there

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185 Prime Minister David Cameron, letter to National Trust, 20 September 2011 <http://www.telegraph.co.uk/earth/hands-off-our-land/8777913/David-Camersons-letter-to-National-Trust-in-full.html>

186 *HS2 Consultation*, February 2011, p 55

187 Ev 267

188 Ev 262

189 See also Ev w62.

did not appear to be a consensus on any alternative route from an environmental perspective.

80. We have been presented with two very different accounts of the environmental impacts of HS2: HS2 Ltd told us that noise levels would be quite limited, that HS2 would create a “dual-carriageway for wildlife”,<sup>190</sup> and that 2.9m cubic metres of spoil would be generated and used to construct bunds or removed avoiding local roads.<sup>191</sup> By contrast, the Chilterns Conservation Board and others told us that HS2 (as proposed) would result in damage to 10 Sites of Special Scientific Interest and 84 county wildlife sites, “the largest loss of ancient woodland in recent times” (25.8 hectares)<sup>192</sup> and a “Berlin Wall for wildlife”.<sup>193</sup> In addition, noise calculations did not allow for “worst-case scenarios”, such as unfavourable wind directions, the land take was unquantified and the amount of spoil would be “absolutely gargantuan” (perhaps 11m cubic metres) and its disposal impacts much greater than described by HS2 Ltd.<sup>194</sup> Even the width of the corridor is unclear.<sup>195</sup> The Chilterns Conservation Board<sup>196</sup> and National Trust<sup>197</sup> pointed out that they were not merely seeking to protect local interests but had responsibilities and legal duties to protect certain land and property on behalf of the nation. In the case of the Chilterns Conservation Board, its duties relate to the Chilterns Area of Outstanding Natural Beauty; in the case of the National Trust, it relates to Hartwell House and grounds, which it holds “inalienably”, through which the proposed HS2 would pass.<sup>198</sup> These organisations also pointed to the Government’s undertakings to be the “greenest government ever” and to protect the national environment, particularly Areas of Outstanding Natural Beauty.

81. The divergence of views on likely impacts of HS2 is partly because detailed environmental assessments have not (yet) been carried out nor noise protection measures designed.<sup>199</sup> It might in some cases be due to a lack of dialogue and communication between HS2 Ltd and the major objector bodies. Some have stated that requests for information have been blocked or delayed without adequate explanation.<sup>200</sup> The groups are concerned that the Environmental Impact Assessment will not be undertaken until after a decision (to proceed) has been taken, by which time it will be “too late”.<sup>201</sup>

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190 Q463

191 Ev 286

192 Letter from Steve Rodrick, Chief Executive, Chilterns Conservation Board, to Mrs Ellman, Chair, Transport Committee, 12 September 2011

193 Q 350

194 Qq 331-332, 337

195 Ev 286

196 Q 324

197 Q 318 Dame Fiona Reynolds

198 Ev 292

199 English Heritage said that, without additional work, they were unable to judge the impacts of HS2 on the historic environment and its heritage assets, Ev w232.

200 Ev 161

201 Qq 331-332

## Landscape costs

82. The DfT's economic case methodology does not put a monetary value on landscape costs.<sup>202</sup> The Government's recent Natural Environment White Paper sets out proposals to change this approach and to include the value of "natural capital", which may be much higher than the market value of the land.<sup>203</sup>

Later in 2011, [DEFRA] will publish new supplementary guidance to HM Treasury's Green Book for use by all Government Departments on valuing the natural environment in appraisals.<sup>204</sup>

In fact, HS2 Ltd has already undertaken an "indicative" assessment of the landscape value for HS2, which it puts at £4.5bn.<sup>205</sup> If this figure were to be deducted from the benefits of HS2 (London–West Midlands), the BCR including WEIs would fall to 1.56 (see Chapter 4).<sup>206</sup>

**83. We recognise that HS2 is likely to have substantial impacts on the countryside, communities and people along its route. It is unfortunate that a direct route between a station to the west of London and the West Midlands crosses the Chilterns AONB—a national asset. Because detailed assessments have not been undertaken, it is difficult to be clear about the precise scale of the impacts or the effectiveness of mitigation measures. Our visit to the Arup sound laboratory suggests to us that noise impacts may be less than feared but for other factors it is impossible to tell. We recommend that the revised business plan for HS2 should take account of the Government's new approach to economic appraisal, which places a monetary value on natural capital. It should also make explicit whether this approach would suggest changes to the alignment or design of the route proposed by HS2 Ltd. We would encourage the Government to place greater emphasis on following existing transport corridors.**

## Consultation, Challenge and NIMBYs

### Consultation

84. The DfT and HS2 Ltd undertook formal public consultation on the HS2 proposal earlier this year. The consultation was intended to gather views on:

the proposed national high speed rail strategy [...] and on the proposed line of route for an initial London – West Midlands line.<sup>207</sup>

Mr Hammond described the consultation as "one of the largest and most wide-ranging ever undertaken by Government."<sup>208</sup> Some 50,000 responses were received. Many people

202 Qq 551-552

203 HS2 Ltd estimates that the land cost (including buildings) for HS2 London-Birmingham will be £930m. See Ev 286.

204 DEFRA, *The Natural Choice: securing the value of land*, Natural Environment White Paper, June 2011, Cm 8082, para 3.42

205 Ev 267

206 Oxera email 6 September 2011

207 *HS2 Consultation*, February 2011, p 25



who responded to the consultation did so due to concerns about possible impacts on their homes and local environment. Many also submitted strategic arguments in favour or against HS2.

85. Despite the considerable scale and content of the consultation exercise, some major stakeholders, such as 51m and AGAHST, expressed disappointment and frustration with the process. AGAHST complained that there has been a lack of impartiality in the process; that residents on the Y sections were effectively excluded as no information was provided on the route north of Birmingham; that economic and environmental information was inaccessible or not available; and that Ministers implied that they would proceed regardless of the consultation.<sup>209</sup> The Chilterns Conservation Board, 51m, National Trust and HS2 Action Alliance also criticised the consultation process, particularly in terms of a failure on the part of HS2 Ltd and the DfT to engage with them, to debate strategic issues, resolve technical issues or to consider alternative proposals.<sup>210</sup> Complaints about lack of consultation or engagement might simply reflect the fact that such discussions as there were did not produce the results which opponents wanted. We have no way of judging whether or to what extent that has been the case.

### Challenge

86. Following its establishment in 2009, HS2 Ltd established three challenge panels (strategic, technical and analytical) “to provide independent expert scrutiny on different elements of [its] work.” These panels continue to meet. Of the three groups, currently comprising 22 people (all men), only the Analytical Challenge Panel contains any evident critic of high-speed rail. The Strategic Challenge Panel comprises eight transport and local government experts who are almost all publicly supportive of high-speed rail, including the Director of Yes to HS2, the Director of Greengauge 21 and the Chairman of Network Rail.<sup>211</sup> Mr Hammond said that the details of the challenge panels were a matter for HS2 Ltd but he thought they had “worked well”.<sup>212</sup>

**87. It is disappointing but perhaps unsurprising that DfT and HS2 Ltd have not been able to reach agreement on technical issues with major objectors such as 51m and those with statutory roles such as the Chilterns Conservation Board and National Trust. We do not pretend that any consultation process could have led to opposition melting away but some factual issues might have been resolved and areas of disagreement narrowed. It is also of concern that the Government intends to reach a decision on whether to proceed with Phase I before information on the Y network is published and before many of the environmental impacts for both phases are clear. We recommend that no decision is taken until such strategic information on Phase II is published, appraised and consulted upon.**

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208 *HS2 Consultation*, February 2011, p 6

209 Ev 166

210 Qq 326-360

211 Ev 286

212 Q 548

## **NIMBYs**

88. The previous Secretary of State has been accused of comparing opponents of HS2 with the Luddites and “NIMBYs” (Not In My Back Yard).<sup>213</sup> In Manchester in June this year, Yes to HS2 launched a bus poster campaign—“Their lawns or our jobs”. Professor Begg, Director of the campaign, defended the posters.<sup>214</sup> Meanwhile the Stop HS2 campaign toured the country with a 10ft inflatable white elephant.

**89. What should have been a serious and factually-based debate about how best to address the transport, economic and environmental challenges of HS2 has too often been reduced to name-calling and caricature: Luddites, NIMBYs and white elephants fought out a battle of “jobs versus lawns”. We urge the Government to desist from disparaging opponents of HS2 as NIMBYs and for both sides in the debate to show respect for each other and to focus on the facts.**

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213 *Financial Times*, 25 June 2011, p 2 and Q 510

214 Q 97

## 6 The strategic route

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### Route criteria

90. In 2009, HS2 Ltd developed a set of “fundamental guiding principles that would form the basis of high-speed rail in the UK”.<sup>215</sup> These emphasise the role of high-speed, long-distance services, segregation of high-speed rail from the classic network over time but integration with classic rail and other public transport where beneficial. We have discussed earlier in this report how the particular business case methodology used led HS2 Ltd to recommend a direct London–West Midlands route, with few stations. For the avoidance of planning blight, only one route option was presented as the Government’s preferred option and the Government’s timetable has allowed relatively little opportunity to debate the wider objectives of high-speed rail in the UK context. Some witnesses were quite satisfied with the route as proposed and simply wanted to see the entire HS2 network in operation as soon as possible.<sup>216</sup> Others, such as CPRE, criticised the narrow focus of the consultation and the lack of consideration of development of the classic network<sup>217</sup>. Mark Barry was critical of the lack of consideration of Wales and the South-West in the process.<sup>218</sup> Mr Hammond was anxious that there should be no delay.<sup>219</sup>

91. The remit agreed with HS2 Ltd by the previous Government gave the company considerable freedom to make its own proposals for the strategic route (see Chapter 1). In particular, it was for the company to advise on the location of stations in London and the West Midlands and on whether the line should go via Heathrow or, alternatively, provide a spur into the airport. HS2 Ltd’s subsequent report set out a wide range of options for the route to the West Midlands, with a clear recommendation in favour of the route subsequently adopted—with some modifications—by the present Government. None of HS2 Ltd’s original shortlist of routes went via Heathrow. All three went through the Chilterns: the terms of the remit made this likely. A broader set of considerations might have suggested alternative alignments and stations.

### The “classic” rail network

92. One of the main advantages of a new high-speed line is that it should free up capacity on existing lines for additional local, regional and freight services. Indeed, Centro claims that enhanced regional services would increase regional GVA by more than the HS2 effect—but the enhancements wouldn’t be possible without HS2. West Coast Rail 250 endorses the view that communities along the existing WCML will benefit from this additional rail capacity.<sup>220</sup> West Coast Rail 250 strongly supports HS2 but wants greater clarity on the patterns of WCML services following the opening of HS2.<sup>221</sup> It estimates that

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215 Ev 262

216 For example, Ev w45 and Ev w195.

217 Ev 191

218 Q 398

219 Q 533

220 See para 39.

221 Q 407

some £7bn will be spent on basic maintenance and renewals to the WCML in the next 10 years.<sup>222</sup>

93. It seems, however, that some towns and cities, such as Coventry and Stoke, that currently enjoy relatively fast and frequent services to London, may end up with slower or fewer services to London. 51m provides a schedule of towns that are likely to be affected.<sup>223</sup> The Government argues that, whilst there may be some service losses, these places will enjoy greatly enhanced local and regional services, including a wider range of Pendolino services to the north.

94. Milton Keynes and Northampton are served by fast-line WCML services, currently provided by London Midland. Under DfT standards for services with stations over 20 minutes journey time apart, these should have no standing passengers. However, these services are substantially overcrowded now, and major growth is forecast to continue, driven by further housing expansion.<sup>224</sup> Although, under the HS2 proposal, there is scope for substantial improvement in the long term, there is no proposal for improvement before that time—2026. **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.**

95. **The implications for the development of the classic rail network and service patterns on it once HS2 is in operation have not been made sufficiently clear. HS2 offers potential for many additional local and regional services on the classic network. However, a lack of information has caused concerns in cities such as Coventry and Stoke that they will lose out. We recommend that the Government, in announcing its decision on the HS2 consultation, provides a more explicit and comprehensive statement of the likely patterns of services on the classic network once HS2 is operational.**

## HS2 stations

96. One of the ironies of high-speed rail is that, while there can be strong opposition to a route passing through an area, most towns and cities prefer to be on the network. As we learnt in France and Germany, the lobbying for a high-speed rail station can be very fierce and local municipalities would bid, often with public funds, to have a station in their city. In Lille, this resulted in the station being located in the city centre instead of on the outskirts as proposed by SNCF. In Germany, two intermediate stops have been provided on the high-speed rail line between Frankfurt and Cologne. Lobbying has sometimes resulted in high-speed rail stations which are little used or in stations situated between towns.

97. HS2 Ltd has proposed that there should be no intermediate stations between Old Oak Common and Birmingham International. Intermediate stations on Phase II of the Y

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222 Email from Tony Page, WCR250 Co-ordinator, 12 September 2011

223 Ev 154

224 Ev w61 Milton Keynes Council

network have not yet been proposed; the consultation said only that there would be stations in South Yorkshire and the East Midlands.<sup>225</sup> Various towns and cities, including Milton Keynes, Stoke, and cities in the East Midlands and South Yorkshire have proposed that there should be stations; Manchester Airports Group has advocated a station at Manchester Airport. Most witnesses favour city centre stations since they are already served by public transport and would reinforce urban regeneration.<sup>226</sup> Some groups, such as CPRE, are opposed to out-of-town parkway stations, which they believe would undermine urban regeneration;<sup>227</sup> they have raised particular objections to the proposed Birmingham Interchange station which would be in the green belt.<sup>228</sup>

98. Greengauge 21 has questioned the need for a HS2 station at Old Oak Common and, based on a recent study by Network Rail, proposed alternative arrangements for the London end of HS2. These involve the same route but no HS2 station at Old Oak Common, a diversion of some WCML trains onto Crossrail and some HS2 trains continuing to Stratford International, thus reducing the number of platforms required at Euston. A smaller station, for WCML services, would be built at Old Oak Common to provide interchange with Crossrail. According to Greengauge 21 this would enable HS2 to be completed more quickly and at less cost and provide greater benefits, and better use of existing and committed infrastructure.<sup>229</sup> This proposal, coming late in the day from a principal proponent of high-speed rail, and member of the HS2 strategic challenge panel, suggests that more than one option for the London end of the line may be worth considering. **Insufficient attention has been paid to the economic justifications for the siting of high-speed rail termini. It should be noted that most travellers going to Euston for business purposes will still have onward journeys to make to either the City or the West End. If that is so, then the Government should reassess whether terminating at either Old Oak Common or another station on the Crossrail network might not be a more effective solution given concerns about the capacity of Euston.**

## Heathrow and HS1

### *Heathrow*

99. We and our predecessor committee<sup>230</sup> received extensive evidence on the value of Heathrow to the UK economy and the importance of good access to Heathrow from the UK regions in relation to their economic development prospects. Mr Hammond emphasised the unique role of Heathrow and the importance of fast access to it and from it:

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225 *HS2 Consultation*, February 2011, p 63

226 Birmingham City Council has backed the proposals for a HS2 station at Curzon Street (ev w 173); other witnesses have criticised the proposed location for being poorly connected to the existing city centre (ev w62),

227 Ev 191

228 Ev w393

229 Ev 138

230 Transport Committee, *The future of aviation*, First Report of Session 2009-2010, HC 125, 7 December 2009, pp 24-30

the reality is that for most people outside the UK they think about the UK through the prism of Heathrow. That is how they arrive. The question is not, “Where is it?” The question is, “How long does it take for me to get there from Heathrow?”<sup>231</sup>

100. The importance of access to airports was reinforced by our visit to France and Germany where the benefits of linking high-speed rail networks to the principal airports were emphasised. Cities such as Lyon which were previously remote from international gateways had particularly benefitted. Various witnesses have criticised the Government’s proposal for a spur or loop via Heathrow instead of a direct connection and the fact that this would not be provided until Phase II (2032) at the earliest.<sup>232</sup> The alignment of a spur or loop was not part of the Government’s consultation on HS2. Heathrow Hub Ltd argues that the Government’s current proposal prioritises time-savings over additional stops or improved connectivity, particularly to Heathrow and HS1.<sup>233</sup> The Heathrow Hub route, it claims, is superior for Heathrow, provides a major new transport interchange for London<sup>234</sup> and would be less environmentally-damaging to the Chilterns. The Heathrow Hub route was supported by the Conservative Party in opposition but dropped by the Coalition Government after the Mawhinney Report—a high-level review which recommended a Heathrow spur (and terminating the line at Old Oak Common instead of Euston).<sup>235</sup> It is still supported by the Conservative Transport Group.<sup>236</sup>

101. HS2 Ltd explained that they had reviewed the option of taking the main HS2 route via Heathrow in the initial stages of planning HS2. They had rejected it because of the time penalty it would impose on passengers not wishing to access Heathrow and because of higher construction costs.<sup>237</sup> Heathrow Hub Ltd contends, however, that HS2 Ltd failed to evaluate its proposal correctly and that it would be less costly than HS2 *plus* a Heathrow spur or loop, cross the Chilterns at a narrower point and would not involve significant passenger delay.<sup>238</sup> The Heathrow Hub proposals would also have allowed greater use of existing transport corridors such as the M40.

102. It seems that the Government is considering further options for rail access to Heathrow. According to the *Sunday Times*,<sup>239</sup> Mr Hammond recently initiated an investigation into a scheme to link HS2, Crossrail and GWML in a station at Heathrow. HS2 Ltd told us that he has asked them to investigate “southward connections” from Heathrow.<sup>240</sup> And recent press reports indicate that Ministers are now considering a high-speed rail link between Heathrow and Gatwick airports.<sup>241</sup>

231 Q 529

232 Ev w242 Bow Group

233 Ev 195

234 Q 376

235 DfT, *High Speed Rail Access to Heathrow: A Report to the Secretary of State for Transport by Rt Hon the Lord Mawhinney Kt*, July 2010

236 Conservative Transport Group, *Response to HS2 consultation*, July 2011

237 Q 448

238 Ev 195

239 *The Sunday Times*, 4 September 2011, p 14

240 Q 449

241 *The Times*, 8 October 2011

103. Whatever arrangements are finally decided upon for Heathrow, our witnesses were clear that any impact on demand for runway capacity would be very small<sup>242</sup> and that any slots that became available as a result of a reduction in flights from within the UK would be reallocated very quickly.<sup>243</sup> As such, HS2 was not seen as a substitute for more runway capacity at Heathrow.<sup>244</sup> The airport operator stated that, without the potential to increase runway capacity at Heathrow, there was a limited commercial case for the aviation industry to contribute towards a HS2 connection.<sup>245</sup>

**104. We are concerned that a Heathrow spur or loop, in addition to a main HS2 line, may prove more costly than a single line via Heathrow and that the proposed 2 trains per hour would not provide Heathrow with a sufficiently frequent service. Moreover, no direct HS2 Heathrow connection is planned until 2032 at earliest and the route was not part of the public consultation. We note elsewhere the questions that have been raised about the need for a HS2 station at Old Oak Common. We recommend that the Government set out more clearly for comparison the costs and benefits of routing HS2 via Heathrow (and of making it the principal interchange to the west of London) so that there can be a better understanding of the pros and cons of different options. We also recommend that the Government makes a clear statement about the status of possible complementary schemes such as those which would link Heathrow to GWML from the west or to Gatwick. It is unacceptable for debate on such major decisions to be conducted through a series of nods and winks in the press.**

## **HS1**

105. The Government has accepted that there should be a link between HS2 and HS1, via a new tunnel an upgraded North London line, to allow for direct high-speed rail services to Europe. Direct rail services from beyond London, using the classic lines, had been envisaged when the Channel Tunnel was opened but demand proved insufficient. It remains to be seen what level of demand there will be in future and what service frequency can be justified. HS2 Ltd is currently planning on the basis of 2 trains to Europe per hour.

106. TfL has raised concerns about HS2 trains using the North London line because of operational difficulties and delays that could arise, affecting both local and high-speed rail services. Given the cost of providing the link (around £1bn) and the limited service that may result, the business case is not strong.

**107. The London end of the HS2 network is the most complex and expensive part of the scheme. Various options were suggested during the earlier stages of project development and we note that significantly different arrangements are still being proposed, including from members of the HS2 strategic challenge panel. Some of these involve a lesser role for Old Oak Common, a new role for the redundant Stratford International and alternative ways of linking HS2 to HS1. Another option could be to terminate HS2 at Old Oak Common, with passengers transferring to central London**

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242 Ev w480

243 Q 396 Allan Gregory

244 Q 391

245 Qq 388-390 Allan Gregory

via Crossrail, thus avoiding significant capital costs of building the line between Old Oak Common and Euston, and tube capacity improvements at Euston. The Government's principal rail consultant, Atkins, has also made suggestions for improving integration with the classic network. If the Government decides to proceed with HS2, it must explain in detail not just why it favours a particular scheme but why that scheme is better than alternative solutions, including those put forward by the Government's own advisers. There must be a greater degree of consensus on these issues—many of which are technical—before Parliament is asked to consider a hybrid bill.

### Phasing and interim arrangements

108. A number of witnesses raised concerns about problems that may arise in the phasing of the project. Network Rail,<sup>246</sup> Centro,<sup>247</sup> Lord Berkeley<sup>248</sup> and others expressed concerns about possible congestion on the WCML north of Lichfield in the period between opening Phase I and Phase II. Lord Berkeley was particularly concerned about the probable lack of paths for freight trains. HS2 Ltd, however, claims that it has analysed the situation in some detail and is confident that there will not be a problem.<sup>249</sup>

109. Leeds City Region and others are concerned that, whereas Manchester and Glasgow would receive high-speed services from the start, Leeds and the north east would not be similarly served until the completion of Phase II.<sup>250</sup> They have recommended that a link be provided from HS2 to the Birmingham–Derby line and the Midland Main Line in Phase I to allow trains to Leeds from 2026.<sup>251</sup>

110. The Scottish Government and other Scottish witnesses were keen that Scotland should be fully integrated into the high-speed rail network, with a line between England and Scotland. Under the current proposals, HS2 services would run, via the classic network, to Glasgow via the WCML on completion of Phase I and to Edinburgh via Birmingham, Leeds and the ECML on completion of Phase II. Mr Hammond confirmed that he made a commitment to Scottish Ministers to work with them on a dedicated high-speed line to Scotland “once [he] had got the hybrid bill into Parliament”.<sup>252</sup> It was suggested by some witnesses the route should be built southwards from Scotland. Under the devolution settlement, it would be for the Scottish Government to fund any infrastructure costs within Scotland and for the UK Government to fund those in England.<sup>253</sup>

**111. For reasons of cost, financing and management, the HS2 network should be built in phases. Despite pleas from some in Scotland and the north of England to build**

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246 Ev 292

247 Ev 140

248 Q 64

249 Ev 267

250 Ev 172

251 Ev 132

252 Q 537

253 Q 539



southwards from the north, it seems clear that construction should start with the London–West Midlands phase as this is where capacity needs are greatest. There is no reason, in principle, however, why the Scottish Government should not start preparatory work on a Scottish high-speed line, if it so wishes. We are concerned, however, about capacity to the north of Lichfield, in the interim period between Phases I and II, and about the lack of HS2 services to Leeds and beyond until 2032. We recommend that these aspects be considered further, including the possibility of a connection between HS2 and the Birmingham–Derby line and Midland Main Line in Phase I to provide access from the north east.

## Technical feasibility of HS2

112. Scepticism has been expressed by many witnesses about the feasibility of running 18 trains per hour (tph), at speeds of 225 mph,<sup>254</sup> and whether the 2-track London–West Midlands section would have the capacity to adequately serve the WCML, Midland Main Line and East Coast Main Line destinations once the Y network is completed.<sup>255</sup>

113. No high-speed route in the world currently runs more than 13 tph.<sup>256</sup> The factors that may impinge on HS2's capacity to achieve 18 tph include the design of station terminals and their approaches, the dovetailing of services at junctions, the practicality of rapid boarding at intermediate stations and the impact of potential delays on those sections of the classic network that would be used by HS2 trains.<sup>257</sup> Professor McNaughton of HS2 Ltd assured us, however, that existing technology would permit the reliable operation 18 tph, and even 21 or 22 tph, at 225 mph.<sup>258</sup> HS2 Ltd also stated that "only limited, foreseeable, development" would be needed for the proposed speed of 250 mph to be attained. HS2 Ltd also stated that the calculations regarding 18 tph had been reviewed, at least provisionally, by independent experts.<sup>259</sup>

114. We note that HS2 Ltd's conclusion has made assumptions about providing adequate "throat" infrastructure at Euston to permit conflict-free access in and out of the platforms, very high-speed turnouts and sufficient parallel platforms Old Oak Common. The details behind these assumptions are not clear, at this stage. The external reviews were published by HS2 Ltd on its website on 26 October 2011.<sup>260</sup>

115. HS2 Ltd's evidence refers to the scope for operational delay to spread from the classic railway onto the high-speed line (which would have the effect of reducing practical capacity) but implies that, in Phase II, the problem would be reduced as "a higher proportion of train services would still start on [the] existing railway".<sup>261</sup> In fact the

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254 Ev w17 and correspondence from Dr Paul Thornton to the Committee

255 Ev w1, w364 and w371

256 Qq 83-84 Pierre Messulam

257 See also Piers Connor, *Rules for High Speed Line Capacity*, Railway Technical Web Pages, Infopaper No. 3 <http://www.railway-technical.com/Infopaper%203%20High%20Speed%20Line%20Capacity%20v3.pdf>

258 Ev 267, Qq 439-440 Professor McNaughton stated that 29 tph would be theoretically possible.

259 Ev 286

260 Letter from Sir Brian Briscoe, HS2 Ltd, to Mrs Ellman, 26 October 2011. See also comments from Councillor Martin Tett, 51m in letter to Mrs Ellman, 31 October 2011.

261 Ev 272

proportion of trains coming onto the new line from the existing railway would still be 55%. HS2 Ltd does not cover the impact on capacity of speed restrictions or maintenance operations which are required from time to time on all railways. HS2 Ltd says that it will not allow for four tracks as this would significantly increase costs and there will be no future requirement for four tracks. Should such a demand arise, it seems that a new high-speed rail line would be the preferred option.<sup>262</sup> Indeed, this is what proponents of high-speed rail, such as Greengauge 21, advocate.<sup>263</sup>

**116. Operating 18 trains per hour on a high-speed rail line has not been attempted elsewhere. This frequency and train speeds of 225 mph or more are risk factors for the project. Failure to deliver this frequency would also affect the business case. We recommend that the Government publishes full details of the technical basis for its assertion that 18 trains per hour, or more, are feasible.**

**117. We also question whether the system is being designed with sufficient margin for expansion. If 18 trains per hour are required from the opening of Phase II, it is surely conceivable that further services may be desirable at some point after that. Apart from the ability to increase the number of trains formed of double sets, the current proposal does not appear to provide for this possibility. The Government argues that there are no circumstances in which four tracks would be needed and it is not providing for that eventuality. It appears that, should additional capacity be required, a new high-speed line, probably linking London, Stansted, Yorkshire and the north east, would be its preferred option.**

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262 Ev 267

263 Greengauge 21, *Fast Forward: A high-speed rail strategy for Britain*, September 2009

## 7 Conclusions and the way ahead

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### The case for HSR

118. We believe that there is a good case for proceeding with a high-speed rail network, principally because of the substantial improvements in capacity and connectivity that it would provide, not only for services to and from London but also between the major cities of the Midlands, the North and Scotland. There would also be substantial benefits to passengers and freight on the classic network from the released capacity that would result. Its development should be closely integrated with plans for the classic rail network and other major transport infrastructure.

119. Although the impact of HS2 on regional economies is harder to predict, we note the substantial support for high-speed rail from businesses and local authorities in the regions. We note also the views of Professor Begg and others that, once implemented, major transport schemes have often proved to have had greater economic impacts than their pre-implementation appraisals predicted.<sup>264</sup> We believe that high-speed rail could have strategic economic benefits and should be planned on a strategic basis. It should be integrated with economic development planning.

### A single hybrid bill?

120. We are clear that the case for HS2 depends on completion of the Y network—London, Birmingham, Manchester and Leeds. In the longer term, we believe it should be expanded to include Scotland, Wales and other parts of the UK.

121. The Government has made it clear that it wishes to see the Y network completed, with high-speed lines to Manchester and Leeds. For practical reasons, however, it intends to introduce a hybrid bill for London–West Midlands only, with a second bill for completion of the Y network in the 2015–2020 Parliament. There are concerns amongst some, notably in areas north of Birmingham, that a second bill may not be forthcoming and that only Phase I would be constructed. Former Secretary of State for Transport, Lord Adonis, has argued at length that the Government should promote a single bill for the entire network rather than two separate bills.<sup>265</sup> Others have expressed a similar view.<sup>266</sup> Mr Hammond said that this would significantly delay the timetable and the start of construction. Moreover a single bill would be “massively indigestible” for Parliament. He offered instead to incorporate into the first bill whatever reassurance he could.<sup>267</sup>

**122. We believe Lord Adonis’s view has merit and, as a minimum, the Government must firmly commit to the Y network before seeking Parliamentary approval for HS2. It should also clarify those works that will be included in Phase I to enable Phase II to proceed, including any works to facilitate interim arrangements. We further**

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264 Q 105

265 *Rail*, Issue 676, 10 August 2011, pp 48-55

266 For example, Liverpool and North West Chambers of Commerce, Ev w45.

267 Qq 533-540

**recommend that 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. We recognise that this would not bind a future Government but it might provide greater clarity and momentum. Our suggested wording is as follows: “This Act provides for the first phase of the construction of a national high-speed railway network, the second phase of which will involve the construction of lines from the northern end of the HS2 line to Manchester and Leeds by 2032.” Work on a second bill should commence now so that, if necessary, the bills could be combined at the start of a new Parliament.**

## **Government decision on HS2**

123. Many issues about the Government’s proposal for HS2 and about high-speed rail in general have been raised in the course of our inquiry. We have pointed to a number of areas that we believe need to be addressed by the Government in the course of progressing HS2. These include the provision of greater clarity on the policy context, the assessment of alternatives, the financial and economic case, the environmental impacts, connections to Heathrow and the justification for the particular route being proposed.

124. Twenty-five years after completion of the M25 and 30 years after the opening of the Paris–Lyon high-speed rail line, HS2 offers a new era of inter-urban travel in Britain. It will also create new demands for high-speed rail routes, connections and stations, as it has in France, Germany and elsewhere. Having raised expectations, the Government needs to be clear how it intends to manage future demands and balance these with the need for ongoing investment in other transport infrastructure.

# Conclusions and recommendations

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## Government transport policy

1. The absence of a transport strategy makes it hard to assess how HS2 relates to other major transport infrastructure schemes, regional planning and wider objectives, such as bridging the north-south divide. This seems to have deterred some groups, which might otherwise have supported HS2, from doing so. The biggest single transport investment proposed in this Parliament should be grounded in a well thought-through strategic framework and we are disappointed that the Government has not developed a strategy for transport, particularly after it rejected our earlier recommendation to publish a White Paper on transport and the economy. (Paragraph 20)
2. The Government is due to publish several important policy documents soon, including a White Paper on its proposals for controlling costs in the rail industry; a 'sustainable framework' for aviation; a National Policy Statement for road and rail networks; and a revised National Policy Statement for Ports. The development of what could emerge as separate strategies for rail and aviation again highlights the absence of an overall transport strategy: this is a lacuna which must be filled. We recommend that if the Government decides to proceed with HS2 it should, in announcing that decision, set out in more detail than is available in the DfT's business plan not only why HS2 is desirable but also how it fits within an overall transport strategy. We also recommend that the forthcoming White Paper on rail and the sustainable framework for aviation fully reflect the impact on both modes of the creation of a high-speed rail network in the UK. This country has often failed to invest in transport infrastructure because all party agreement could not be reached. We have one of the lowest motorway densities in Western Europe, insufficient airport capacity in the south east with inadequate road and rail connections and our rail network is mainly a legacy of Victorian investment. Having all-party support should be seen as an advantage for this scheme. (Paragraph 21)
3. It would be unacceptable and counterproductive if investment in HS2 led to a diminution of investment in other parts of the rail network. The previous Secretary of State for Transport has told us that, assuming the costs are spread over some 17 years, HS2 is affordable and that current levels of investment in the "classic" network can be maintained into the future. We expect the Government to uphold this statement. The Government has the opportunity to secure future levels of rail spending in the next spending review period by means of the commitments it makes in the forthcoming High Level Output Specification and Statement of Funds Available for Control Period 5 (2014–19). These are due by July 2012 and will be an acid test of the Government's commitment to investment in today's railway as well as in high-speed rail. (Paragraph 26)
4. We recommend that, if the Government decides to go ahead with HS2, it should, in announcing that decision, publish a summary of the financial case including the assumptions which persuade Ministers that the scheme will be affordable alongside sustained investment in the classic network. We consider that this could usefully

include details of the projected capital and revenue expenditure profiles; how these compare with assumed DfT spend profiles for the rest of the rail network and for the rest of transport; and any underlying assumptions about financial contributions to HS2 from non-DfT sources. We further recommend that alongside the summary financial case the Government should announce its priorities for funding in Control Period 5 (2014–19) as part of its High Level Output Specification and Statement of Funds Available in order to meet anticipated passenger and freight capacity constraints on the classic network up to the projected start of HS2 in 2026. (Paragraph 27)

### Meeting future transport needs

5. Demand management, such as peak and off peak pricing, is already an integral element in the way that train services are planned and operated. It is, however, in our view, largely a tactical approach and not a long-term solution to serious mismatches of supply and demand. If capacity is seriously constrained, growing demand can be managed only by means of ever higher ticket prices or increasing restrictions such as compulsory seat reservations, neither of which are acceptable as a long-term approach to rail service provision. (Paragraph 43)
6. The debate on capacity seems to us to reveal two contrasting views. On one view, rising demand on the West Coast corridor is essentially a problem, to be tackled by least-cost incremental improvements coupled with measures to suppress demand. On the other view, rising demand is, for strategic reasons, to be welcomed and indeed fostered. As noted in Chapter 2, we consider that the Government needs to explain more clearly this strategic case and in particular why such arguments do not apply to road and air transport. Provided this is done, we support the step change that a high-speed rail link between London, the Midlands, the North and Scotland could bring to the capacity, quality, reliability and frequency of rail services between our major cities, and to those served by the existing WCML. Whilst the alternatives proposed by groups such as 51m offer substantial additional passenger capacity, they are not of the same scale as HS2. The rapid growth in passenger numbers over the past 15 years shows the need to plan on a larger scale and for the long term. We do not wish our successors to be faced with a situation in ten years' time where demand has continued to grow but insufficient time remains to provide the necessary capacity. We call on the Government to set out a clear and comprehensive long-term strategy for transport and the place of high-speed rail within it. (Paragraph 44)

### Economic impacts

7. The evidence we have received and our visit to France and Germany lead us to two conclusions about the potential of HS2 to stimulate national and regional growth. First, it is obvious that the economic impacts of high-speed rail can vary and are not easily predicted: only time will tell whether or not HS2 will, for example, help to rebalance the economy and reduce the north-south divide. Our judgement is that HS2 could indeed be the catalyst for these economic benefits. Our second conclusion, from the experience of France and elsewhere, is that if high-speed rail is to realise its full potential the Government's plans for HS2 must be accompanied by

complementary regional and local strategies for transport, housing, skills and employment. Under current Government policies, the responsibility for producing such plans rests with local economic partnerships, integrated transport authorities and combinations of such bodies. Support—not least with funding—will be needed from the Government. We call upon the Government to recognise this as a priority. (Paragraph 58)

8. The case for investing in a high-speed line between London and the West Midlands depends largely on the assumption that the full Y network will be completed. Whilst we can see that the benefits of a more extensive high-speed rail network, embracing Manchester and Leeds, are likely to be greater than those of the London–West Midlands line alone, it is disappointing that even basic information on the Y network, such as the number and location of stations, was not available during the public consultation or during our inquiry. We believe that there should be an urgent strategic appraisal of phase II before a final decision on phase I is taken. It is also disappointing that as a major justification for HS2 phases I and II is the rebalancing of the economy, a full assessment of the case for building north to south has not been undertaken. This work should be carried out as a priority. (Paragraph 63)
9. A high-speed line offers potential economic and strategic benefits that a conventional line does not. These include a dramatic shift in connectivity between the UK's major cities and improved access from the regions to Heathrow and continental Europe. These are in addition to the time savings and crowding benefits outlined in the Government's economic case. It seems clear, therefore, that if a new line is to be built, it should be a high-speed line. It is possible however, that very high speed (250 mph) may have been given an undue emphasis as a result of the particular appraisal method used as part of the economic case. It may be that a high-speed line operating at less than 250 mph may offer greater opportunities for noise and environmental impact mitigation, as well as an opportunity to follow existing transport corridors. We are concerned that the decision to build a 250 mph line has prematurely ruled out other route options such as building HS2 alongside an existing motorway corridor such as the M40 or M1/M6. (Paragraph 68)
10. The economic case for HS2 has a double importance. Not only does it purport to assess whether HS2 is a good investment, but it also significantly influences the scheme design. The robustness of the methodology is therefore critical. We note the debate over whether it is appropriate to attach so much weight to travel time savings and whether other approaches, including a higher valuation of reduced crowding or impacts on Gross Value Added, should be used as well or instead. We conclude that it is disappointing that a major strategic scheme, with the potential to grow and rebalance the economy and to address major capacity issues, is being designed and assessed to a large extent on the basis of the value of travel time savings, which are not universally accepted. When HS2 Ltd provides the updated economic case to the Secretary of State for Transport later this year, it should provide a comparative assessment on the basis of reduced crowding, with a lower value attached to time savings. The implications for the scheme design should be made explicit. This should also be applied to any assessment of alternatives to HS2. (Paragraph 69)

## Environmental impacts

11. The Government needs to make clear how HS2 fits into its wider aviation strategy. It is not clear that even the Y-network will substantially reduce demand for domestic aviation. We note that Lord Mawhinney's report into whether Heathrow should be on the high-speed network only found against the idea when assessing it on the basis of it ceasing at Birmingham: "... a direct high-speed link to Heathrow fully funded from public expenditure, in the context of a high-speed rail network extending only to the Midlands, is not likely to provide a good return on the public expenditure entailed." We would encourage the Government to reassess this proposal based upon the assumption that the network will extend to Manchester and Leeds. (Paragraph 76)
12. Some supporters of HS2 have argued that it would have substantial carbon-reduction benefits. These claims do not stand up to scrutiny. At best, HS2 has the potential to make a small contribution to the Government's carbon-reduction targets. Given the scale of the expenditure and the official assessment, HS2 should not be promoted as a carbon-reduction scheme. However, if the Government's primary aim is to meet and reinforce demand for inter-urban travel, HS2 will produce less carbon than an expanded motorway network or a reliance on domestic aviation. It is important that the Government makes rapid progress with reducing carbon emissions from UK electricity generation. (Paragraph 77)
13. We recognise that HS2 is likely to have substantial impacts on the countryside, communities and people along its route. It is unfortunate that a direct route between a station to the west of London and the West Midlands crosses the Chilterns AONB—a national asset. Because detailed assessments have not been undertaken, it is difficult to be clear about the precise scale of the impacts or the effectiveness of mitigation measures. Our visit to the Arup sound laboratory suggests to us that noise impacts may be less than feared but for other factors it is impossible to tell. We recommend that the revised business plan for HS2 should take account of the Government's new approach to economic appraisal, which places a monetary value on natural capital. It should also make explicit whether this approach would suggest changes to the alignment or design of the route proposed by HS2 Ltd. We would encourage the Government to place greater emphasis on following existing transport corridors. (Paragraph 83)
14. It is disappointing but perhaps unsurprising that DfT and HS2 Ltd have not been able to reach agreement on technical issues with major objectors such as 51m and those with statutory roles such as the Chilterns Conservation Board and National Trust. We do not pretend that any consultation process could have led to opposition melting away but some factual issues might have been resolved and areas of disagreement narrowed. It is also of concern that the Government intends to reach a decision on whether to proceed with Phase I before information on the Y network is published and before many of the environmental impacts for both phases are clear. We recommend that no decision is taken until such strategic information on Phase II is published, appraised and consulted upon. (Paragraph 87)



15. What should have been a serious and factually-based debate about how best to address the transport, economic and environmental challenges of HS2 has too often been reduced to name-calling and caricature: Luddites, NIMBYs and white elephants fought out a battle of “jobs versus lawns”. We urge the Government to desist from disparaging opponents of HS2 as NIMBYs and for both sides in the debate to show respect for each other and to focus on the facts. (Paragraph 89)

### The strategic route

16. 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. (Paragraph 94)
17. The implications for the development of the classic rail network and service patterns on it once HS2 is in operation have not been made sufficiently clear. HS2 offers potential for many additional local and regional services on the classic network. However, a lack of information has caused concerns in cities such as Coventry and Stoke that they will lose out. We recommend that the Government, in announcing its decision on the HS2 consultation, provides a more explicit and comprehensive statement of the likely patterns of services on the classic network once HS2 is operational. (Paragraph 95)
18. We are concerned that a Heathrow spur or loop, in addition to a main HS2 line, may prove more costly than a single line via Heathrow and that the proposed 2 trains per hour would not provide Heathrow with a sufficiently frequent service. Moreover, no direct HS2 Heathrow connection is planned until 2032 at earliest and the route was not part of the public consultation. We note elsewhere the questions that have been raised about the need for a HS2 station at Old Oak Common. We recommend that the Government set out more clearly for comparison the costs and benefits of routing HS2 via Heathrow (and of making it the principal interchange to the west of London) so that there can be a better understanding of the pros and cons of different options. We also recommend that the Government makes a clear statement about the status of possible complementary schemes such as those which would link Heathrow to GWML from the west or to Gatwick. It is unacceptable for debate on such major decisions to be conducted through a series of nods and winks in the press. (Paragraph 104)
19. The London end of the HS2 network is the most complex and expensive part of the scheme. Various options were suggested during the earlier stages of project development and we note that significantly different arrangements are still being proposed, including from members of the HS2 strategic challenge panel. Some of these involve a lesser role for Old Oak Common, a new role for the redundant Stratford International and alternative ways of linking HS2 to HS1. Another option could be to terminate HS2 at Old Oak Common, with passengers transferring to central London via Crossrail, thus avoiding significant capital costs of building the line between Old Oak Common and Euston, and tube capacity improvements at Euston. The Government’s principal rail consultant, Atkins, has also made suggestions for improving integration with the classic network. If the Government decides to proceed with HS2, it must explain in detail not just why it favours a

particular scheme but why that scheme is better than alternative solutions, including those put forward by the Government's own advisers. There must be a greater degree of consensus on these issues—many of which are technical—before Parliament is asked to consider a hybrid bill. (Paragraph 107)

20. For reasons of cost, financing and management, the HS2 network should be built in phases. Despite pleas from some in Scotland and the north of England to build southwards from the north, it seems clear that construction should start with the London–West Midlands phase as this is where capacity needs are greatest. There is no reason, in principle, however, why the Scottish Government should not start preparatory work on a Scottish high-speed line, if it so wishes. We are concerned, however, about capacity to the north of Lichfield, in the interim period between Phases I and II, and about the lack of HS2 services to Leeds and beyond until 2032. We recommend that these aspects be considered further, including the possibility of a connection between HS2 and the Birmingham–Derby line and Midland Main Line in Phase I to provide access from the north east. (Paragraph 111)
21. Operating 18 trains per hour on a high-speed rail line has not been attempted elsewhere. This frequency and train speeds of 225 mph or more are risk factors for the project. Failure to deliver this frequency would also affect the business case. We recommend that the Government publishes full details of the technical basis for its assertion that 18 trains per hour, or more, are feasible. (Paragraph 116)
22. We also question whether the system is being designed with sufficient margin for expansion. If 18 trains per hour are required from the opening of Phase II, it is surely conceivable that further services may be desirable at some point after that. Apart from the ability to increase the number of trains formed of double sets, the current proposal does not appear to provide for this possibility. The Government argues that there are no circumstances in which four tracks would be needed and it is not providing for that eventuality. It appears that, should additional capacity be required, a new high-speed line, probably linking London, Stansted, Yorkshire and the north east, would be its preferred option. (Paragraph 117)

## Conclusions and way ahead

23. We believe Lord Adonis's view has merit and, as a minimum, the Government must firmly commit to the Y network before seeking Parliamentary approval for HS2. It should also clarify those works that will be included in Phase I to enable Phase II to proceed, including any works to facilitate interim arrangements. We further recommend that 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. We recognise that this would not bind a future Government but it might provide greater clarity and momentum. Our suggested wording is as follows: "This Act provides for the first phase of the construction of a national high-speed railway network, the second phase of which will involve the construction of lines from the northern end of the HS2 line to Manchester and Leeds by 2032." Work on a second bill should commence now so that, if necessary, the bills could be combined at the start of a new Parliament. (Paragraph 122)

# Annex 1: Review of the Government's case for a High Speed Rail programme, Report by Oxera Consulting Ltd for the Transport Select Committee, 20 June 2011

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## 1 Introduction

1.1 The Transport Select Committee (TSC) is conducting an inquiry into high-speed rail.<sup>1</sup> This report—commissioned by the TSC and prepared by Oxera—provides a review of the Government's case for a High Speed Rail programme.<sup>2</sup> The report does not seek to conclude whether specific schemes under the programme should go ahead; instead, it reviews the approach to appraisal taken and highlights the areas of the case which are most sensitive to the assumptions that have been made.

1.2 The High Speed Rail programme would be a substantial capital investment for the UK; its construction and operation would have a significant impact on transport users, the economy and the environment. As such, there is a responsibility to ensure that the programme and its specific schemes is well justified. Aspects of the business case are highly technical yet very important to the decision-making process. The TSC has therefore commissioned Oxera<sup>3</sup> to provide an independent review of the published economic case<sup>4</sup> for the programme and a set of questions that the Committee could use to probe the evidence base put forward by witnesses during its inquiry.<sup>5</sup>

1.3 The economic case is just one part of the overall business case for the HSR programme. As the Department for Transport (DfT) has set out, in making transport decisions there are five aspects that need to be considered: the strategic, economic, commercial, financial and management cases. This report focuses primarily on the economic case—which considers economic, social and environmental impacts—and the economic appraisal that underpins it.

1.4 Oxera has reviewed all published aspects of the case for the High Speed Rail programme, including the economic case, demand modelling reports, cost modelling, appraisal of sustainability, and the wider economic impacts (WEIs). Oxera has had direct access to the DfT and HS2 Ltd in order to seek clarifications on certain technical points. The TSC has also provided Oxera with copies of written submissions to its inquiry.

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1 <http://www.parliament.uk/business/committees/committees-a-z/commons-select/transport-committee/news/hsr---new-inquiry/>

2 The High Speed Rail programme currently includes two main phases: London–West Midlands, followed by an extended Y network. This review uses the terminology 'HS2' to refer to the specific London–West Midlands line proposed by the Government and 'Y network' to refer to the full scheme of HS2 with extensions to Manchester and Leeds.

3 Oxera was awarded the commission following a competitive tender process.

4 HS2 Ltd, 'Economic case for HS2. The Y Network and London - West Midlands', February 2011.

5 Oxera's assessment focuses on the business case for HS2 and the Y network, and has not assessed the relative merits of the specific route choices.

1.5 The grey boxes in each section below highlight suggestions for questions that the TSC Members might choose to use during oral questioning of witnesses throughout the inquiry.

1.6 Broadly speaking, the areas that questioning is likely to cover include the following.

- *What the programme is being assessed against*—HS2, the Y network and the strategic alternatives are all being assessed against a ‘do the minimum’ scenario. On this basis, both HS2 and the best-performing strategic alternative provide twice as many benefits as costs over a 60-year appraisal horizon. While HS2 is expected to cost nearly three times as much as the strategic alternative, it is expected to deliver nearly three times as many benefits. On the same basis, the Y network is estimated to provide 2.6 times as many benefits as costs, while the strategic alternative to the Y network provides 1.4 times as many benefits as costs. Any scheme with a BCR of greater than 2 offers ‘high’ value for money on the DfT’s scale.
- *The case for the extra capacity*—the timing of any infrastructure upgrade along the routes proposed by the government is dependent on demand growth projections. Timing is sensitive to assumptions on economic growth, the performance of other modes, and the degree to which demand is managed or allowed to continue rising (both before and after the scheme is introduced).
- *The quantified benefits delivered*—these will depend on assumptions regarding the value of travel time saved (in particular, the degree to which passengers are productive on board trains, including services on the existing network), and the degree to which productivity in the wider economy is enhanced by the programme.
- *The degree of non-monetised impacts*—the published Economic Case does not include items such as landscape and carbon in its BCRs, although it might be possible in principle to do so. Other items—such as land-use impacts, which may have wider economic consequences—are not included due to the lack of meaningful evidence supporting quantification, but are assessed qualitatively. However, previous schemes (such as the Jubilee Line Extension, discussed in Appendix 2) have delivered considerable benefits derived from changes in land use around stations.
- *Scheme costs*—for HS2, the costs have been subject to fairly rigorous scrutiny, and standard ‘optimism bias’ adjustments have been applied. The detailed design and scheme costs for the Y network have been subject to considerably less scrutiny. In addition, it is less clear how the costs and risks associated with planned engineering works for the strategic alternatives have been captured in the appraisal of those schemes. Based on experience with the West Coast Route Modernisation, the disruption associated with that type of investment can be considerable.

- *Who benefits*—there is relatively little evidence presented on the regional and socio-economic impacts of the programme.

1.7 The report has grouped the reviewed material into related areas, rather than following a structure that corresponds directly to each separate published document. Thus, the report is structured as follows:

- section 2 reviews what the programme is being assessed against;
- section 3 reviews the assumptions and approach to appraisal that have been used;
- section 4 asks whether the standard approach to appraisal is appropriate in this case;
- section 5 summarises; and
- additional (generally more technical) material is provided in the appendices.

## 2 What is the programme being assessed against?

2.1 Before assessing the Government’s appraisal of HS2 itself, it is necessary to be clear against what the business case for the scheme is being assessed (the reference case). For example, is the counterfactual no investment, or some other form of investment, such as further improvements to the West Coast Main Line (WCML)?

2.2 The Economic Case for HS2 and the Y network has been evaluated against a reference case that includes some short-term changes to the existing conventional services. This reference case includes investments up to 2015 and other major committed schemes (eg, Crossrail).<sup>6</sup> While it is unlikely that there would be no further changes to the conventional network beyond 2015 without the High Speed Rail programme, the programme is not directly assessed against more substantial long-term changes to the conventional network. Instead these potential changes are presented separately as a range of alternative strategic options—Box 2.1 presents the schemes proposed as part of the best-performing strategic alternatives.

### Box 2.1 Best-performing strategic alternatives

According to the analysis undertaken for the government, ‘Rail Package 2’, and ‘Scenario B’ are the best-performing strategic alternatives to HS2 and the Y network, respectively. The text below describes the key schemes anticipated as part of these packages, which are additional to schemes in the Do Minimum scenario (against which both the high-speed and conventional alternatives are being compared). The schemes in the Do Minimum scenario are:

- station upgrade at Birmingham New Street, plus Bletchley area remodelling;

6 HS2 Ltd (2011), ‘Economic Case for HS2, The Y Network and London–West Midlands’, February. In the reference case, additional investment in the road network beyond 2015 is included at a rate based on the DfT’s road traffic forecasts.

- nine-car Pendolino trains assumed to be lengthened to 11 cars;
- capacity increases on the WCML via new rolling stock delivered as part of the Inter-City Express Programme; and
- capacity increases on the Chiltern Line via train lengthening in the peaks.

The strategic alternatives are as follows.

### **Rail Package 2 (RP2)**

This package takes the form of a series of infrastructure enhancements on the WCML, including:

- a Stafford area bypass; grade separation between Cheddington and Leighton Buzzard; three new platforms at Euston station; three extra platforms at Manchester Piccadilly (with grade separation at Ardwick); four-tracking Attleborough–Brinklow (including freight capacity works at Nuneaton); Northampton area speed improvements; and four-tracking Beechwood Tunnel to Stechford.

### **Scenario B**

These upgrades consist of the WCML upgrade seen in RP2, plus upgrades to the Midland Main Line and East Coast Main Line (ECML).

- WCML—infrastructure enhancements include a Stafford area bypass; grade separation between Cheddington and Leighton Buzzard; three new platforms at Euston station; three extra platforms at Manchester Piccadilly (with grade separation at Ardwick); four-tracking Attleborough–Brinklow (including freight capacity works at Nuneaton); Northampton area speed improvements; and four-tracking Beechwood Tunnel to Stechford.
- Midland Main Line—infrastructure enhancements include electrification from Bedford to Sheffield; a freight loop facility between London and Bedford; reinstatement of four tracks between Bedford and Kettering; reinstatement of two tracks between Kettering and Corby; station area remodelling at Corby; remodelling and four-tracking in the Leicester area; and electrification and increased stabling capacity at depots.
- ECML—infrastructure enhancements include throat remodelling at Kings Cross, reinstatement of a third tunnel and six-track approach; four-tracking Digswell–Woolmer Green; four-tracking Huntingdon–Peterborough; Peterborough area works (Werrington Flyover); four-tracking Stoke Junction to Doncaster; provision of a flyover for the Nottingham–Lincoln route at Newark; works to address low-speed points and restrictive signalling at Retford; electrification and upgrades for Retford–Sheffield; remodelling and extra platforms at Doncaster; and electrification of Hamble Junction to Leeds.

Source: Atkins (2011), 'High Speed 2 Strategic Alternatives Study: London to West

Midlands Rail Alternatives—Update of Economic Appraisal’, February, p 11, and Atkins (2011), ‘High Speed Rail Alternatives Study—Strategic Alternatives to the Proposed ‘Y’ Network’, February, p. 15.

2.3 Primarily, the strategic alternatives are enhancements to the capacity of the three main north–south lines out of London.<sup>7</sup> This separation of the high-speed and conventional options and their assessment against the same reference case essentially treats the two options as independent, suggesting that only one will be chosen. In other words, the options as constructed rule out a combined solution.

2.4 Some of the key summary statistics from the appraisal of these alternatives are compared against HS2 in Table 2.1.

**Table 2.1** Appraisal of high-speed and strategic alternatives (60-year present value)

		<b>Economic Case</b>		<b>Strategic alternatives</b>	
		<b>HS2</b>	<b>Y network</b>	<b>London–WM Package 2</b>	<b>Y network Package B</b>
<b>A</b>	Transport user benefits (£ billion)	17.5	38.3	6.6	12.0
<b>B</b>	Other (£ billion)	0.4	1.7	0.0	0.1
<b>C</b>	WEIs (£ billion)	4.0	6.3	–	–
<b>D</b>	Indirect tax adjustment (£ billion)	–1.3	–2.7	–0.6	–1.1
<b>e = a + b + c – d</b>	<b>Total benefits (£ billion)</b>	<b>20.6</b>	<b>43.7</b>	<b>6.0</b>	<b>10.9</b>
<b>F</b>	Total costs (£ billion)	24.0	44.3	8.9	18.7
<b>G</b>	Revenues (£ billion)	13.7	27.2	5.8	11.0
<b>h = f – g</b>	<b>Net cost to government (£ billion)</b>	<b>10.3</b>	<b>17.1</b>	<b>3.2</b>	<b>7.7</b>
<b>e/h</b>	<b>BCR</b>	<b>2.0</b>	<b>2.6</b>	<b>1.9</b>	<b>1.4</b>

Note: The two strategic alternatives shown here are enhancements to the conventional network rather than new conventional lines, and are those with the highest BCR of those assessed by HS2 Ltd. Various rows have been omitted. The indirect tax adjustment on the strategic alternatives means that the transport user benefits do not equal the total benefits. Values have been taken from the model output spreadsheets, and in some cases the presentation means that the values differ from those presented in the Economic Case.

Source: HS2 Ltd.

2.5 Table 2.1 shows that the reported BCRs for the strategic alternatives are lower than those for high-speed rail. Using the DfT’s BCR classification system, the high-speed options would both be assessed as ‘high’ value for money (VfM) and the two strategic alternatives as ‘medium’ VfM.<sup>8</sup> Based on these stated BCRs, the high-speed options appear to offer better VfM than the strategic alternatives, and both options are preferable to the reference case.

7 Atkins (2011), ‘Strategic Alternatives to the Proposed “Y” Network’, February, prepared for the DfT.

8 The DfT recommends that projects with a BCR of between 2.0 and 2.5 constitute ‘high’ VfM and that those with a BCR between 1.5 and 2.0 are ‘medium’ VfM. See Department for Transport (2011), ‘Value for Money Assessments’, May.

2.6 At this juncture, it is worth noting that the recently published Report of the Rail Value for Money Study argues that ‘there is a need to ensure that a full range of whole-system options is considered’ and, specifically, that ‘in common with other transport sectors, there should be an end to “predict and provide” in the rail sector, and there should be a move towards “predict, manage and provide”, with a much greater focus on making better use of existing capacity.’<sup>9</sup> The study recommends in particular that planning in the industry should consider demand management options, where appropriate. In this context, it is unclear to what extent the case (and in particular the opening year) for the High Speed Rail programme, and the alternatives against which it is being assessed, have taken into account whether demand management has the potential to contribute to resolving the capacity issues that the schemes are intended to alleviate.

**Q 1: To what extent would demand management on the conventional network delay the need for extra rail capacity?**

2.7 There are some potential inconsistencies between the assessment of the strategic alternatives and high-speed options. The business case for the High Speed Rail programme covers WEIs, which include the benefits of higher employment densities (agglomeration), labour market benefits (such as improved labour supply) and other benefits. Oxera understands that the largest component of the WEIs for the high-speed options is agglomeration, which arises primarily as a result of releasing capacity for short-distance services.

2.8 In contrast to the high-speed options, the analysis of the strategic alternatives appears to omit WEIs. In general, some WEIs would be expected from the strategic alternatives, although the agglomeration benefits would be expected to be smaller than those for high-speed rail. This is because the ability of the strategic alternatives to increase capacity on the conventional network for commuter services and simultaneously improve long-distance capacity may be limited by the continued use of existing stations for both services. Given that agglomeration benefits are driven by increased capacity for commuter services, these benefits from the strategic alternatives would be expected to be small.

2.9 The WEIs for the London–West Midlands strategic alternative Package 2 were previously estimated in the 2010 business case.<sup>10</sup> If these were to be added to the current BCR estimates for Package 2 (ie, 1.9), its BCR would reach 2.0—the same ratio as HS2.

**Q 2: What is the latest estimate of WEIs for the conventional strategic alternatives to HS2?**

2.10 The presentation of transport user benefits in the published reviews of the strategic alternatives implies that crowding and other transport user benefits are omitted.<sup>11</sup> However, HS2 Ltd has informed Oxera that these benefits, with one

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9 Rail Value for Money Study (2011), ‘Realising the Potential of GB Rail’, Summary Report, June, p. 48.

10 Agglomeration was £190m–£299m, imperfect competition £238m–£412m, and labour market impacts were negligible. See Atkins (2010), ‘High Speed 2 Strategic Alternatives Study, Strategic Outline Case’, March.

11 The Transport Economic Efficiency Tables in the strategic alternatives documentation show ‘travel time savings’ only.



exception, are included in the transport user benefits, but that the disaggregation is not shown.<sup>12</sup>

2.11 The exception relates to the impact on reliability. A reliability benefit has been included for high-speed services. This is because all of these services would run at the same speed, which tends to improve reliability relative to lines with a mix of speed services, as per the conventional network. However, no impact on the reliability of the conventional lines is included for either the high-speed options or the strategic alternatives. HS2 Ltd has informed Oxera that to conduct these estimates for the conventional line would require more detail than is currently available at this stage in the development of the scheme. The impact of incorporating reliability changes for the strategic alternatives is currently unclear. It is possible that the strategic alternatives could reduce the reliability of conventional services.

**Q 3: Is further work progressing to estimate the impact on the reliability of conventional services for both the high-speed rail options and for the strategic alternatives?**

2.12 The BCRs for the high-speed options and strategic alternatives—as shown in Table 2.1—are little different. The economic case for proceeding with HS2 itself is contingent on funding being available for costs that considerably exceed the strategic alternatives, which offer broadly similar value for money on conventional rail. This suggests that the case for the High Speed Rail programme over the strategic alternatives rests on estimates of the net benefits and option values of the extension to a Y network. However, the estimates of the benefits from the Y network are described as a ‘high level assessment’, with a substantial element ‘extrapolated from our experience of work on HS2 (London - West Midlands)’.<sup>13</sup>

**Q 4: Is it appropriate to focus on the benefits of the Y network given that its case has been assessed in less detail?**

**Q 5: Has further work been completed to improve the robustness of the case for the Y network?**

2.13 In the same way that the construction of HS2 would enable the construction of the Y network and its associated benefits, it is possible that the Y network would create a ‘valuable option’ for further extensions. For example, future potential extensions from Scotland are likely to have greater benefits if they can link to a high-speed Y network at Manchester and/or Leeds compared with linking to a conventional network.

**Q 6: Has the prospect of benefits from further extensions to the Y network been considered and analysed?**

2.14 The Economic Case does not consider whether investments in road networks would be a viable alternative to a high-speed rail network; however, it is based on the Government’s previous assessment of the potential benefits and costs of improving road

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12 The strategic alternatives have been assessed by Atkins on behalf of the DfT using HS2 Ltd’s model; hence, the appraisal includes the same benefits as those for high-speed services, with the exception of reliability impacts.

13 Department for Transport (2011), ‘Economic Case for HS2: The Y Network and London – West Midlands’, February.

(and rail) networks, which indicated that major upgrades to existing road networks would provide much less capacity, more disruption and fewer connectivity and journey time benefits than a new rail line.<sup>14</sup> Therefore, HS2 Ltd notes that it has not considered upgrades to the road network on the basis of the Government's decision that a new high-speed rail network would better support its strategy to promote economic growth.<sup>15</sup> It is unclear to what extent this decision has been subject to full appraisal.

### 3 How robust are the assumptions used?

3.1 Economic appraisal of future schemes inevitably involves some uncertainty due to its reliance on forecasts. The robustness of the assumptions and forecasts used can therefore have a significant impact on the estimated costs and benefits, and hence the BCR. This section reviews the implementation of appraisal of the High Speed Rail programme and the assumptions that underpin the assessment of transport user benefits, revenues, costs, wider economic impacts, environmental effects, and distributional impacts.

#### Transport user benefits

##### Use of travel time

3.2 The largest component of the monetised estimated benefits of high-speed rail comes from the time savings of business travellers (for HS2 these are £5.7 billion out of the £20.6 billion of total benefits, or 28%, excluding the reliability and wait time components).<sup>16</sup> The value of these time savings depends on the assumption around the use of travel time.

3.3 The assessment of benefits assumes that workers cannot use their journey time productively since this is the standard assumption used in transport appraisal. However, the Economic Case acknowledges that:

[with] the advent of technologies such as laptops and 'wifi' internet networks which allow people to work on trains we recognise this is an area of debate.<sup>17</sup>

3.4 Research also shows that the level of productivity that can be achieved on a train is very similar to that which can be achieved at a normal workplace. For instance, the Mott MacDonald IWT Consortium study in 2008 found that the average productivity factor—or the amount of working time needed if work were done at the normal workplace relative to that on a train—is between 96% and 98%, depending on the duration of the train journey.<sup>18</sup> However, this is at odds with earlier studies, which have

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14 Department for Transport (2010), 'High Speed Rail', March.

15 HS2 (2011), 'High Speed Rail: Investing in Britain's Future', Consultation, February.

16 HS2 Ltd (2011), 'Economic Case for HS2: The Y Network and London–West Midlands', February.

17 HS2 Ltd (2011), 'Economic Case for HS2: The Y Network and London–West Midlands', February, para 4.3.4.

18 The Mott MacDonald IWT Consortium (2008), 'The Productive Use of Rail Travel Time and Value of Travel Time Saving for Travellers in the Course of Work', by Fickling, R., Gunn, H., Kirby, H., Bradley, M. and Heywood, C., p. 9. See also Oxera (2007), 'How to value in-work-time crowding', August 28th.

suggested that around 10–20% of rail travel time may be productive.<sup>19</sup> There are three potential effects of including productive use of travel time in the appraisal:

- it would reduce the benefits attributed to the reduction in travel time because the value placed on these time savings is dependent on how much the time spent travelling costs the employer, which would then be negligible/significantly lower;
- it would increase the benefits for passengers remaining on conventional services, who would experience less crowded conditions (currently, the only benefit from reducing crowding is reduced discomfort);
- it would increase the benefits when passengers switch from other modes if they can work more productively on HS2 than on their previous mode of travel.

3.5 The Economic Case notes that if productive use of travel time is taken into account, the reduced productivity from having to stand on trains should be taken into account.<sup>20</sup> The sensitivity test in Chapter 7 explains that if the business value of time is halved and if crowding impacts are adjusted to reflect the loss of value experienced by business passengers travelling in crowded conditions (instead of using commuter values for business passengers), the BCR would increase slightly.

**Q 7: To what extent do you consider that travel time should be considered productive? How realistic is the sensitivity test in Chapter 7 of the Economic Case?**

#### **Value of travel time**

3.6 The valuation of travel time for business travellers used in the appraisal is £45 per hour in 2009 prices (£37 per hour in 2002 prices). The basis for the estimate is 2002 earnings data applied to 1999–2001 National Travel Survey data.<sup>21</sup> The April 2011 document published by HS2 Ltd notes that there is some survey data evidence to suggest that business travellers value time more than the values used in the business case.<sup>22</sup>

3.7 Oxera has tested a sensitivity whereby the value of time for business users is reduced by one-third. This had the impact of lowering the BCR for HS2 to 1.7 with WEIs (1.3 without WEIs), or, for the Y network, to 2.1 with WEIs (1.8 without WEIs).

3.8 Oxera also notes that the DfT uses a uniform value of time across the country, but is keeping under review the option of reflecting regional variations in earnings.<sup>23</sup> Should it decide to include regional variations, this would alter the business case, depending on the balance of travel between regions with higher and lower incomes.

**Q 8: How confident are you in the estimated values of time?**

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19 See, for example, Fowkes, A.S. (2001), 'Principles of valuing business travel time savings', ITS Working Paper 562, December.

20 HS2 Ltd (2011), 'Economic Case for HS2: The Y Network and London–West Midlands', February.

21 Department for Transport (2011), 'Values of Time and Operating Costs TAG Unit 3.5.6', April.

22 HS2 (2011), 'Valuing the Benefits of HS2 (London–West Midlands)', April.

23 Department for Transport (2011), 'Review of decision making in the Department for Transport', written statement of the Rt Hon Phillip Hammond MP, April.

## Revenues

3.9 Calculating the expected revenues that will be generated by HS2 requires two interacting components to be estimated: demand forecasts and fare levels.

### Demand forecasts

3.10 The demand forecasting element of the appraisal appears to be one of the most developed elements of the business case. The forecasts are based on a number of bespoke passenger demand forecasting models, with inputs from standard DfT models and standard rail industry guidance.<sup>24</sup>

3.11 The broad approach to demand forecasting consists of several steps. First, demand forecasts for the conventional network from now until 2021 and 2043 have been estimated. This is necessary in order to estimate the base level of demand on the conventional network in the absence of high-speed services. Second, the rate of demand growth following opening of the high-speed line is estimated. Third, an assumed cap to rail demand growth is applied beyond which there is no further growth in demand for long-distance rail—this is intended to reflect saturation of rail demand.

3.12 However, the demand forecasts inevitably rely on a range of assumptions, and these continue to evolve. There have been regular revisions, the latest of which were published in April 2011.<sup>25</sup>

3.13 The important points arising from the latest demand forecast include:

- the greatest proportion of trips on HS2 is abstracted from the conventional network (65%);
- a cap on demand growth (at roughly double the current WCML levels) is implemented in 2043;
- a reduction in overall demand growth from 1.4% to 1.1% per annum reduces the BCR of HS2 to 1.3 (excluding WEIs).

3.14 The approach to modelling has been based on industry standard guidance, known as the Passenger Demand Forecasting Handbook (PDFH).<sup>26</sup> However, in other contexts, the reliability of PDFH forecasts has been questioned, particularly because of a perception that it has systematically underestimated the generally high levels of demand growth experienced by the industry in the last six to seven years. A number of alternative demand forecasting options exist, including versions of the PDFH<sup>27</sup> and other customised demand models (see Appendix 1 for further details).

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24 The suite of models includes models for long-distance, South, Midlands, Heathrow and station choice.

25 HS2 Ltd (2011), 'A Summary of Changes to the HS2 Economic Case', April.

26 Association of Train Operating Companies (2005), 'Passenger Demand Forecasting Handbook v4.1'.

27 The elasticities on exogenous variables come from PDFH v4.1 and fare elasticities from PDFH v4.0. The most recent version of PDFH is v5.

**Q 9: How dependent is the business case on the standard forecasting framework? Have alternative (especially non-PDFH) rail demand forecasting frameworks been tested?**

3.15 The demand forecasts appear to be one of the areas in which sensitivity tests have been applied most thoroughly. HS2 Ltd has tested sensitivities on both the rate of growth and the level of demand at which growth has been capped. These are tested as direct assumptions on demand, and sensitivities on exogenous growth factors are tested separately. See Table A1.1 for a summary of these sensitivities.

3.16 HS2 Ltd has elected to cap demand growth for rail travel. This decision is partly as a function of the modelling, which, without a cap would predict unconstrained demand growth. The cap is equivalent to approximately double the current level of demand on the WCML. The justification for this cap is somewhat arbitrary; however, HS2 Ltd has tested scenarios (replicated in Table A1.1) which show that the implementation of the cap has an important impact.

**Q 10: How was the level of the demand cap determined? What evidence is there to support it being set at the level selected?**

**Fare levels**

3.17 The base-case scenario for the modelling is long-term rail fare growth of RPI + 1%. This is equivalent to the current cap on annual increases in regulated fares. In the description of changes to the modelling published in April 2011,<sup>28</sup> it is stated that the assumptions in the model were updated to incorporate the short-term impact of RPI+3% for three years from 2012, as announced in the 2010 Comprehensive Spending Review.<sup>29</sup> The stand-alone impact of this does not appear to be described separately from those of other changes.

3.18 HS2 Ltd has tested a scenario of RPI + 2% in the long term, and found that this caused the BCR (without WEIs) for HS2 to fall to 0.9. This indicates that the assumption on rail fare growth is important.

3.19 Despite the real-terms increases in fares experienced since 2004, the Secretary of State for Transport has indicated that, in the long term, the intention is for there to be an end to above-inflation fare increases.<sup>30</sup> Fare increases at or below inflation would not be exceptional—indeed, before January 2004, regulation of fares was at the level of RPI – 1%. Given the change in BCR resulting from the sensitivity of RPI + 2%, it may be useful to test other scenarios, such as RPI + 0%, or at least anticipate the optimal fares strategy for the new services and reflect this in appraisal.

**Q 11: Have other scenarios of higher or lower fare increases been tested?**

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28 HS2 Ltd (2011), 'A Summary of Changes to the HS2 Economic Case', April.

29 HM Treasury (2010), 'Spending review 2010', October.

30 Department for Transport (2011), 'Hammond welcomes value for money report that could bring efficiency savings to benefit passengers and taxpayers', May.

3.20 The fare levels assumed on the conventional and high-speed services are the same.<sup>31</sup> It seems unlikely that the optimal fare strategy will be equivalent pricing between the two types of service, given passengers' willingness to pay more for faster journeys. For example, there is currently a fare differential for passengers using domestic HS1 services relative to passengers using conventional services between the same origin and destination. It would therefore seem appropriate to test a scenario based on differential pricing between the high-speed and conventional lines.<sup>32</sup> This is particularly the case if there is a desire to use fares as part of a demand management programme designed to 'lock in' the benefits of the new capacity delivered by the High Speed Rail programme.

3.21 The impact of differential pricing could be to increase revenues and hence reduce the net cost to government. Whether this improves VfM would then depend on the relativity of the revenue increase to the impact on the reduction in benefits from the demand response to premium fares. It may also be the case that fares for using the high-speed network could be used to 'lock in' the benefits of the High Speed Rail programme.

3.22 Premium fares for high-speed services may also have distributional consequences. The consequence of such fares will tend to shift the cost burden towards users and away from general taxation. If the users of high-speed rail services are generally expected to come from more affluent socio-economic backgrounds, this may be a more progressive form of funding for a high-speed rail scheme (as is further discussed later in this section).

**Q 12: Has further work on premium fares for high-speed services been conducted since 2010? How would premium fares affect expected revenues? In particular, is there a role for demand management to 'lock in' the benefits of the High Speed Rail programme?**

## Costs

3.23 High-speed rail infrastructure and rolling stock involve substantial costs that fall into three categories: construction costs, rolling stock costs and operating costs.

3.24 The construction costs include the cost of tunnels, rail systems and land purchase. They are by far the largest component of the total scheme costs—in the Economic Case for HS2, they are estimated at £16.8 billion out of £24 billion of total costs, or 70%.

3.25 HS2 Ltd has approached the estimation of these construction costs by estimating the procedures needed for each specific component of the scheme, as identified in the detailed route planning. For each route section and station, HS2 Ltd has costed the scope of work based on a detailed route plan and section drawings.

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31 In the 2010 documentation this is explained as a feature of the model structure, see HS2 Ltd (2010), 'HS2 Demand Model Analysis', February, para 3.5.3.

32 In the 2010 documentation, premium fares were tested in an alternative model, however HS2 Ltd concluded that it was 'an issue that could be investigated in more detail in the future'. See HS2 Ltd (2010), 'HS2 Demand Model Analysis', February, para 3.5.6.

HS2 Ltd has undertaken considerable benchmarking of infrastructure costs by type against costs in other countries. Benchmarked costs have been allocated by section of route, and optimism bias adjustments appear to have been derived from standard Green Book guidance.<sup>33</sup>

**Q 13: Has the benchmarking suggested areas where costs could be reduced through efficiency savings?**

3.26 The process of construction of a high-speed line will involve disruption to the existing conventional services. HS2 Ltd estimates that the cost of possession management and compensation for operational disruption is £195m.<sup>34</sup> The cost of any unplanned disruption is presumably captured within the optimism bias.

3.27 However, there is a question as to whether the degree of planned disruption is greater for high-speed rail or for the enhancement to the conventional network under the strategic alternatives. Works associated with the WCML upgrade caused considerable disruption to existing services, with revenue growth on the WCML falling considerably behind that seen on the parallel East Coast Main Line during the upgrade works.

**Q 14: Has there been an assessment of the relative degree of planned disruption between the high-speed and strategic alternative options?**

3.28 The second cost category is that associated with the purchase of rolling stock. These costs are estimated as £2.8 billion (or 12%) for HS2. Two types of rolling stock would need to be purchased: one for use exclusively on HS2 (a ‘captive’ set) and the other for use on both HS2 and the conventional network (a ‘classic-compatible’ set). The costs for the captive set have been derived on the basis of existing fleet types, and with a low optimism bias. For the classic-compatible set, a 50% premium and a larger optimism bias have been applied—this appears intuitively to be a conservative assumption for the hybrid fleet, although it is uncertain how much such sets would cost.

3.29 The final cost category is operating costs—ie, the costs associated with the day-to-day running of the high-speed services, which include factors such as the cost of the train crew. It is less clear what benchmarking has been undertaken in relation to these costs—they appear to have been derived from appropriate industry assumptions (eg, in relation to station staff, and using HS1 operations and maintenance costs), but it is unclear what assumptions are being made in relation to efficiency improvements in rail operating costs over the period between now and the start of operations.

3.30 Asset renewal rates are currently included in ongoing costs, although it is not clear where the renewal costs have been derived from, or whether the renewals profiles are reasonable.

**Q 15: How have asset renewal rates been derived?**

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33 This adjustment for optimism bias is based on cost escalation of projects from inception to delivery, and hence ought to implicitly cater for changes in design that may arise as a result of the consultation and hybrid bill.

34 HS2 Ltd (2011), ‘Economic Case for HS2: The Y Network and London–West Midlands’, February, Table 7.

There is considerable uncertainty surrounding the costs of the full Y network—HS2 Ltd has used a ‘higher level approach’.<sup>35</sup> This relates in particular to the costs of delivering a service pattern on the Y network, with no work having yet been undertaken on train diagrams, which would enable detailed assumptions to be made about rolling stock purchases and operating costs. This might be a concern if the case for HS2 rests on its ability to enable the full Y network to be built.

**Q 16: What progress has been made in improving the robustness of the cost estimates for the Y network?**

It is unclear how HS2 Ltd has calculated the cost savings that it is intending to make as a result of lower levels of train service being required on the conventional network. For example, it assumes £78m of savings per annum from the withdrawal of Pendolino services on the WCML, but it is not clear that this is a full saving (since it essentially assumes that Pendolinos are reused to displace fully an equally expensive service elsewhere on the network).

**Q 17: How have the cost savings on the conventional network been estimated?**

**Wider economic impacts**

3.31 WEIs affect the wider economy and not necessarily the transport users themselves. They include effects such as agglomeration. The WEIs of HS2 are assessed in the Economic Case as £4 billion, with a conservative rough estimate of a further £2.3 billion from the Y extension to Leeds and Manchester.

3.32 The WEIs for HS2 appear to have been calculated in line with standard appraisal guidance. The agglomeration benefits are based on outputs from the demand modelling. The imperfect competition benefits are derived as 10% of business user benefits, as per standard appraisal guidance. The imperfect competition benefit reflects the fact that prices in an imperfectly competitive market exceed costs, implying that the value of benefits exceeds the reduction in costs.

3.33 HS2 Ltd approaches the issue of WEIs using bottom-up analysis, in line with DfT guidance.<sup>36</sup> Other studies of high-speed rail in Europe and elsewhere have looked at impacts top-down, for example using evidence on job creation and property prices in local economies.<sup>37</sup> Such studies have produced estimates of the beneficial impact on city and regional economies of up to 3% of local GDP. The HS2 estimates are well below this level, but nonetheless illustrate the upside potential involved in such calculations.

3.34 The WEIs have not been subject to any of the sensitivities tested elsewhere in the appraisal.

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35 HS2 Ltd (2011), ‘A summary of changes to the HS2 economic case’, April, p. 18.

36 A bottom-up approach means that elements are estimated separately and then aggregated. This compares to a top-down approach, where a single estimate of the total WEIs would be calculated.

37 See, for example, Marques, L. (2009), ‘Portugal’s High Speed Future: Developing a National and International Network’, The Future of European Rail Conference, March 17th.



## Agglomeration

3.35 The agglomeration benefits identified in the Economic Case account for £3 billion of the £4 billion of WEIs. HS2 Ltd has informed Oxera that most of these benefits arise from freeing up capacity for short-distance commuter services. Since these WEIs are predicated on capacity rather than travel time, the benefits arise not as a result of high-speed services per se, but rather owing to the ability to release capacity for additional commuter services. However, as already stated, no equivalent WEIs have been included in the assessment of the strategic alternatives.

3.36 The assessment of agglomeration impacts was informed by a report by Daniel Graham and Patricia Melo, economists at Imperial College London.<sup>38</sup> The report focused on the agglomeration benefits from improved travel times of high-speed rail itself and found that these benefits would be ‘very small indeed’.<sup>39</sup> This is consistent with the agglomeration benefits included in the Economic Case being derived primarily from additional commuter capacity rather than inter-city time savings.

**Q 18: Has there been analysis equivalent to that of Graham and Melo (2010) for the agglomeration benefits from additional commuter capacity? If so, does it provide indications of the robustness of the estimate of £3 billion agglomeration benefits?**

### Non-monetised factors

3.37 Some factors are omitted from the BCRs calculated in the Economic Case owing to a lack of hard quantitative evidence. These factors are potentially significant and may therefore be expected to yield additional impacts. However, monetisation of these benefits in the BCRs may be difficult or inappropriate (although some of the written submissions to the TSC attempt to place values on some of these—see Appendix 1). As such, these factors will need to be considered elsewhere in the overall business case for high-speed rail. This is in line with comments made by HS2 Ltd—for example, with regard to land-use changes (such as investment in new office space and housing developments being constructed in the vicinity of high-speed interchanges), it stated that:

While these [land-use changes] have not been included in the monetised business case for HS2, they are deemed to be important considerations in the decision making process.<sup>40</sup>

3.38 Some of the other factors not monetised in the Economic Case are described below.

- The number of direct jobs created by the construction and operation of HS2. If these jobs were included in the appraisal, it is not clear whether there would be an impact on the BCR, given that about 85% of the jobs would be in construction, and therefore likely to be temporary, with even the permanent ones possibly being displaced from elsewhere. (Although displacement from one area to another may not change the overall BCR, it may affect regional

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38 Graham, D.J. and Melo, P. (2010), ‘Advice on the Assessment of Wider Economic Impacts: a report for HS2’, March.

39 Ibid.

40 HS2 Ltd (2011), ‘Valuing the benefits of HS2 (London–West Midlands)’, April.

inequalities.) The Appraisal of Sustainability (AoS) also states that jobs lost at other railway stations due to the HS2 scheme will be likely to be replaced elsewhere, but the evidence base for this assumption is not provided, so it might be more appropriate for these lost jobs to be subtracted from the total number of jobs created.

- The ability of workers to access higher-productivity jobs may be enhanced because of reduced journey times from high-speed rail.
- The local development/regeneration impacts around HS2 stations, including:
  - land-use changes leading to greater concentration of employment around high-speed rail hubs, which could yield additional productivity benefits;
  - home/building demolition and adverse ecological impacts;
  - the net additional floor space (office, residential, retail, hotel, education, industrial) associated with HS2 has been forecast, but is not included in the appraisal. In addition, this is calculated as the future floor space with HS2 compared with the future floor space in the absence of HS2, and therefore does not seem to account for the existing floor space that would be lost as a result of the construction of the high-speed rail link.
- The benefits of increased potential for freight traffic due to released capacity on the WCML; the AoS explains that there is scope for freight on the Southern section of the WCML.
- The AoS quantifies the costs of operational airborne noise at residential areas only, thereby excluding a detailed appraisal of construction noise, airborne noise at other sensitive locations, vibration, ground-borne noise, and noise from HS2 stations and depots.

3.39 The overall impact of these effects is difficult to ascertain.

**Q 19: Are there some WEI factors that are not in standard guidance that could have been included?**

**Q 20: Is it possible to suggest a likely order of magnitude for these omitted benefits?**

#### **WEIs of the Y network and strategic alternatives**

3.40 There is no formal published appraisal of WEIs of the Y network, nor of the extent to which the extensions to Leeds and Manchester would displace or add to benefits from the HS2 line. The approach reported in the HS2 Economic Case merely assumes that there will be additional wider benefits equivalent to half of what would be expected if they were in similar proportion to the extra conventional transport benefits for business from the extensions.

3.41 The equivalent benefits for the strategic alternatives do not appear to have been calculated.

## Environmental impacts

3.42 The operation and construction of a high-speed line will have impacts on both the local and wider environment, one of the most important being that on carbon emissions. This will be driven by the energy efficiency of high-speed services relative to conventional services and other modes, the extent of modal shift, the level of new trip generation, and the use of freed-up capacity for other modes/conventional services.

When assessing operational and embedded carbon emissions, the primary sources of emissions are often the same cost factors that have the most uncertain estimates. This leads to a wide range of potential aggregate carbon impacts from HS2. Assuming the central cost estimates under two different sets of assumptions, this range is from +£870m to -£2,022m (in 2009 prices). This range becomes even wider if, under the same assumptions, the low and high projected costs are used instead of the central case.

It is unclear whether the strategic alternatives have been subject to an appraisal of their carbon impacts.

### **Q 21: Would it be possible to reduce the estimated range of potential carbon emissions?**

3.43 The quantification of carbon emissions in the AoS uses July 2009 guidance published by the Department of Energy and Climate Change (DECC).<sup>41</sup> In the revised approach to appraisal published by the DfT, the carbon valuation has been updated to reflect the values published by DECC in June 2010.<sup>42</sup>

### **Q 22: Will the estimated carbon values in the AoS be updated to reflect this change?**

The extent of modal shift is a key factor in determining the level of carbon emissions. A shift in passengers from domestic aviation to high-speed rail would lower aviation emissions if the aviation services were reduced as a result (or smaller or more efficient planes used for the remaining passengers). Therefore, the AoS considers a number of scenarios related to the impact on aviation services from high-speed rail. One scenario considered is that there would be no change to aviation emissions if the reduction in passenger numbers on any one flight were not enough to discontinue the service. Another scenario proposed in the AoS is that slots previously used by the flights predicted to be displaced by HS2 remain vacant. However, this is unlikely to occur due to the excess demand for capacity at the main airports in the South East (Heathrow and Gatwick).

### **Q 23: Is it correct that there may be a net increase in carbon emissions because there is no reduction in the number of flights and additional HS2 services?**

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41 Department of Energy and Climate Change (2009), 'Carbon Valuation in UK Policy Appraisal: A Revised Approach', July.

42 Department of Energy and Climate Change (2010), 'Updated short term traded carbon values for UK public policy appraisal', June.

The estimation of the greenhouse-gas effects of HS2 uses the July 2009 DECC guidance, which includes projections of traded and non-traded costs of carbon up to 2050.<sup>43</sup> The appraisal then assumes that the cost remains at the 2050 level for the rest of the operational life of the scheme (ie, until 2086).

**Q 24: If changes in the cost of carbon beyond 2050 are considered, would this significantly affect the estimates?**

3.44 The case for high-speed rail is affected by the impacts on carbon emissions that are quantified, although these do not appear to be included in the BCR. Given the very limited anticipated substitution from air to rail (6%) and car (7%), the substantial volume of new trips (22%) suggested for HS2, and the lower rates of emission from slower trains, the classic rail options could well involve lower overall emissions. This would bring the comparison of BCRs closer together for the Y network and generate an advantage for the classic rail options to Birmingham.

Many of the ecological, biodiversity and other such assessments are undertaken at a high level only, since the detail required to carry out a full assessment is unavailable, according to the AoS report.

**Q 25: Will these assessments be carried out when more data becomes available in order to have a better indication of the impacts, and would these assessments be likely to have a significant impact on the BCR of the scheme?**

3.45 The AoS does not explicitly consider the landscape impacts of building a new high speed line, which HS2 Ltd rightly believes would be important. Neither are such effects included in the calculated BCRs, and the extent to which they would reduce the measured value for money of a new line is therefore unclear.

3.46 Studies do exist of the values attached by people to particular kinds of landscape, and Government has in recent years proposed and undertaken new studies. It should be possible to produce broad estimates of the order of magnitude of landscape costs for a new high speed line.

**Q 26: Have estimates been made of the landscape impacts of a new high speed line, and would these be likely to have a significant impact on the relevant BCRs? Are such assessments planned?**

### **Distributional impacts**

3.47 The impact of high-speed rail is unlikely to be uniform across the UK population; rather, the effects will differ across socio-economic groups and regions.

### **Socio-economic impacts**

3.48 In assessing the case for HS2, it would be of interest to consider the potential socio-economic impacts on both users and non-users as a result of construction of the line.

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<sup>43</sup> Department of Energy and Climate Change (2009), 'Carbon Valuation in UK Policy Appraisal: A Revised Approach', July.

3.49 HS2 could have distributional impacts if only certain socio-economic groups benefit from travel on the proposed route. HS2 Action Alliance claims that 47% of long-distance rail trips are made by the top household income quintile (with a gross household income of over £70,000 per annum on average).<sup>44</sup> Other studies corroborate the assertion that high-speed rail tends to attract individuals from higher-income groups.<sup>45</sup> While the Economic Case does not discuss this point, it estimates that about 67% of the transport user benefits (of the Y network) are likely to go to business users—ie, individuals who tend to be from higher-income groups.<sup>46</sup> If users are predominately from high-income groups, they will in general have a higher ability and willingness to pay for these journeys. This may suggest that a premium-fare strategy is appropriate (as discussed in paragraphs 3.20 to 3.22), and that more weight might need to be placed on the wider economic benefits of providing more capacity for business travel.

**Q 27: Has there been consideration of the types of user, in terms of socio-economic status, who will benefit from travel on HS2?**

**Q 28: Are there expected to be significant distributional effects between socio-economic groups as a result of the construction of the HS2 line?**

### **Geographic/regional**

HS2 Ltd stresses the need for high-speed rail to be fully integrated into local and regional economic and spatial strategies in order that maximum economic benefits are obtained.<sup>47</sup> This is likely to be an important enabling factor in the government's desire to see the high-speed network changing the economic geography of the country:

The Government believes that high speed rail can play an important role in promoting valuable strategic change in the economic geography of Britain, supporting sustainable long-term growth and reducing regional disparities.<sup>48</sup>

In practice, there are likely to be higher benefits in the vicinity of high-speed rail hubs, so the 'regeneration' benefits to those areas are likely to be understated. However, these may be offset by economic losses in other areas, including locations not served by the high-speed line—the 'tunnel effect'.<sup>49</sup> Thus, the London and Birmingham economies might benefit partly at the expense of areas not served by the new scheme. The precise impacts will depend on the reallocation of conventional services on the WCML and elsewhere.

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44 HS2 Action Alliance (2011), 'Review of the February 2011 consultation business case for HS2', May. Based on data taken from Rohr, C., Fox, J., Daly, A., Patruni, B., Patil, S., Tsang, F. (2010), 'Modelling Long-Distance Travel in the UK', RAND Europe. Values of average quintile household income are taken from Office of National Statistics, 'The effects of taxes and benefits on household income, 2005-06'.

45 For example, a report by Greengauge 21 noted that people who take advantage of high-speed trains for daily commuting are primarily those with higher incomes. Harman R. (2006), 'High Speed Trains and the Development and Regeneration of Cities', *Greengauge 21*, July.

46 As calculated from the HS2 Central Case Spreadsheet.

47 HS2 Ltd (2010), 'Demand Model Analysis Appendix 3: High Speed Rail and Spatial Patterns and Strategies in Cities and Regions', February.

48 Department for Transport (2011), 'High Speed Rail: Investing in Britain's Future', Consultation paper, p. 12.

49 Gutierrez Puebla, J. (2005), 'Spatial Effects of the High Speed Train', *Investigaciones Regionales*.

**Q 29: What estimates have been made of the adverse economic impacts on areas not served by the new high-speed line?**

3.50 The AoS does note that there could be inter- and intra-regional redistributive impacts, and that people may be attracted to locate around HS2 stations in London or Birmingham, at the expense of other parts of those cities or other cities in the UK. In its April 2011 document, HS2 Ltd forecasts the monetised impacts of transport benefits and WEIs by region, calculating that 34% of benefits (by origin of trip) will go to those from London. It also notes that the longer-distance rail users who will be the principal beneficiaries of high-speed rail are likely to be from London, Birmingham, Manchester and their surrounding areas.

3.51 However, a number of impacts of the proposed scheme have been assessed at the route level only. This prevents a clear indication of whether the benefits or costs are concentrated in certain regions. Some of these factors include:

- the change in carbon emissions as a result of modal shift and change in total emissions (the carbon emissions from construction have been assessed by route section);
- planned regional growth (major housing and other developments have been assessed by route section);
- the impact of the scheme on reducing health inequalities.

3.52 When the AoS does assess benefits and costs by route section, it is not clear whether certain regions benefit at the expense of others. Furthermore, the only regions that are assessed in detail in terms of economic impacts are the catchment areas surrounding key stations on the line. Some of the written submissions to the TSC that cover specific regions are summarised in Appendix 1.

**Q 30: What is the relative size of the economic impacts on cities expected to be served by the high-speed network? What proportion of these economic impacts is abstracted from other regions not served by the high-speed network?**

**4 Is the standard approach to appraisal appropriate and do other similar projects provide useful lessons?**

**Is the standard appraisal approach appropriate?**

4.1 Current appraisal guidance is designed to be applicable to all manner of transport schemes, whether they are small or big, for cycling or rail. There is therefore a question as to whether this standard approach should be adjusted for assessing a unique major transport project, such as high-speed rail. Oxera understands that, in due course, the appraisal of the high-speed network will be adjusted to reflect the revised approach to appraisal recently published by the DfT. This approach put forward in this revised guidance recommends five separate components to make up the full business case: the Strategic Case, Economic Case, Commercial Case, Financial Case, Management Case. The AoS uses several different appraisal techniques to evaluate the impact of high-speed rail, including WebTAG guidance, strategic environmental assessments, environmental,

health and equality impact assessments, sustainability appraisal, and other similar techniques.

4.2 Appendix 2 looks at some more technical issues relating to the approach to appraisal.

### **Are there lessons from other major transport projects?**

4.3 Oxera has briefly reviewed evidence from other major transport projects to examine whether there are any apparent systematic trends that would imply that ex ante project appraisals tend to over- or underestimate any specific parts of the appraisal (see Appendix 2).

4.4 Overall, a number of lessons can be drawn from ex post assessments of other high-speed rail and rail schemes. Planning and taking account of the environmental, economic, and social factors seem to be integral to the success of the scheme. Furthermore, a consideration of the main uncertainties or risks surrounding the costs and revenues can lead to more robust estimates. At the same time, in almost all schemes considered, unforeseen circumstances have arisen and contributed to higher costs or lower revenues than expected, although some schemes have still delivered good VfM. The optimism bias adjustments applied to the appraisal of the High Speed Rail programme are designed to mitigate some of these risks at this stage of the process.

**Q 31: Do the generally favourable ex post assessments of major rail projects (eg, the Jubilee Line Extension) suggest that the bottom-up BCRs are conservative estimates?**

**Q 32: Are the bottom-up estimates for the High Speed Rail programme consistent with the top-down estimates from other high-speed rail examples?**

## **5 Summary**

5.1 Oxera's review has highlighted that there are several aspects to the business case for high-speed rail, including monetised and non-monetised elements.

5.2 The monetised estimates are surrounded by a degree of uncertainty—indeed, the sensitivities published by HS2 Ltd for HS2 show a range of 0.7–2.7 for the BCR excluding WEIs (see Table A1.1) and this simply looks at each sensitivity in isolation. The overall balance of non-monetised impacts—which include landscape, carbon and changes in land use—is difficult to ascertain, but is likely to become more apparent as the understanding of the impacts improves over time, and as HS2 Ltd adjusts the appraisal to reflect the DfT's revised approach to such assessments.

5.3 Overall, the case for the High Speed Rail programme seems to depend on whether and when the capacity is needed, the selection of the best VfM approach to delivering that capacity, the degree of uncertainty around the monetised benefits and costs of the preferred options, and judgements on the balance of evidence relating to non-monetised items, such as environment and regeneration impacts (which are likely to be substantive in their own right but not fully set out in the Government's assessment).

## A1 Further detail: Are the assumptions used robust?

### Other transport user benefits

A1.1 Section 3 covered the travel time savings. The remaining transport user benefits fall into the following categories: reliability, crowding, other rail user impacts (which include wait time penalties and access/egress time), road decongestion and other impacts. The first four of these are also influenced by the value of time estimates.

A1.2 The assessment of other transport user impacts includes the benefits associated with local air emissions, noise and accidents/safety, which are valued as being £37m (for HS2), equal to 0.1% of the total net benefits. It is the value of the HS1 link, at £350m, that makes up the majority of the stated benefits of other impacts.<sup>50</sup>

### Demand

#### Forecasting framework

A1.3 The forecasting framework used by HS2 Ltd has primarily been the PDFH, which provides a framework and recommended parameters for assessing demand changes as a result of changes in rail service offering and in external factors.

A1.4 One of the main issues with the PDFH is that it is based on a constant elasticity specification. This means that increases in demand drivers continue to have an unabated impact on demand. As a result the PDFH is generally recommended for use in assessing incremental changes (<10%) in demand drivers.

A1.5 In the modelling undertaken for HS2, the models are based on PDFH v4.1 and PDFH v4.0. A more recent update (PDFH v5.0) has been released by the Passenger Demand Forecasting Council but is not yet part of the DfT's recommended guidance. The DfT is currently in the process of testing these estimates.<sup>51</sup>

A1.6 Other non-PDFH forecasting frameworks exist, including the *Revisiting the Elasticity Based Framework* study carried out by Arup and Oxera on behalf of the DfT, Transport Scotland and the Passenger Demand Forecasting Council.

#### Effect of other modes

A1.7 The demand and cost of other modes is a further determining factor in the demand forecasts for rail. The air demand estimates are informed by SPASM (the DfT's standard aviation model) and the highway demand informed by the National Transport Model (NTM) and National Trip End Model (NTEM).

A1.8 A sensitivity included in the Economic Case is for a 50% increase in fuel duty above the current forecast. This has the impact of increasing the BCR (without WEIs) to 2.4, which suggests that the cost of road travel is an important determinant of the case for HS2. An increase of 50% appears to be a large increase to test; however, fuel duty is only one component of the overall cost of road travel. Thus, flexing this single

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<sup>50</sup> The 'Other Impacts' reported in Table 4 of the Economic Case.

<sup>51</sup> Department for Transport (2011), 'Freedom of Information Response F0007480', April 8th.



component of road travel cost does not fully capture all the road costs that travellers might face. Potentially an increase in the total cost of road travel should have been tested.

A1.9 One of the other components of road cost that experiences greater variability is oil prices. Although there is much debate about forecast oil prices, a further scenario that could have been tested would have been oil prices rising substantially in the long term.

**Q 33: How would substantial long-term oil price rises or falls have an impact on demand for rail? Would this impact be greater than those in the tested fuel duty scenarios?**

A1.10 The demand modelling has taken account of the service offering of other modes, including road and aviation. For aviation, forecast air fares have been extracted from the DfT's SPASM model. These forecasts predict declining real air fares, which is in line with the long-term historical trend.<sup>52</sup> However, a sensitivity reported in the Economic Case is for growth in air fares of 37% as a result of high oil prices and carbon trading. This leads to an increased BCR excluding WEIs of 1.8. This sensitivity seems to be a fundamentally different position to the base case of declining air fares. However, the implication is that the level of air fares is not a crucial determinant of the case for high-speed rail.

**Q 34: Are declining real air fares realistic given the prospect of increased environmental taxation on aviation?**

A1.11 The demand for air, road and rail are modelled separately. However, there appears to be an asymmetry because rail forecasts take account of aviation and car cost changes, while car and air demand do not take account of changes in the generalised cost of rail.

## **WEIs**

### **Estimates of WEIs from written submissions**

A1.12 A number of submissions to the TSC's inquiry provide alternative estimates of the WEIs that could result from the High Speed Rail programme. These submissions provide a wide range of estimated impacts to certain areas/cities and the whole of the UK.

- The South Yorkshire Passenger Transport Executive<sup>53</sup> cites evidence predicting that high-speed rail will be worth more than £70m per annum in productivity benefits to the eastern city regions of the North East, Tees Valley, Leeds, Sheffield and East Midlands. This is as a result of wider production and labour markets and the attraction of inward investment. This analysis also indicates that the Eastern Network would provide a further contribution of £4.2 billion to the

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<sup>52</sup> Atkins (2010), 'HS2 Baseline Forecasting Report: A report for HS2', February.

<sup>53</sup> Submitted on behalf of the South Yorkshire Integrated Transport Authority and the Sheffield City Region.

national economy in productivity, imperfect competition and capacity release benefits.<sup>54</sup>

- A report by Greengauge 21, cited in the Core Cities submission, looks at the WEIs associated with changes in accessibility, productivity of businesses and employment patterns, as well as agglomeration effects.<sup>55</sup> It estimates that a national high-speed rail system could generate £14 billion of wider economic benefits (out of total scheme economic benefits of £125 billion) over 60 years. This report also notes that these wider benefits are well distributed across regions: 36% to the Midlands and North of England; 35% to the wider South East, including London; and 26% to Scotland.
- Birmingham City Council cites an independent economic study which suggests that there could be an increase in economic output of between £600m and £1.5 billion in the West Midlands region (the higher levels of benefit are reliant on additions to regional rail services).
- Professor John Tomaney cites a study by KPMG for Greengauge 21,<sup>56</sup> which claims that HS2 would create a single market for services and knowledge-based activities. In turn, this would cause an increase in GVA of between £17 billion and £29 billion by 2040. KPMG also predicts that HS2 will generate additional tax receipts of between £6 billion and £10 billion due to increased economic activity.
- The Greater Manchester Combined Authority predicts that economic output could be increased by £967m per year across the region covered by the Northern Way partnership.

## Distributional effects

### Socio-economic impacts

A1.13 The AoS evaluates the levels of deprivation<sup>57</sup> and socio-demographic characteristics of each station catchment area and key areas along the proposed route and the WCML. The community integrity and accessibility assessment also takes account of the number of properties in the 20% most deprived areas and in areas with a high proportion of equality groups that would be demolished. However, these pieces of analysis are not linked to the resulting potential distributional impacts from HS2.

A1.14 In line with WebTAG guidance, the key sustainability objectives in the AoS include economic prosperity and economic welfare, but these objectives are concerned with supporting wider economic growth, rather than the distributional impacts. Similarly, and in accordance with the way in which these assessments are usually undertaken, the equality impact screening assessment (EqIA) looks at the effects of HS2

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54 This data is taken from a forthcoming report of the Eastern Network Partnership, providing evidence for the HSR eastern network, to be published in July 2011.

55 Greengauge 21 (2009), 'Fast Forward: A High-Speed Rail Network for Britain'.

56 Greengauge 21, (201), '*Consequences for Employment and Economic Growth*', February.

57 It considers the impact of the scheme on areas of high deprivation, known as Lower Super Output Areas (LSOAs).

on ‘priority equality groups’ but it does not directly address the impacts on different income groups.<sup>58</sup>

### Geographic

A1.15 There is evidence that those cities where the service sector (including tourism) counts for a large proportion of the economy, are the most likely to benefit from access to high-speed lines.<sup>59</sup> London is thus very likely to benefit, possibly at the expense of less service-oriented cities on the line. In fact, a large proportion of the quantified benefits (34%) in the Economic Case are to long-distance passengers from London, so the regeneration effects (if they exist) would be large in London.

A1.16 The AoS does not assess many distributional implications between regions along the route, although it states that one of the aims of HS2 is to reduce disparities between London and the rest of the UK. For this reason, it would be of interest to assess all of the benefits of the scheme by route section. While some benefits of the scheme are assessed in this way in the AoS, many of the significant effects—such as benefits for commuters/consumers, agglomeration, maintaining/improving access to public transport—are assessed at the route level, and therefore it is not clear if there are disparities in benefits/costs between different parts of the route.

A1.17 A number of submissions to the HS2 consultation and evidence from other schemes suggest mixed evidence about the inter-regional effects of high-speed rail.

- The wider economic benefits of Crossrail have been assessed by borough in London and the South East. The agglomeration effects (as measured by change in output per job) are greatest along the route. In other words, the boroughs which experience the most significant change in accessibility to jobs have the highest change in output per job. However, it is of note that no regions are projected to lose out.
- The North West Chamber of Commerce predicts that high-speed rail will help to close the north–south economic divide by improving access to the North West, enhancing opportunities for investment and economic development.
- Professor John Tomaney<sup>60</sup> looks at whether high-speed rail will help rebalance regional economies based on evidence from five countries where high-speed rail has been introduced, and concludes that the impact of high-speed rail on regional inequalities is fairly ambiguous.
- The Liverpool and North West Chambers of Commerce believe that HS2 will maximise VfM and business confidence to invest outside London and the South East.

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58 This considers gender, ethnicity, disability, age, faith and sexual orientation.

59 Albalade, D. and Bel, G. (2010), ‘High Speed Rail: Lessons for Policy Makers from Experiences Abroad’, *University of Barcelona*.

60 51M (2011), ‘The Local and Regional Impacts of High Speed Rail in the UK: A Review of Evidence’.

- Warwickshire County Council does not consider that the evidence that HS2 Ltd puts forward suggests a reduction in the north–south divide, and considers that this should be assessed in more detail.

## Sensitivities

A1.18 Table A1.1 summarises the stated sensitivities for the BCR.

**Table A1.1 Impact of sensitivities on the BCR (without WEIs)**

	<b>Sensitivity</b>	<b>Detail</b>	<b>HS2</b>
	Base case (without WEIs)	Demand capped in 2043, growth rate 1.4%	1.6
<b>Demand growth</b>	Demand cap higher	Demand growth extended by five years	2.0
	Demand cap lower	Demand capped at 2026 level	0.7
	Demand growth faster (I)	Demand cap reached in 2033	1.9
	Demand growth faster (II)	Demand cap reached in 2033 due to higher economic growth	2.0
	Demand growth slower (I)	Demand cap reached in 2055, growth rate 1.1%	1.3
	Demand growth slower (II)	Demand cap reached in 2055 due to lower economic growth	Below 1.3
	Scottish demand capped	Cap Scottish demand in 2021	1.3
	<b>Inter-modal impacts</b>	Growth of other modes lower	Capping air and road growth at 2008 levels
Cost of other modes lower		50% higher fuel duty and 37% higher air fares	2.7
<b>Fares</b>	High fare increases	Rail fares increase at RPI+2%	0.9
<b>Other benefits</b>	Station redesign	Including benefits of Euston redesign	1.7
<b>Costs</b>	Cost reduction	15% reduction in costs	2.0
	No cost differential	Same cost estimates for captive and classic fleet	1.9
	Lower optimism bias	Optimism bias at 10%, slower electricity costs and greater productivity gains	2.0
	Private sector contribution	Private sector contribution of £2 billion	1.7
<b>Opening year</b>	Later opening	Opening year in 2030	2.0

Source: HS2 Ltd (2011), 'Economic Case for HS2: The Y Network and London–West Midlands', February.

## **A2 Further detail: Is the standard approach to appraisal appropriate?**

### **Approach to appraisal**

A2.1 The DfT's approach to appraisal and prioritisation of transport schemes was reformed in April 2011. Following the reform the guidance recommends that the assessment of a transport scheme comprises several distinct elements—the Strategic Case, Economic Case, Commercial Case, Financial Case, Management Case. These different components of the overall business case all play a role in informing the ultimate decision. This means that the pure BCR of monetised benefits and costs is only one of the factors that decision-makers must consider. The Consultation document has been clear that the BCR of the High Speed Rail programme is only one component of the Government's case for high-speed rail.<sup>61</sup>

A2.2 The approach to appraisal is still supported by the DfT's WebTAG, which gives guidance on the technicalities of conducting appraisal. A few changes were made to this guidance following the reform, including to the treatment of indirect tax and the value of greenhouse gases.

A2.3 One part of appraisal is the Appraisal Summary Table which should include all qualitative, quantitative and monetised impacts. The monetised costs and benefits should be included in the BCR—as calculated in the Economic Case. In the published documentation for high-speed rail the various components of the appraisal are described separately, for instance the Economic Case and the AoS. Each of these contains aspects of the Appraisal Summary Table. For instance, the Economic Case contains the monetised construction costs, the AoS contains an assessment of biodiversity and both contain assessments of noise (Economic Case as a monetised assessment, AoS as a qualitative assessment). The approach taken by HS2 Ltd is in line with the current guidance, although notably there are some factors that could be monetised (such as number of jobs created or building developments), but which are not.

### **Small time savings**

A2.4 Although most of the time savings on high-speed rail would not be considered small, some of the time savings for passengers from released capacity on conventional services or road network may be considered small.

A2.5 There has been an ongoing debate in the transport industry regarding the treatment of small time savings in appraisal. The business case for transport schemes often includes the valuation of very small time savings (minutes or seconds) accruing to many transport users. The debate is between those who claim that transport users place low or no value on very small savings, compared with those who claim that all time savings should be treated equally regardless of their size. This debate was discussed in a 2010 article in Oxera's online publication, *Agenda*.<sup>62</sup>

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61 Department for Transport (2011), 'High Speed Rail: Investing in Britain's Future', p. 14, February.

62 Riley, C. (2010), 'Do small savings in travel time matter?', *Agenda*, November.

A2.6 The current DfT guidance remains clear that all time savings should be included and the HS2 business case adopts this approach.

## Discounting

A2.7 The costs and benefits of HS2 have been assessed in present value terms. This means that costs and benefits further in the future are weighted as less important than costs or benefits today. This is known as discounting and is primarily based on the principle known as time preference—that goods and services available now are preferable to those available later. This applies to society as a whole as well as individuals.

A2.8 The standard appraisal approach to evaluating costs and benefits over time has been followed in the assessment of HS2. The scheme has been appraised over 60 years from opening, with an initial discount rate of 3.5% falling to 3% after 30 years. The full Y network has been appraised over 67 years (60 years from commencement of the full Y and the initial seven years of just HS2).

A2.9 Two potential challenges to the discounting approach can be raised. These relate to the discount rate and the appraisal time period. Oxera has tested in the published model two variants to the default discounting approach.

### Discount rate

A2.10 The HM Treasury Green Book values have been used and there would need to be a more fundamental revision of these recommendations that applied to appraisal of all schemes if alternative values were to be considered appropriate.

A2.11 However, there may be scope for reconsidering this value if the trend economic growth rate per capita over the long term was deemed to have changed from the 2.1% that is used in the current estimate. For example, if there was a structural change to long-term growth (not just short-term cyclical variations) as a result of the 2008 financial crisis.

### Appraisal period

A2.12 HS2 has been appraised over 60 years and the Y network over 67 years (60 from the opening of full Y, seven from just HS2). This is in line with DfT recommendations. Note, however, that the Green Book provides recommendations for discount rates for longer time periods—see Table A2.1.

**Table A2.1** The declining long-term discount rate

Period of years	0–30	31–75	76–125	126–200	201–300	301+
Discount rate	3.5%	3.0%	2.5%	2.0%	1.5%	1.0%

Source: HM Treasury (2003), 'The Green Book'.

A2.13 Since HS2 is a long-life asset one potential alteration to the standard approach to appraisal is to alter the appraisal time frame.

A2.14 Oxera has tested in the published model two variants to the default discounting approach.

A2.15 Table A2.2 below shows the impact on the BCR of changes to the discounting approach. Changing either the discount rate or the appraisal time frame will change the BCR. However, there is no clear reason to deviate from the current guidance.

**Table A2.2** Impact of alternative discounting assumptions

Period of years	HS2			Y network		
	Base	Appraisal period extended by ten years	Discount rate of 3.0% then 2.5%	Base	Appraisal period extended by ten years	Discount rate of 3.0% then 2.5%
BCR (without WEIs)	1.6	1.8	2.0	2.2	2.4	3.2
BCR (with WEIs)	2.0	2.3	2.4	2.6	2.8	3.8

Source: HM Treasury (2003), 'The Green Book'.

## Are there lessons from other major transport projects?

A2.16 The construction and operation of a high-speed rail line in the UK would not be unprecedented. The UK already has one high-speed line and there are many others across Europe and the rest of the world. This section briefly analyses whether there are lessons to be drawn for ex ante appraisal of HS2 or the Y network from ex post evaluations of other high-speed rail schemes and outcomes of other major transport projects.

### High Speed 1

A2.17 High Speed 1 (HS1) is the railway between St Pancras London and the Channel Tunnel. It allows high-speed rail services to operate between London and the continent as well as domestic high speed services from Kent to operate into London. Work on HS1 began in 1998; the first section of the railway (between the Channel Tunnel and Kent) opened in 2003 and section two (between Kent and London) opened in 2007.

A2.18 A number of lessons can be drawn from the ex post evaluations of HS1. First, there seems to have been some level of optimism bias with respect to passenger forecasts. The estimates of passenger revenues were revised downwards three times between the start of the project in 1998 and 2004. These forecasts each included low, medium and high scenarios, and in almost all cases, the high scenarios in the revisions were quite similar to the low cases from the previous forecasts. However, there were a number of unforeseen circumstances that may have contributed to lower-than-expected passenger traffic, including a reduction in travel following the terrorist attacks in September 2001. The overly optimistic passenger forecasts also hindered the plans to raise private finance, since this was based on the prospect of a certain level of forecast revenue. In turn, this led to increased public support for the project and a restructuring of the deal in 1998.<sup>63</sup>

63 National Audit Office (2005), 'Progress on the Channel Tunnel Rail Link', HC 77 Session 2005-2006, July 21st.

A2.19 On the other hand, there may be some positive lessons from the construction of HS1 and the ex ante cost forecasting that was undertaken. Section one of the link was completed on time and slightly below the target cost (as set out in the 1998 restructuring). The target cost of £1,930m was estimated as the sum of point cost forecasts for all of the component works, which were based on assumptions about various project risks. Due to the uncertainty in some of these assumptions, a contingency was also estimated at £180m. The actual cost outturn for Section one was £1,920m.<sup>64</sup>

### High-speed rail in Europe

A2.20 This section reviews major high-speed rail links around Europe and looks at the impacts of these schemes on passenger demand, modal shift, and wider economic and regional impacts. Overall, the success of high-speed rail seems to largely depend on the precise route selected, and whether the high-speed rail link alleviates congestion and connects the most highly populated cities.

### Mobility impacts

A2.21 The introduction of high-speed rail services in France and Spain generated a significant number of trips, and caused modal shift from road and rail. For example, there was a 2.8 times increase in demand for rail on the Madrid–Seville route from 1991 to 1997 and a 2.2 times increase for the Paris–Brussels route from 1994 to 2005, after the respective high-speed rail lines were introduced.<sup>65</sup> However, there is evidence that the generation in travel is mostly from outer areas into the city rather than the reverse; in other words, the journey generation is asymmetric. For example, on the Paris to Rhone-Alps route, flight and train journeys to Paris increased by 144%, but journeys in the inverse direction only experienced a 54% increase due to the high-speed rail connection.<sup>66</sup>

### Wider economic and regional impacts

A2.22 The introduction of the TGV in France was accompanied by the implementation of policies to develop and improve regional rail services to ensure that benefits were spread widely and to increase accessibility. These policies seem to have succeeded in bringing benefits to cities in some cases, such as Lyon and Lille. However, there have been low levels of job creation and attraction of few new businesses in cities with deprived economies and where the stations are located outside urban areas; for example, Montchanin. The regional impacts from the introduction of the high-speed rail link in Spain are also ambiguous. While the AVE is not reported to have attracted new firms to the catchment areas of stations, existing firms have benefited from the new transport infrastructure. Sizeable land value and population increases have also been cited as a result of AVE construction.<sup>67</sup>

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64 Ibid.

65 Brown, R. (2007), 'Transport Economists' Group Seminar', March 2nd.

66 Albalade, D. And Bel, G. (2010), 'High-speed rail: lessons for policy makers from experiences abroad', Working paper 2010/03.

67 Ibid.



A2.23 Experience from Germany suggests that there may be positive impacts in the catchment areas surrounding stations, although in the case of Germany both freight and passengers are transported on high-speed rail. For example, there was a 20% increase in demand for office and retail space around the Kassel–Wilhelmshohe station, which opened in 1992, and this has induced other new developments in the surrounding area.<sup>68</sup>

### Costs

A2.24 The construction of the German ICE line experienced building delays and complications which caused higher-than-expected construction cost overruns, operating deficits and increasing debt burdens. The operational deficits are considered to be a result of the small average size of German cities and the dispersion of the population around the country.<sup>69</sup>

### West Coast Main Line

A2.25 The upgrade to the WCML was completed on December 7th 2008.<sup>70</sup> There are two main documents which reviewed the business case for the project: the business case produced by the Strategic Rail Authority (SRA);<sup>71</sup> and the review of the upgrade by the National Audit Office (NAO).<sup>72</sup>

A2.26 The SRA business case estimated user benefits but not the WEIs of the upgrade. However, without quantifying the WEIs from the scheme, the BCR is estimated to be 2.4:1, thus providing ‘high value for money’. The business case suggests that service improvements would lead to a 15–25% increase in the number of passenger journeys, of which 60% would be from modal shift from road to rail. In addition, it is expected that the scheme will remove 5,000 lorries per day from the road. Figure A2.1 shows the distribution of user benefits from the scheme.

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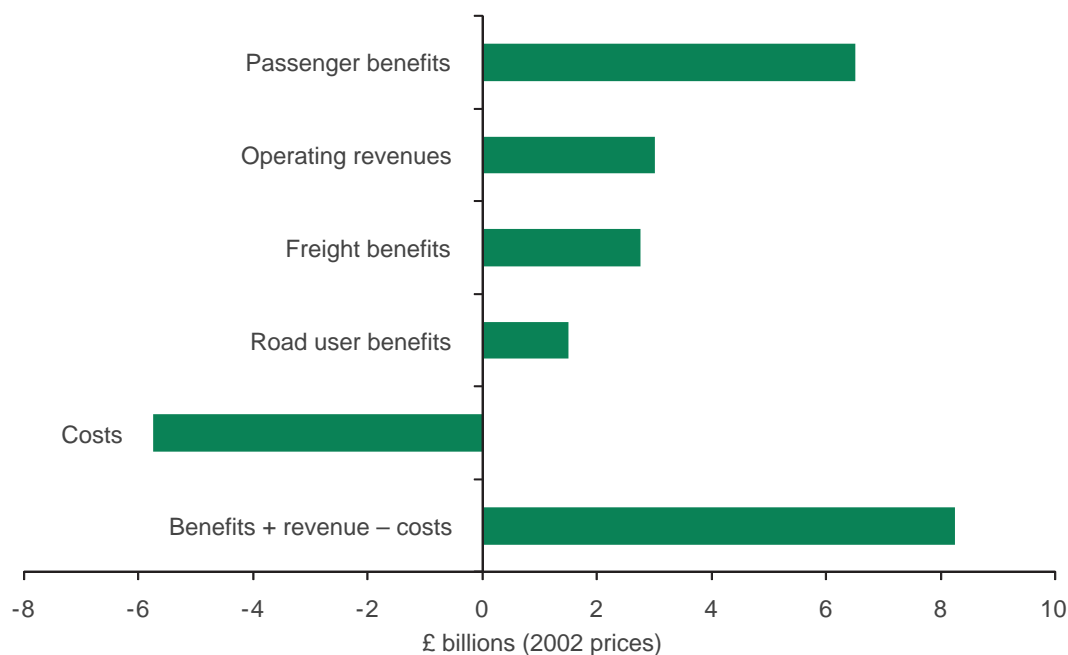
68 Haynes, K.E. (1997) ‘Labour markets and regional transportation improvements: the case of high-speed trains, an introduction and review’, *The Annals of Regional Science*, **31**, 57–76.

69 Albalade, D. And Bel, G. (2010), ‘High-speed rail: lessons for policy makers from experiences abroad’, Working paper 2010/03.

70 Network Rail (2008), ‘West Coast Main Line: Built in the 19th Century. Rebuilt for the 21st’, press release, December 7th.

71 Strategic Rail Authority (2003), ‘West Coast Main Line Strategy’, June.

72 National Audit Office (2006), ‘The Modernisation of the West Coast Main Line’, November 22nd.

**Figure A2.1** Distribution of user benefits

Source: Strategic Rail Authority (2003), 'West Coast Main Line Strategy', June, p. 45.

A2.27 The figure above shows that over half of the estimated benefits accrue to passengers, both existing and new.

A2.28 The NAO review of the upgrade comments:

The business case for the continuation of the programme hinged around the non-financial benefits, chiefly savings in passenger journey times and benefits to road-users from freight being carried by rail rather than road and from reduced road congestion<sup>73</sup>

### Jubilee Line Extension

A2.29 The Jubilee Line Extension (JLE) was one of London's biggest and most expensive engineering projects. Running from Green Park to Westminster, Waterloo and Stratford, the project also included the building of six completely new stations as well as rebuilding or enlarging five other stations. There were also five major developments associated with the JLE, including the Greenwich Millennium Dome. The JLE was completed in December 1999 and has been operating since.

A2.30 There were two major ex ante studies of the JLE, including the East London Rail Study and quantified risk assessment modelling, as well as a number of studies completed during construction and two ex post assessments.

A2.31 The ex post assessments indicate that there were significant cost overruns from the JLE. In the year that it was decided to go ahead with the project (1993), the costs were predicted to be £2.1 billion (although there were already a number of upward revisions before this time). However, due to a number of factors, including the collapse

73 National Audit Office (2006), 'The Modernisation of the West Coast Main Line', November 22nd, p. 22.

of tunnels using the same tunnelling method as the JLE, and the greater complexity of construction in some areas than previously envisaged, the actual costs of the project were £3.45 billion. The JLE was also delivered 21 months later than initially planned, for the reasons mentioned above and due to problematic electrical and mechanical work.

A2.32 However, even with these large cost overruns and delays, the JLE is considered to have delivered good VfM. The JLE was initially approved with a BCR of 0.95 and an expectation that there would be some additional unquantified benefits from the regeneration of the South Bank and the creation of new jobs in Canary Wharf. An ex post evaluation of the scheme estimated that the JLE delivers a BCR of 1.75, even accounting for the cost overruns. This may be a result of the large developments that were created around stations. For example, there was extensive housing and commercial development around Canada Water station which may not have occurred on the same scale without the JLE.<sup>74</sup>

A2.33 An ex post environmental impact assessment concluded that the JLE has had no adverse impact on ambient noise levels at the nearest noise-sensitive properties along both the underground and above-ground sections. Additionally, apart from the initial impacts of above-ground works associated with construction, the operation of the extended line has not had any noticeable impact on urban ecology.<sup>75</sup>

A2.34 Overall, there are a number of lessons that can be drawn from ex post assessments of other high-speed rail and rail schemes. Planning and taking into account the environmental, economic, and social factors seems to be integral to the success of the scheme. As well, a consideration of the main uncertainties or risks surrounding the costs and revenues can lead to more robust estimates. At the same time, in almost all schemes considered, unforeseen circumstances have arisen and contributed to higher costs or lower revenues than expected, although some schemes have still delivered good VfM.

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74 Omega Centre at UCL 'Jubilee Line Extension (JLE)', Project Profile.

75 Scott Wilson for Transport for London (2002), 'JLE – Post Project Appraisal Environmental Indicator Report', December.

## Annex 2: Capacity calculations

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Briefing note on capacity issues by Richard Goldson and Bob Linnard, Specialist Advisers to the Transport Committee, October 2011.

### West Coast Mainline – Supply and Demand

1. A key reason cited by the Government for building HS2 is the extra passenger and track capacity it would provide. Some critics argue that upgrading the existing WCML would provide sufficient capacity for the foreseeable future. This note examines the supply of extra capacity under different options and the demand for capacity (the latter based on information provided by DfT and HS2 Ltd).<sup>1</sup>

#### Supply

2. The table below summarises the extra capacity that would be provided on WCML under three options – HS2 London-Birmingham, the conventional upgrade modelled by DfT (Rail Package 2 – RP2) and the variant to that proposed by 51m.<sup>2</sup> It also shows the percentage capacity increases relative to the HS2 reference case date (2008).

3. It shows that the recent upgrade and high-frequency timetable have already increased capacity from 90,000 seats per day in 2008 to 120,000 seats in 2011.

4. The RP2 and 51m proposals would both increase that 2011 figure by a further 80% to 90% to around 220,000 seats. Either could probably be implemented by 2016. Both these proposals would provide a rather smaller increase in the seats available in the peak – around 60% (relative to 2011) in the case of 51m.

5. HS2 would provide significantly more additional capacity than RP2 or 51m. It would increase the daily capacity (relative to 2011) by some 145% to nearly 300,000 seats, and the peak capacity by a similar percentage, albeit not until 2026.

#### Demand

6. HS2 Ltd has provided information on current and forecast long-distance (100 miles and more) trips on WCML, though only on the franchise currently operated by Virgin.<sup>3</sup> That proviso means that the figures for demand are not directly comparable with those above for supply. The important thing is the *relative rate* at which supply and demand increase.

7. In 2008 there were 50,000 long-distance trips per day over the southern end of Virgin West Coast. By 2011 this had risen to about 65,000. DfT's standard model for forecasting rail passenger demand shows growth of 2% per year, well below the 10% per year actual growth from 2008 to 2011 on WCML. This means that the forecast of 57,000 trips by 2021 has already been exceeded. Similarly, it means that the forecast of 101,000 trips by 2043 – about 50% more than today – is probably too low.

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1 Ev 267

2 Ev 154

3 Ev 267

8. But if the model is right and demand quickly drops back to 2% per year, then RP2 or 51m would provide enough capacity for perhaps 20 years, at least on an all-day basis.

9. HS2 Ltd says that HS2 would of itself increase demand – by an extra 37%.

### Load Factors

10. The load factor is the rail industry measure of crowding. A load factor of 100% means that all seats are occupied. (If the journey is less than 20 minutes it would also assume standing within the design limits of the rolling stock.)

11. DfT's figures show load factors on Virgin West Coast between London and the West Midlands (the busiest stretch) at 56% in 2008, dropping to 42% in 2021. That reduction reflects the extra capacity created by the recent upgrade running ahead of the 2% per year modelled demand growth. But as with the demand figures in paragraph 8 above, the 2021 forecast does not reflect the actual 2008-11 surge in demand.

12. By 2043, without HS2 or any alternative, the load factor is forecast to have risen to 76%. That reflects a forecast doubling of 2008 demand. But RP2 or 51m would broadly double today's supply of capacity. So why might we need the much bigger increase in capacity offered by HS2 (which, even allowing for the 37% increase in demand that the new line would generate, would by 2026 give a much lower average load factor than any alternative)? The answer lies in the way demand is concentrated at peak periods.

### Peak Demand

13. DfT/HS2 Ltd acknowledge two limitations in their figures. First, as noted, they ignore the actual demand growth over the past 3 years. Second, the load factors are *all day averages* which will mask much higher demand in the morning and evening peaks. The question of whether these peaks can be spread is crucial.

14. The McNulty report on rail value for money urges a move from predict and provide to predict, manage and provide, i.e. using different pricing structures to make better use of capacity. DfT have largely dismissed the scope for this on WCML, arguing that 9-5 commuting is here to stay for the foreseeable future.<sup>4</sup> If they are right then even a (probably understated) 76% all-day average load factor would lead to unacceptable peak crowding, reinforcing the case for the step change in capacity provided by HS2.

15. As an aside, if DfT are right that demand cannot be spread and the 10% annual growth of the past three years were to continue, even pressing ahead with HS2 would mean severe overcrowding for commuters post-2020, given that HS2 cannot be in operation before 2026.

### Conclusions

16. HS2 is needed for capacity reasons if the growth of the last 3 years continues or if peak demand cannot be spread.

17. If the growth rate were to fall back quickly to 2% per year (or less) RP2 or 51m would suffice, but only if an answer could be found to the problem of peak demand.

Table 1

Interventions	Daily Trains	Daily Standard Class Seats (Increase over 2008 Base)	Daily Seats (Std + 1st) (Increase over 2008 Base)	Peak Standard Seats (one hour, one way) (Increase over 2008 Base)	Peak Seats Std + 1st (One hour, one way) (Increase over 2008 Base)	Comments
Train investment with no/little infrastructure investment						
HS2 2008 Base (Reference case)		59,298	90,000	2,289	3,482	Gross figure obtained from HS2 Strategic Alternatives Study. Peak hour figures estimated.
Current timetable	286	81,924 (38%)	120,244 (34%)	3,162 (38%)	4,652 (34%)	Includes Voyager services (30 daily).
Evergreen 3 (2011 Chilterns line upgrade)	[68]	[28,900] [55%]	[28,900] [32%]			Committed scheme, complete in 2011, but excluded by 51m and here as it is unclear how much of the capacity is actually available to WM passengers after allowing for intermediate usage to Bucks, Oxon and Warks.
Committed train lengthening project	286	105,924 (79%)	144,244 (60%)	4,102 (79%)	5,592 (61%)	Committed scheme - implemented from 2012.
December 2013 additional services	306	113,679 (92%)	154,899 (72%)	4,102 (79%)	5,592 (61%)	Additional hourly off-peak train each way. Note off-peak only.
First class reconfiguration as proposed by 51m	306	134,379 (127%)	162,903 (81%)	4,630 (102%)	5,620 (61%)	One car converted from first to standard class.
12 car sets as proposed by 51m (except Liverpool)	306	166,908 (181%)	195,432 (117%)	5,810 (154%)	6,800 (95%)	Major physical constraints at Liverpool.

<b>Infrastructure investment, proposed by 51m to relieve pinchpoints</b>									
30 additional services enabled	336	186,648 (215%)		218,538 (143%)	6,391 (179%)		7,480 (115%)		
<b>Total envisaged by 51m</b>	336	186,648 (215%)		218,538 (143%)	6,391 (179%)		7,480 (115%)		
Increase over Current	50	104,724 (128%)		98,294 (82%)	3,229 (102%)		2,828 (61%)		
<b>RP2</b>				224,600 (150%)					Estimated from Strategic Alternatives Paper and calculations re Evergreen
<b>RP2 Increase over Current</b>				104,366 (87%)					
<b>HS2 (West Mids) Proposal (All New Capacity)</b>	336			174,900 (194% over base) (145% over current)			7,150 (205% over base) (154% over current)		Assumes 15 hour day with 3 hour peaks; all trains 550 capacity, except 50% of Birmingham will be 1100
<b>HS2+Y Proposal (West Mids &amp; NW only) (All New Capacity)</b>	312			184,800			8,800		Assumes 15 hour day with 3 hour peaks; all trains 550 capacity, except 50% of Manchesters and Birmingham will be 1100
<b>HS2+Y Proposal (All destinations) (All New Capacity)</b>	492			283,800			12,100		Assumes 15 hour day with 3 hour peaks; all trains 550 capacity, except 50% of Manchesters and Birmingham will be 1100

## Annex 3: Committee visit to Lille, Paris and Frankfurt, 4–6 July 2011

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### ***Monday 4 July***

- 11.00 Travel by Eurostar from London to Lille, France; on-board discussion with Reuben Arnold, Head of Commercial Development, Eurostar
- 14.30 Meeting with Mr Michel Bonord, Director, Euralille Development Corporation (SAEM Euralille) and Mr Thierry Mabilde de Poncheville, Managing Director, Greater Lille Development Agency (ADU)
- 16.30 Meeting with Lille Economic Development Agency (APIM)
- 18.00 Travel by TGV from Lille to Paris
- 19.30 Briefing by Sir Peter Westmacott, British Ambassador to France, at the Ambassador's Residence; followed by dinner meeting hosted by the Ambassador, with Ms. Barbara Dalibard, Head of SNCF Voyages and Mr. Hervé Moritan, Député UMP. Also Mr. Hugo Shorter, Minister-Counsellor, British Embassy Paris

### ***Tuesday 5 July***

- 08.30 Breakfast meeting at Réseau Ferré de France (national rail infrastructure company), with Mr. Jean-Marc Delion (Director for Development and Railway Investment) and Mr. Pierre Denis Coux, (Project Director, High-Speed Line South Europe Atlantic), RFF
- 10.30 Meeting with French Minister for Transport Mr. Thierry Mariani, French Ministry of Ecology, Sustainable Development, Transport and Housing
- 13.00 Travel by ICE from Paris to Frankfurt, Germany
- 18.00 Briefing by Mr Simon Gallagher, British Embassy in Berlin
- 19.00 Dinner meeting with Dr. Rainer Stephan British Honorary Consul

### ***Wednesday 6 July***

- 08.00 Breakfast meeting with Dr. Freundt, Managing Director, Regional Economic Policy Division, IHK Frankfurt and Herr Endemann, Regionalverband FrankfurtRheinMain



- 10.00 Meeting at Deutsche Bahn offices with Dr. Manuel Rehkopf, Executive Board, Marketing DB long-distance traffic AG and Dr. Michael-Jürgen Beck, Head of Division time-table & capacity management, DB Netz AG
- 13.00 Wash-up lunch meeting with Dr. Rainer Stephan and Mr Simon Gallagher
- 14.15 Travel by ICE and Eurostar from Frankfurt to London via Brussels

# Formal Minutes

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**Tuesday 1 November 2011**

Members present:

Mrs Louise Ellman, in the Chair

Steve Baker  
Jim Dobbin  
Julie Hilling  
Kwasi Kwarteng  
Mr John Leech

Paul Maynard  
Iain Stewart  
Graham Stringer  
Julian Sturdy

Draft Report (*High Speed Rail*), proposed by the Chair, brought up and read.

*Ordered*, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 42 read and agreed to.

Paragraph 43 read.

Amendment proposed, in line 2, to leave out from “operated.” to end, and insert “**At present levels of rail subsidy, we cannot know whether demand management would be adequate in the long term to bring supply and demand into balance. If capacity became seriously constrained, growing demand and higher ticket prices would be a clear signal for further investment, perhaps in high-speed rail.**”—(Steve Baker.)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 2

Steve Baker  
Paul Maynard

Noes, 6

Jim Dobbin  
Julie Hilling  
Kwasi Kwarteng  
Mr John Leech  
Graham Stringer  
Julian Sturdy

Paragraph agreed to.

Paragraphs 44 read, as follows:

**The debate on capacity seems to us to reveal two contrasting views. On one view, rising demand on the West Coast corridor is essentially a problem, to be tackled by least-cost incremental improvements coupled with measures to suppress demand. On the other view, rising demand is, for strategic reasons, to be welcomed and indeed fostered. As noted in Chapter 2, we consider that the Government needs to explain more clearly this strategic case and in particular why such arguments do not apply to road and air transport. Provided this is done, we support the step change that HS2 could bring to the capacity, quality, reliability and frequency of rail services between our major cities, and to those served by the existing WCML. Whilst the alternatives proposed by groups such as 51m offer substantial additional passenger capacity, they are not of**

**the same scale as HS2. The rapid growth in passenger numbers over the past 15 years shows the need to plan on a larger scale and for the long term. We do not wish our successors to be faced with a situation in ten years time where demand has continued to grow but insufficient time remains to provide the necessary capacity. We therefore support the proposal for a new rail line between London and Birmingham and onwards to Manchester and Leeds.**

Amendments made.

Amendment proposed, to leave out from “**therefore**” in line 13 to the end of the paragraph and insert “**call on the Government to set out a clear and comprehensive long term strategy for transport and the place of high-speed rail within it.**”—(*Steve Baker.*)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 5

Steve Baker  
Kwasi Kwarteng  
Paul Maynard  
Iain Stewart  
Julian Sturdy

Noes, 4

Jim Dobbin  
Julie Hilling  
Mr John Leech  
Graham Stringer

Paragraph, as amended, agreed to.

Paragraphs 45 to 62 agreed to.

Paragraph 63 read.

Amendment proposed, at the end, to add “**It is also disappointing that as a major justification for HS2 phases I and II is the rebalancing of the economy, a full assessment of the case for building north to south has not been undertaken. This work should be carried out as a priority.**”—(*Graham Stringer.*)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 5

Steve Baker  
Jim Dobbin  
Iain Stewart  
Graham Stringer  
Julian Sturdy

Noes, 2

Kwasi Kwarteng  
Mr John Leech

Paragraph, as amended, agreed to.

Paragraphs 64 to 82 agreed to.

Paragraph 83 read.

Amendment proposed, in line 10, to leave out from “**changes**” to the end of the paragraph and insert “**to the strategic route, detailed alignment or design of the line proposed by HS2 Ltd.**”. —(*Iain Stewart.*)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 4

Steve Baker  
Paul Maynard  
Iain Stewart  
Julian Sturdy

Noes, 5

Jim Dobbin  
Julie Hilling  
Kwasi Kwarteng  
Mr John Leech  
Graham Stringer

Paragraph agreed to.

Paragraphs 84 to 95 agreed to.

A paragraph—(*Paul Maynard*)—brought up and read, as follows:

**We note that whilst many organisations support high-speed rail in principle, they object to the specific route. We would urge the Government to reconsider the criteria for the route between London and Birmingham to seek some degree of consensus. This may include either intermediate stations on the line already under consultation, investment in further tunnelling under the Chilterns, or a re-appraisal of proposals such as Heathrow Hub which would allow for greater use of existing transport corridors.**

Question put, That the paragraph be read a second time.

The Committee divided.

Ayes, 4

Steve Baker  
Paul Maynard  
Iain Stewart  
Julian Sturdy

Noes, 5

Jim Dobbin  
Julie Hilling  
Kwasi Kwarteng  
Mr John Leech  
Graham Stringer

Paragraphs 96 to 117 agreed to.

Paragraph 118 read.

Amendment proposed, in line 1, to leave out “there is a good case” and insert “a case can be made”.—(*Steve Baker*.)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 4

Steve Baker  
Paul Maynard  
Iain Stewart  
Julian Sturdy

Noes, 5

Jim Dobbin  
Julie Hilling  
Kwasi Kwarteng  
Mr John Leech  
Graham Stringer

Paragraph agreed to.

Paragraphs 119 to 124 agreed to.

Annexes agreed to.

Summary read.

Motion made, to leave out the summary and insert the following new summary:

The UK is sometimes accused of failing to invest sufficiently in its transport infrastructure and of not planning for the long term. In HS2, the Government proposes what is probably the largest single investment in UK transport infrastructure in modern times and what is undoubtedly a long term commitment.

In contrast to policies on major roads and airports, HS2 has all-party support even as it is not supported by all MPs. We note the substantial support for high-speed rail from those businesses, local authorities and politicians in the regions which stand to benefit under current proposals and the strong opposition from those along the route. Indeed, HS2 is fast becoming a case study in public choice theory.

We support the concept of a high-speed rail network for Britain as part of the overall long term transport strategy for the UK, also including classic rail, road, aviation and shipping. There is no doubt that the Government's HS2 proposal would deliver a step-change in rail capacity and connectivity while releasing capacity for passengers and freight on the classic network. However, we believe that the Government's HS2 proposal is premature and that significant issues need to be addressed before a decision to proceed with HS2 can be made.

HS2 is not commercially viable and it contains huge financial risks: it will require substantial subsidy in both construction and operation, even if all goes to plan. The discounted sum of capital and revenue costs is £44.3bn against projected ticket sales of £27.2bn<sup>1</sup>. If the project proceeds as planned, it will achieve a financial loss of £17.1bn.

While the Secretary of State of the time of our last evidence session accepted that HS2 is an infrastructure investment that would never be made by the private sector, we question whether the strategic economic benefits anticipated for HS2 justify the financial risks inherent in the project, particularly given the present fiscal and economic outlook. We have recommended that, if the Government decides to go ahead with HS2, it should, in announcing that decision, publish a summary of the financial case including the assumptions which persuade ministers that the scheme will be affordable alongside sustained investment in the classic network.

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1 *High Speed 2: the next government project disaster?* IEA Discussion Paper No. 36, July 2011

The economic case for HS2 assumes that time on board a train is wasted for business travellers. This is increasingly untrue thanks to on-board internet access. Oxera's report indicated that the level of productivity which can be achieved on a train is very similar to that which can be achieved at a normal workplace. Consequently, the economic benefits of HS2 are significantly exaggerated.

Significant environmental and social costs – including planning blight – are not included in the assessment of the economic case. Moreover, we heard that HS2 is likely to create demand for further expensive, taxpayer-funded infrastructure, such as a new underground line to cope with passengers at Euston. All this suggests that HS2 will cost taxpayers substantially more than presently anticipated.

Claims that HS2 will bridge the North-South divide must be treated with caution. The evidence appears to be largely speculative and, as we heard, regions not benefitting from HS2 would bear substantial costs through the redirection of the necessary capital. While most taxpayers will not benefit from the scheme, the cost of HS2 is equivalent to £1,000 per taxpayer, even on current estimates.

In forecasting demand for HS2, the Department disregards an approach using scenarios based on alternative futures and instead uses past information to forecast 75 years into the future in a single econometric variable. The uncertainty around such a method is enormous, especially in later years. The DfT, in *Delivering a sustainable railway (2007)* and *Realising the potential of GB rail (2011)*, accepted that forecasting demand 30 years ahead is impossible to do accurately and recommended incremental strategies for investment.

While opponents of HS2 have argued the flaws in the demand forecast, supporters have argued that fare levels will be set to enable high use of the new network<sup>2</sup>. This implies greater taxpayer subsidy to induce demand, a phenomenon which may already be significant on the current network: as the Secretary of State said, "We have one of the most expensive railways in the world. ... That is not acceptable. The taxpayer is contributing almost as much as the farepayer – and the farepayer is paying a lot more than his international comparators."<sup>3</sup>

We have reported the tension between two contrasting views of rising demand: on the one hand, a problem to be managed by least-cost incremental improvements and measures to suppress demand and, on the other, a phenomenon to be welcomed and fostered for strategic reasons. We have called on the Government to explain that strategic case and why it does not apply to road and air transport. In the meantime, it appears that this historic infrastructure proposal is underpinned by a simplistic approach to demand forecasting and a lack of strategic clarity.

We consider that alternatives to HS2 have not been adequately explored. AGAHST argue that the Evergreen 3 upgrade to the Chiltern Line between London and Birmingham has been wrongly excluded from the Government's assessment of capacity: HS2 Ltd says that it will be "exploring this further". The DfT has acknowledged that it has not carried out a full analysis of the 51m Group's proposals, arguing that "at the strategic level, its current view is that no package of upgrades to existing lines could offer the same level or range of benefits as a new high-speed line." However, our own specialist advisers have demonstrated that alternatives to HS2 might meet the background passenger growth forecast to 2043 at peak times, just as they demonstrate the dramatic increase in capacity which would be provided by HS2.

The arguments around demand management are ambiguous and the fares strategy for HS2 has not been decided. The modelling assumes current fare levels. We consider that it would have been helpful if the DfT had provided a more comprehensive account of the options and implications.

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2 *High-Speed Rail: Fair and Affordable*, Greengauge, 2010

3 <http://www2.dft.gov.uk/press/speechesstatements/speeches/hammond20100910.html>

The challenge panels within HS2 are not credible. Of the three panels of 22 men, only the Analytical Challenge Panel contains any evident critic of high-speed rail. The members of the Strategic Challenge Panel are almost all publicly supportive of high-speed rail and it includes the Director of Yes to HS2, the Director of Greengauge21 and the Chairman of Network Rail. We have recommended that the Government employs a more robust and diverse challenge process.

In the course of our inquiry, many issues about the Government's proposal for HS2 and about high-speed rail in general have been raised. We have indicated a number of areas which must be addressed in progressing high-speed rail. These include provision of greater clarity on the policy context, the assessment of alternatives, the financial and economic case, the environmental impacts, connections to Heathrow and the justification for the particular route proposed. We call on the Government to consider and to clarify these matters before it reaches its decision on HS2.

Our inquiry has dealt with the strategic case for high-speed rail. If the Government decides to proceed with HS2, a hybrid bill will provide the opportunity for detailed matters, including those of environmental impact and mitigation, to be addressed. —(*Steve Baker.*)

Question put, That the new summary be read a second time.

The Committee divided.

Ayes, 1	Noes, 6
Steve Baker	Jim Dobbin Julie Hilling Kwasi Kwarteng Mr John Leech Graham Stringer Julian Sturdy

Amendment proposed, at the end of line 16 to insert "However, we believe that significant issues need to be addressed before a decision to proceed with HS2 should be made." —(*Iain Stewart.*)

Question proposed, That the Amendment be made.

The Committee divided.

Ayes, 4	Noes, 5
Steve Baker Paul Maynard Iain Stewart Julian Sturdy	Jim Dobbin Julie Hilling Kwasi Kwarteng Mr John Leech Graham Stringer

Summary agreed to.

Motion made, and Question put, That the Report be the Tenth Report of the Committee to the House.

The Committee divided.

Ayes, 8

Jim Dobbin  
Julie Hilling  
Kwasi Kwarteng  
Mr John Leech  
Paul Maynard  
Iain Stewart  
Graham Stringer  
Julian Sturdy

Noes, 1

Steve Baker

*Ordered,* That the Chair make the Report to the House.

Written evidence was ordered to be reported to the House for placing in the Library and Parliamentary Archives.

*Ordered,* That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Tuesday 8 November at 10.00 am

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## Witnesses

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### Tuesday 21 June 2011

Page

**Stephen Joseph**, Chief Executive, Campaign for Better Transport, **Chris Nash**, Research Professor, University of Leeds, and **Christian Wolmar**, railway author and broadcaster Ev 1

**Michael Roberts**, Chief Executive, Association of Train Operating Companies, **Richard Eccles**, Director of Network Planning, Network Rail, **Anthony Smith**, Chief Executive, Passenger Focus, and **Lord Berkeley**, Chairman, Rail Freight Group Ev 8

**Nicholas Petrovic**, Chief Executive, Eurostar, and **Pierre Messulam**, Rail Strategy and Regulation Director, SNCF Ev 18

### Tuesday 28 June 2011

**Professor David Begg**, Director, Campaign for High Speed Rail, **David Frost**, Director General, British Chamber of Commerce, and **Jim Steer**, Director, Greengauge 21 Ev 23

**Geoff Inskip**, Chief Executive, Centro, **Stephen Clark**, Core Cities Group, **Kieran Preston OBE**, Leeds City Region, and **Geoffrey Piper**, Chief Executive, NW Business Leadership Team Ev 31

**Cllr Stephen Greenhalgh**, Leader, Hammersmith & Fulham Council, **John Dickie**, Director of Strategy & Policy, London First, and **Daniel Moylan**, Deputy Chairman, Transport for London Ev 38

### Tuesday 12 July 2011

**Jerry Marshall**, Chairman, AGAHST (Action Groups Against High Speed Two), **David Bayliss OBE**, Trustee, RAC Foundation, **Bruce Weston**, Director, HS2 Action Alliance, and **Lord Wolfson of Aspley Guise** Ev 44

**Cllr Martin Tett**, Leader, Buckinghamshire County Council and **Chris Stokes**, 51M, **John Tomaney**, Henry Daysh Professor of Regional Development, Newcastle University, and **Cllr Sue Vincent**, Deputy Leader and Cabinet Member for Environment, London Borough of Camden Ev 55

### Tuesday 6 September 2011

**Ralph Smyth**, senior transport campaigner, Campaign to Protect Rural England, **Steve Rodrick**, Chief Officer, Chilterns Conservation Board, **Dame Fiona Reynolds**, Director General, National Trust, and **Professor Roger Vickerman**, School of Economics, University of Kent Ev 65

**Niall Duffy**, Head of PR and Public Affairs, Flybe, **Allan Gregory**, Surface Access Director, Heathrow Airport Ltd, **Jonathan Young**, Programme Director (Group Strategy), Manchester Airports Group, and **Steven Costello**, Director, Heathrow Hub Ltd Ev 73

**Garry Clark**, Head of Policy and Public Affairs, Scottish Chambers of Commerce, **Keith Brown MSP**, Minister of Housing and Transport, Scottish Government, **Tony Page**, Campaign Co-ordinator, West Coast Rail 250, and **Mark Barry**, advisor on transport and the economy, Cardiff Business Partnership Ev 79

## Tuesday 13 September 2011

**Sir Brian Briscoe**, Chairman, **Alison Munro**, Chief Executive, and **Professor Andrew McNaughton**, Chief Engineer, HS2 Ltd Ev 87

**Rt Hon Philip Hammond MP**, Secretary of State for Transport Ev 96

## List of printed written evidence

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1	Professor John Tomaney, Henry Daysh Professor of Regional Development, Newcastle University	Ev 106
2	North West Business Leadership Team	Ev 113
3	Professor Chris Nash, Institute for Transport Studies, University of Leeds	Ev 115
4	National Trust	Ev 117
5	Hammersmith and Fulham Council	Ev 119
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(published in Volume III on the Committee's website [www.parliament.uk/transcom](http://www.parliament.uk/transcom))

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155	Dr Moshe Givoni & Professor David Banister, Transport Studies Unit, School of Geography and the Environment, University of Oxford	Ev w541
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162	Maurice Hopper	Ev w553
163	Glenn Lyons & Steve Atkins, Centre for Transport & Society, University of the West of England, Bristol	Ev w553
164	Dr Paul Hoad	Ev w555
165	David Henderson and David Sawers	Ev w563
166	John Killip	Ev w566
167	Mr Geoffrey Toull	Ev w566

## Correspondence

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The following correspondence was received in connection with the Committee's inquiry and copies have been placed in the Parliamentary Archives ([www.parliament.uk/archives](http://www.parliament.uk/archives)), and are available to the public for inspection. Requests for inspection should be addressed to The Parliamentary Archives, Houses of Parliament, London SW1A 0PW (tel. 020 7219 3074; email [archives@parliament.uk](mailto:archives@parliament.uk)). Opening hours are from 9.30 am to 5.00 pm on Mondays to Fridays.

Mr Francis Charig, Antix Labs Ltd; Mr D F Willbond; Kim Goodall, HS2 Action Alliance; John Taylor, The Chiltern Society; Chris Smith; Michael & Sue Barden; Christopher Paine; A & R McNair; Dan byles MP; David Kirchheimer, Langham Textiles; Peter Hooper; John Stratton; Ms Brenda M Liddiard; Adam D G Macleod; Ms A Woof; Patricia Mallett; Michael Wilkinson; Mark Blathwayt; Daniel Scharf, GreenSpeed; Lawrence Ractliffe; Anthony Ransome; Kevin Archer; Louise Gould; Bruce Weston, HS2 Action Alliance; M. A. Timms; P Coughlan; Simon Moppett, Conservative Transport Group; C J Prideaux; Steve Trowbridge; Alison Farquhar; Stephen Plowden; Marilyn Fletcher, Chiltern Countryside Group; Dr John Waters; APD Westhead; Neil Mathers; David Thrower; The New Economics Foundation; Chris Eaglen; Timothy Hart; Maurice Lewis; Mr H B Warburton; Hilary Wharf, HS2 Action Alliance; Mr Rawicz-Szczerbo; Grand Central Railway Company Ltd; Tim Cresty, Cognitio Communications; Dr Paul Thornton; Adam Macleod; Paul Withrington; Dr Paul Hoad; Glenn Lyons; Alison Doggett, Chiltern Society; Daniel Moylan, Transport for London; Mike Overall, Chiltern Society; James Cornish; William Barter; Marilyn Fletcher; 51M.

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